A CASE STUDY OF INSTITUTIONAL MANAGEMENT IN RESPONSE TO THE ECONOMIC CRISIS

By

YANG YANG

(Under the Direction of James C. Hearn)

ABSTRACT

Many public institutions in the United States have moved to decentralized models to manage their budget and general operations. This has come as a reaction to both reduced state support and increased market opportunities. Due to the recent economic recession, however, it is hypothesized that such a reaction by institutions may have slowed or reversed because of declining market resources. This study sought to examine the specifics of this trend toward decentralized models during the economic recession through investigating budgetary and operational responses of a public institution to the financial distress. A single, case institution was selected based on its mixed feature of decentralization and centralization. By interviewing 26 deans, school chairs, vice-presidents, and budget officers of all levels from this public research university, the researcher investigated strategies the various entities of the institution chose to cope with financial crisis. This study also explored emerging trends in campus management through the choice of strategies during the economic recession. Supplemented by documentary data, the interview data provided strong evidence of centralization at the

institutional level in some administrative areas. The study found that in addition to contingent cutting methods, the university adopted strategic approaches that focused on long-term thriving. Overall, the findings suggested that most of its general operation procedures and processes have not been changed by the economic downturn. Some evidence indicated possible trend of decentralization on campus after the recession.

INDEX WORDS: American higher education, Institutional management, Decentralization, Entrepreneurship, Economic recession

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CHAPTER I

INTRODUCTION

> The two primary camps of higher education budgetary strategy have for years been wrestling over whether it's better to dole out revenues from a central administration or allow individual colleges to control their own financial destinies. With an economic crisis now draining dollars from college coffers across the country, that question is yet again top of mind on several campuses (Stripling, 2010).

Over the past several decades, many public colleges and universities have been looking for ways to manage financial constraints due to reduced state support. State contributions to public research universities have steadily declined in real terms by more than 15 percent in the last 20 years (Keller, 2009). According to the State Higher Education Finance report, between 1997 and 2007, higher education's total allocation of state and local revenues decreased 5.6 percent nationally (SHEEO, 2009). The 2001 recession lasted until 2005 and there was a three-year recovery between 2006 and 2008 with increases in state and local support for public higher education adjusted for inflation and enrollment (SHEEO, 2009). However, the three-year recovery was suddenly interrupted by the current recession, which started in 2008 and is more severe than the 2001 recession (SHEEO, 2009). The current recession posed further financial challenges to public institutions that have undergone decades of declining financial support.

The impacts the current economic recession on higher education institutions were reflected in news reports and stories. The *Chronicle of Higher Education* reported deep budget cuts to many institutions. States, such as California, Florida, Kentucky, Maryland, and Nevada, have felt the crises the most severely and have had to implement creative budgetary solutions.

Florida's eleven public universities, for example, underwent severe financial trouble with additional proposed overall budget cuts of $ 2 billion (Fain, 2008). According to the University of Florida's president J. Bernard Machen, "this is by far the worst fiscal crisis I've seen in 15 years as a university administrator" (Fain, March 2008, p.1). A survey indicated that concern by Californians over state budget cuts to the state's colleges made affordability the top issue facing colleges and universities in the state (Keller, Nov 2008). Schrecker (2009) compared the current financial crisis in higher education to the Great Depression of the 1930s. In fact, he predicted that the current budget cuts would have a more deleterious impact on public institutions than the Great Depression's reductions, given the fact that postsecondary institutions today serve a larger population than ever before.

Unsurprisingly, the financial crisis has created further concerns for administrators regarding the strategic management of their campuses. To unify campus efforts, academic researchers and policy analysts have sought to inform higher education institutions of ways to respond to the crisis. Chabotar (June 2009) examined some classic mistakes colleges and universities are likely to make in economic downturns and suggested ways to avoid these mistakes. For example, he suggested that differences in centrality to mission, size, and efficiency should not be ignored when cuts are made in spending and personnel; enrollment growth may not always serve as a solution to boost revenue; strategic thinking and planning for long-term vitality should not be overshadowed by the short-term crisis; and the governing board has to be informed and involved to get wider support from essential people. Educators and policy-makers also met in Washington DC to discuss ways for higher education leaders to address the crisis adequately (Lederman, June 2009). The meeting focused on the ways in which college leaders have or have not responded to changes in technology, demography, and budget that have posed

more pressures on institutional performance. For instance, Chancellor of the Ohio Board of Regents, Eric D. Fingerhut has taken strides to impose greater efficiency and centralized control on public institutions that used to have substantial autonomy (Lederman, June 2009). He contended that institutional self-interest was an impediment to higher education's progress.

Colleges and universities have implemented various strategies to deal with the cuts and revenue losses (Montell, 2009; Schrecker, 2009). The common strategies were to reduce expenditures without cutting academic programs and tenured faculty jobs. These cost saving measures included faculty hiring freezes, laying off staff, imposing furloughs, trimming operating expenses, cutting travel, reducing office supplies, eliminating salary increases, and merging academic departments, just to name a few. More vigorous approaches involved eliminating academic programs along with tenured faculty funding lines, which may lead to serious consequences in terms of diminished academic integrity. Despite the prospects of academic harm, some universities have cut academic programs that attracted few students or brought in little money for research, along with laying off tenured faculty members. For example, Washington State University eliminated eleven tenured and tenure-track professors within three academic programs; the Louisiana Board of Regents cut the undergraduate philosophy department at the University of Louisiana at Lafayette; and colleges in Idaho, Florida, Michigan, and Wisconsin were also planning to eliminate academic programs and departments (Montell, July 2009).

Besides budgetary challenges, higher education institutions have also faced shifted internal and external markets because of the economic crisis. Enrollments might have increased for some colleges and universities but decreased for others; students might have opted out of private universities to go to cheaper public ones; and some formerly popular programs might

have fewer applicants. An evident case is LaGrange College in Georgia (Campbell, July 2009). In the face of financial crisis, LaGrange College was trying to maintain its applicant pool and yield rate as students were likely to opt for public institutions with lower tuitions.

Taken together, these developments suggest that it is urgent for institutions to respond adequately to address their specific issues and adapt their operational approaches to buffer them from serious harm. In Colorado, universities' reactions have suggested emerging trends of financing and managing research universities as they were becoming less engaged in revenue generation and cost reduction, pointed out by the senior vice chancellor Ric Porreca at the annual meeting of the National Association of College and University Business Officers (Stripling, 2009). The emerging trends in budgetary and operational dimensions at public postsecondary institutions are of great importance for campus managers and policy makers to know. Such emerging trends have meaningful implications to the survival and future prosperity of public higher education in the United States.

Purpose of the Study

As noted above, many colleges and universities in the United States have experienced financial crisis. At the same time, they are facing increased demand for accountability from various stakeholders. Decreased public investment coupled with increased enrollment and increased demand for quality has pushed public institutions toward operational reforms in various arenas for flexibility and efficiency (Hearn, 2008). Hearn (2008) synthesized significant reforms in five arenas, which include innovations in the pricing of educational services, budget decentralization, new human resource arrangements, compensation policies and practices, and structural reform. One arena that is associated with internal budget and decision-making processes is budget decentralization wherein changes emerged toward increased fiscal and

academic autonomy at individual academic units (Hearn, 2008). The debate described in the opening statement of this chapter is concerned with these reforms, which involve adoptions of decentralized budget approaches at public institutions, notably a responsibility center management (RCM) system.

As public higher education institutions have been increasingly influenced by the market since the 1980s (Slaughter & Leslie, 1997; Bok, 2003; Geiger, 2004), it is unsurprising that these reforms were entrepreneurial and market-oriented. In fact, over the last two to three decades, the internal management of many universities has followed a trend of decentralization with increasing entrepreneurial efforts (Massy, 1996; Slaughter and Leslie, 1997; Strauss and Curry, 2002； McLendon and Hearn, 2008; Hearn, 2008) because public higher education institutions have been increasingly influenced by the market since the 1980s (Slaughter & Leslie, 1997; Bok, 2003; Geiger, 2004). The degree and scope of decentralization normally vary across institutions. During the recent economic recession, the motivation for decentralization may have changed when policy-makers and university leaders looked for more accountable use of scarce resources.

On the other hand, institutions may act to buffer budget shortfalls by further decentralizing and thus freeing units to move more aggressively into various markets. Actually, a number of institutions have been tempted to seek those opportunities. Louisiana State University's main campus, for example, proposed that the University be granted exemptions from state procurement and personnel regulations as well as gain freedom to set tuition and fees (Moller, Dec 2010). The University of Wisconsin-Madison also started an aggressive effort to separate from the UW system and have its own governance structure so as to gain more flexibility on tuition setting, hiring, managing facilities, and purchasing (Lederman, Feb 2011).

In light of these new developments, it is important to examine the specifics of the trend of

decentralization during and after the recession. Thus, the aim of this study was to explore whether trends toward decentralization have been slowed or reversed by emerging budgetary and operational developments. In pursuing that aim, the study will ideally conclude to a more in-depth understanding of management strategies and approaches public institutions, especially public research universities, have taken to deal with the recent financial crisis and to explore implication for future institutional management practices. This study further seeks to provide informative suggestions and recommendations to campus leaders for more efficient management of their institutions in times of economic crisis.

Georgia Tech was chosen as the case site for this study to examine shifts on its continuum of centralization and decentralization as it responded to the economic crisis. Georgia Tech has a mix of centralization and decentralization, so it provides a good context for an investigation of movements between the two extremes of centralization and decentralization. The major research questions are as follows:

1) How did a public research university respond as the current economic crisis emerged?
2) What changes took place in the locus of decision authority during the crisis? Why?
3) How did individual units vary in their specific strategies and approaches to dealing with the cuts and revenue losses?
4) How did the economic crisis influence the entrepreneurial activities of individual units?
5) Are there emerging trends in operational approaches in this public research university?

Organization of the Study

Chapter I presents an introduction to the study by describing the fiscal challenge higher education is facing now and the trend in institutional budgetary strategy before the recession. The

purpose of the study and the research questions are also presented. Chapter II presents a review of the literature related to decentralization, entrepreneurship, and management in higher education and institutional strategies used to cope with financial constraints are presented. Chapter III presents a conceptual framework based on notions of decentralization, entrepreneurism, revenue diversification and marketization.

Chapter IV presents the methodology of this study, which includes data collection, sample selection, and data analysis. The results of interviews and document data are presented in Chapter V. Finally, Chapter VI provides a summary of the results, as well as discussions, implications, and recommendations for future research.

CHAPTER II

LITERATURE REVIEW

The American higher education system has been characterized as a "triangle of tensions" between state authority, market forces, and higher education institutions (Clark, 1983). McLendon and Hearn (2008) also contended that recent development of higher education was moving toward a new three-way equilibrium among market-driven, institutionally-based, and centralized bureaucratic forms of coordination and control. In light of these arguments, institutional management is constrained within the broader context of market forces and government oversights. This chapter provides the contexts and theories for a case study of these pressures and developments. The relevant literature in four areas was reviewed separately: (1) decentralization in higher education, (2) entrepreneurship and revenue diversification in higher education, (3) management of higher education institutions, and (4) strategies to cope with financial distress in higher education.

Decentralization in Higher Education

Literature on decentralization in higher education addresses both decentralized state governance of higher education and decentralization of campus management (Peterson, 1971; Richardson, et. al, 1999; Hearn, 2003, 2008; McLendon, 2003; Massy, 2006). At both state and institutional levels, general trends of decentralization emerged in the 1980s with reduced state appropriations and increased autonomy at public universities (Massy, 1996; Marcus et. al., 1997; Richardson et. al., 1999; Hearn, 1994; Priest, et. al., 2002; McLendon & Hearn, 2008).

After reviewing revolutions in state governance systems, Richardson et. al. (1999) concluded that after 1980, market influences induced by the growth of student financial aid incrementally altered state governance structures to meet state needs in a changing environment. In doing so, states shifted their focus to performance rather than process and to outputs rather than inputs. The restructuring of state higher education systems involved the deregulation and decentralization of decision authority to local systems and campuses as against the authority of central state agencies (Richardson et. al., 1999; McLendon & Hearn, 2008).

From a historical perspective, McLendon and Hearn (2008) examined decentralizing trends in state governance reforms of public higher education. They identified three major approaches to governance decentralization since 1980: (1) the deregulation of state procedural controls over budgeting, accounting, personnel, purchasing, and tuition-setting, (2) the loosening of state governance and statewide coordination, and (3) the advent of charter/enterprise colleges with delegated authorities and responsibilities defined by their state charter. These trends, they argued, could be accounted for by structural-contingency theory, which contends that greater size, increasing unpredictability, pressures for stimulating creativity and entrepreneurship, and expanding specialization in the organization are among the factors that can push decision-making to lower organizational levels. Further, they interpreted recent governments' initiatives in quality control and accountability demand as more of a bureaucratic reform movement than a movement toward centralization. They continued to argue that such movement was situated in the context of increasing marketplace challenges coupled with decreased governmental funding for institutions. Institutions are granted greater autonomy in exchange for more comprehensive information flows and communication to assure institutional accountability.

Their arguments are consistent with a recent NACUBO (2007) report investigating the

changing state-institution relationship. The study found that decreased state support was accompanied by a high level of autonomy afforded to institutions from the state in academic, fiscal, and administrative areas. To be more specific, the majority of the institutions responding to the survey indicated significant control in determining academic programs and enrollment size and over budget flexibility, tuition, and other revenue collections. Although these institutions have less control in administrative areas, the level of control has remained relatively the same over the last ten years. Nevertheless, accountability requirements from the state and other stakeholders have risen, with more than 60 percent of the responding institutions required to report formally to the state on performance metrics.

The NACUBO (2007) report also noted that in order to respond to changes in revenue streams, approximately a third of institutions have partnered with private entities. Approximately 90 percent of responding public flagship research institutions indicated that their future financial strategy would aim for greater fiscal and/or managerial autonomy from the state in the next five years. As the study was conducted before the economic crisis hit, it would be reasonable to speculate that public institutions would follow the trend of further decentralization to the unit level even if the crisis had never occurred.

Volkwein and Malik (1997) also discussed state regulation and administrative flexibility at public institutions. They noted that significant budget reductions, accompanied by greater administrative flexibility, make financial reductions more palatable at the campus level. They found that from the 1980s through the 1990s, campuses in many states gained increased flexibility in their academic, financial, and personnel transactions in exchange for the reduced state budget, and the increased administrative flexibility allowed university managers to better cope with budget reductions and a changing environment.

Nevertheless, state governments still possess legal authority and political power to restructure higher education systems to a countervailing direction just as Birnbaum (1988) stated: "The major external force limiting institutional autonomy is the exercise of increased authority by the states" (p.16). State governance of higher education provides a context for understanding internal campus management. Volkwein and Malik (1997) contended that public institutions' relations with state governments form a critical component of the external climate within which they pursue their goals. Nevertheless, unlike other state agencies, universities are viewed as complex, loosely coupled organizations (Volkwein & Malik, 1997) or organized anarchies (Birnbaum, 1988) that are resistant to formal direction and control. They are thought to function better when there is little interference from state government in their core academic operations. Less state regulation to a certain extent reduces the pressure for centralized administration on campus.

The calls for campus decentralization date back to the late 1960s, when there were high aspirations for decentralization among academic professionals (Peterson, 1971). Massy (1996) noted that higher education institutions were a combination of the traditional hierarchical management of non-faculty and a certain kind of involvement from faculty. The traditional hierarchical approach assumes hierarchical authority, whereas the high involvement approach emphasizes moving information, knowledge, power, and rewards to the lowest level of the organization (Massy, 2006). The coexistence of these two approaches to managing higher education institutions results in a continuum ranging from centralization to decentralization. Birnbaum (1988) noted that institutions become administratively centralized due to requirements to rationalize budget formats and to implementation of procedures for passing judicial tests of equitable treatment. Decentralization, in contrast, is fostered by increased faculty specialization

and decreased administrative authority. This is particularly true in large and complex institutions, where schools or departments become the locus of decision-making (Birnbaum, 1988).

Decentralization takes various forms and approaches in management of higher education institutions (Peterson, 1971). Two dimensions of decentralization exist on campus—the organizational pattern of subunits and the pattern of decision-making for coordinating them (Peterson, 1971). Organizational decentralization involves institutional differentiation into subunits, and decision-making decentralization deals with the levels at which decision-making occurs. Peterson (1971) analyzed in detail the notion of decentralization in these two dimensions. Two patterns of organizational decentralization exist in higher education—academic and administrative. He noted the bases for these two patterns are very different—one based on supportive functions and the other on knowledge divisions. Whether or not their structure is decentralized depends on its vertical and horizontal dimensions. One factor that relates to organizational decentralization is interdependency among subunits, which exists in forms of shared physical space, financial resources, personnel, shared programs, or student and faculty interactions. Due to these interdependencies, Peterson noted that the subunits need to be coordinated either through organizational structure or decision making. Further, he concluded that the patterns of organizational decentralization are partial, segmented, complete, or spurious, depending on how subunits coexist and are coordinated.

The dimension of decentralization related to decision-making, which relates to coordination among organizational subunits, is more often discussed than organizational decentralization (Peterson, 1971). Peterson (1971) noted that two notions, those of authority and influence, are associated with decentralized decision-making. Different decisions are authorized or influenced at different levels. He also distinguished between policy decisions, managerial

decisions, and operating decisions: policy decisions concern the university's priorities, program strategies, and mechanisms for obtaining resources; managerial decisions concern the allocation of resources and the coordination among programs; and operating decisions concern the way in which programs are carried out. He suggested that the centralization of policy decisions is often in conflict with the decentralization of operating decisions in that they focus on different outcomes. He concluded that the pattern of decentralization varies in different colleges because they differ in their environmental, organizational, and individual determinants.

Moreover, Peterson (1971) addressed the forces that lead to centralization and decentralization. The centralizing forces are primarily external to the campus and include financial stringency, developments in state coordinating agencies, federal funding, development of management information systems, and concern for campus governance, whereas the decentralizing forces are primarily on campus and include institutional size, student and faculty interest in governance, and support from administrators. His discussion of centralization/decentralization provides a framework for understanding the emerging trends in higher education institutions.

Entrepreneurship and Revenue-Diversification in Higher Education

Decentralized state governance and decreased state budget, coupled with mounting market pressures, have led public higher education institutions to behave in a corporate fashion, competing with private institutions for shrinking resources. As a result, public institutions are behaving more like private institutions. As Massy (2003) puts it, public institutions are "moving from ivory tower to economic mainstream" (P.16). Privatization, commercialization, and marketization of public institutions are all linked with their entrepreneurship (Kirp, 2003; Bok, 2003; Lyall & Sell, 2006; Ehrenberg, 2006).

Lyall and Sell (2006) defined privatization as "a significant decline in the public investment in higher education institutions and educational opportunities, and the shrinkage of states as stakeholders in their own higher education assets" (p.73). They contended that public higher education was increasingly seen more as a private good than as a public good and that this trend was reflected by reduced state funding as well as shifts in financial aid policies to merit-based that favor middle- and upper-middle-class families. Indications included shifts in federal financial aid from publics to private for-profits and surging fundraising campaigns that reflect heavier reliance of public institutions on diversified revenue streams for their survival.

Ehrenberg (2006) discussed the consequences of privatization in public higher education institutions due to resource constraints, noting that many of these universities had increased their tuition levels, reduced their expenditures per student, kept faculty salary increases at a lower rate than their private counterparts, or replaced tenure-line faculty positions with non-tenure-line hires. He argued that privatization policies have led publics to increase revenues from other sources to compensate for the lack of state support.

Kirp (2003) argued that non-profit universities were increasingly emulating businesses in their entrepreneurship. As they are increasingly serving the needs of multiple constituencies, higher education institutions become more customer-oriented. Market niche, a phrase – that emphasizes a business-like way of thinking, became a popular word in higher education. Kirp perceived a market-driven mindset in actions taken on campus that was not limited to the more commercial units. He argued that entrepreneurial ambition has become a virtue rather than a hold-the-nose necessity at publics. Colleges and universities are increasingly engaged in their entrepreneurial efforts to generate external revenues and to compete in the marketplace. Therefore, being entrepreneurial becomes a solution to budget problems and to operational

inefficiencies for many institutions. Kirp claimed that entrepreneurship should not replace the core mission of public institutions as a public good and as places for creation of new knowledge.

In contrast, the president of Arizona State University, Michael M. Crow (2007), advocated reconceptualizing public research universities to become more adaptable, competitive, and responsive to the changing needs of their constituencies and society as well. He recognized public institutions as academic enterprises and the spirit of enterprise as highly relevant to the advancement of all higher education institutions. In particular, he suggested that public research universities instill entrepreneurial spirit into their institutional culture so as to compete with private non-profit and for-profit institutions for resources as well as for students and faculty.

Clark (2007) did case studies of five innovative European universities to examine entrepreneurial transformations of higher education institutions. He identified five fundamental elements necessary for a university to transform into an entrepreneurial one: "a strengthened steering core, an expanded developmental periphery, a diversified funding base, a stimulated academic heartland, and an integrated entrepreneurial culture" (p.5). In other words, a greater capacity of central managerial groups and academic departments is needed, with the participation of department heads in central steering groups, the construction of non-traditional units linking the university to outside groups to support revenue diversification and acquisition, and the acceptance by the entire university of a new culture that embraces change (Clark, 2007). An entrepreneurial university, he argued, was not solely an aggressive business-oriented institution seeking to maximize profit but was a transformed organization with effective collective entrepreneurship. Such entrepreneurship, he contended, could provide resources and infrastructures to build a university's capability for improved quality and reputation.

Earlier, Slaughter and Leslie (1997) discussed the factors that drove the entrepreneurial

efforts by higher education institutions. They considered these earlier market-oriented entrepreneurial behaviors as a consequence of the global economy in the 1980s that pushed universities to interact with the market (Slaughter & Leslie, 1997). Meanwhile, this movement was coupled with the sets of policies on student financial aid, patents, and copyright (Slaughter & Rhoades, 2004). Entrepreneurial activities not only expand the economy but also bring universities external revenues that support institutional operations, given the scarcity of resources obtainable from traditional sources. While higher education institutions are normally not good at and have little incentive to control their costs, seeking other resources is obviously an alternative way to deal with financial shortages. Slaughter and Leslie (1997) define academic capitalism as follows:

> To maintain or expand resources, faculty had to compete increasingly for external dollars that were tied to market-related research, which was referred to variously as applied, commercial, strategic, and targeted research, whether these moneys were in the form of research grants and contracts, service contracts, partnerships with industry and government, technology transfer, or the recruitment of more and higher fee-paying students. We call institutional and professional market or marketlike efforts to secure external moneys academic capitalism.

Taken together, the entrepreneurial approaches have enabled many institutions to diversify their revenue streams (Hearn, 2003). Using national data from 2000 by Knapp et al., Hearn (2003) presented the proportion of revenues from non-traditional sources in both private and public universities. Accordingly, in public four-year institutions, "new" revenue sources, such as endowment income, hospitals, auxiliary enterprises, sales and services of educational activities, and independent operations, represent more than a quarter of all revenues. He further synthesized revenue-generating efforts in eight domains: instruction; research and analysis; pricing; financial decision making and management; human resources; franchising, licensing, sponsorship, and partnering arrangements with third parties; auxiliary enterprises, facilities, and

real estate; and development office. Initiatives in each of these domains can further diversify revenue streams on campus.

The incentive for seeking outside resources is hardly suppressible just as Crow (2007) argued, "A successful institution will diversify its revenue sources, seeking long-term investment in the enterprise by multiple sources, generally with no single long-term dominant source" (p.30). Other than the internal incentives, Bok (2003) noted that the federal government also provided incentives for commercialization at universities. These include the passage of the Bayh-Doyle Act, federal and state subsidies for cooperative ventures, and tax breaks that foster business investment in scientific research. Bok noted that these shifts were just part of a larger movement toward market solutions throughout American culture:

> The new opportunities for earning money have clearly helped make universities more attentive to public needs. In Europe as well as American, students of higher education have credited market forces with causing universities to become less stodgy and elitist and more vigorous in their efforts to aid economic growth. (p.15)

As tuition revenues serve as one big source of discretionary funds (Clark, 2007), institutions adopt various entrepreneurial strategies to compete in the student market, such as raising tuition, targeting different students with different financial aid packages, and differential tuition (Geiger, 2004; Hearn, 2003). Another major source that higher education institutions are rigorously pursuing is grants and contracts. Slaughter and Rhoades (2004) called this pursuit "research entrepreneurism" as institutions continued attracting research money from governments on the one hand and developed entrepreneurial initiatives in the corporate market on the other. Prominent initiatives in research entrepreneurism involve "business incubators, technology-transfer offices, research and technology centers and parks, small business development centers, and research collaborations with private industry and the government" (Hearn, 2003, p.10).

Other income sources are categorized by Clark (2007) into a third-stream that stretches from industrial firms, local governments, and philanthropic foundations, to royalty income from intellectual property, earned income from campus services, student fees, and alumni fundraising. What Slaughter and Rhoades (2004) called "educational entrepreneurism", collective efforts in generating revenues in the realm of education fall into this category. Such efforts include developing new programs targeted to new job markets, expanding summer programs, developing special professional master programs congruent with employment markets in corporations: raising funds from industry for educational purposes, and placing students in industry (Slaughter & Rhoades, 2004).

All these initiatives and efforts are facilitated by what Clark (2007) called an expanded developmental periphery, a strengthened steering core, and an integrated entrepreneurial culture. An expanded developmental periphery plays a role in linking traditional academic departments to outside organizations and groups. These peripheries included professionalized outreach offices that work on technology transfer, industrial contact, alumni affairs, intellectual property, continuing education, and fundraising, and they can also exist in larger forms, such as interdisciplinary project-oriented research centers (Clark, 2007). These units facilitate institutional entrepreneurial activities for alternative revenues. Bok (2003) notes that faculty are critical of the commercialization of higher education, and they are busy marketing their inventions and intellectual property, creating spin-off businesses, and selling their lectures on CDs and in distance learning modules.

Despite these aggressive efforts to secure new revenues, higher education institutions still find themselves with constrained resources, as they are generally considered to have few incentives to control costs. Hearn (2003) suggested that the ultimate goal of any revenue

diversification effort should be to generate new net revenues, rather than simply to generate new gross revenues. He further suggested that institutions should consider the opportunity costs when pursuing new revenues. Thus, the analysis of cost-effectiveness, as well as institutional mission and culture, should be incorporated into the decision-making on entrepreneurial initiatives. In other words, being entrepreneurial is not an end but a means to achieve the desired results.

Management of Higher Education Institutions

Management of higher education institutions often challenges campus administrators, as they are neither businesses nor government agencies. Rather, they are organizations characterized by shared governance between administrators and faculty. This duality of control makes institutional management different from that of other organizations (Birnbaum, 1988). However, many of the management and governance approaches come from the government and business enterprises (Birnbaum, 2000). Some of these approaches are just management fads, while others persist after adoption.

Birnbaum (2000) discussed the management approaches adopted from government and businesses by higher education. These include planning programming budgeting system (PPBS), management by objectives (MBO), zero-based budgeting (ZBB), strategic planning, and benchmarking. These approaches were proved to be failures or of questionable effectiveness in the management of business, he argued then that they could fail as well in higher education as universities are more complex organizations. Besides strategic planning, PPBS, MBO, and ZBB rapidly faded in higher education (Birnbaum, 2000). The force that propels higher education institutions to seek different management approaches is their pressure for efficiency and effectiveness. The changing environment for higher education institutions outlined in the above sections made development and advocacy of new management approaches more desirable.

Strategic planning was more formally adopted in higher education in the 1980s (Birbaum, 2000), and the impetus was the social, economic, demographic, and technical change in that new era (Keller, 1997). It is a strategy that focuses on examining the internal and external environment of an organization to find its best market niche and improve its performance (Birnbaum, 2000). It could help institutions clarify their purposes and directions and set out action steps for attempted short-term achievements and long-term validity. As it is adaptive and flexible, the models of the examining external environment and the internal strengths and weaknesses of an institution can be quite different. Therefore, successful experiences do not occur in all institutions. Nevertheless, it provides an approach that enables an institution to unite its mission, advantages, principle action steps, and targets (Steeples, 1988).

Ideally, a strategic plan helps an institution achieve desired outcomes, but it deals less with specific internal operations (Birnbaum, 2000). It provides a broad vision than operational guidance on specific priorities or programs for an institution (Schmidtlein, 1981). Instead, specific international operations are more often guided by budget plans. A budget helps to set and communicate institutional priorities within the limited resources available, and it serves both as an institutional action or operating plan for a given period of time and as a contract (Lasher & Greene, 2001). Jones (1993) defined it as "a process of making decisions that distribute resources to enable action" (p.464). Thus, resource allocation serves as an important management mechanism for compliance and control in organizations (Hackman, 1985; Jarzabkowski, 2002).

The better-known resource allocation approaches include: incremental budgeting, formula budgeting, program budgeting, zero-based budgeting, performance budgeting, incentive budgeting, and cost center budgeting (Schmidtlein, 1981; Lasher & Greene, 2001). The traditional and most common approach is incremental budgeting or line-item budgeting with

controls of resources from the central administration. However, centralized budgeting generally prohibits operating units from shifting funds among budget categories and provides little incentive to justify the effectiveness of continuing programs (Massy, 1996; Lasher & Greene, 2001).

Realizing that they have these problems with centralized budgeting, colleges and universities have gone through four eras of budgeting evolution (Lasher & Greene, 2001). Three eras were identified by Caruthers and Orwig (1979): (1) the era of executive budgeting, which emphasized control and responded to waste and inefficiencies; (2) the era of performance-based budgeting, which focused on performance measures; and (3) the era of programming, planning and budgeting systems, which stressed linking budgeting to planning. The fourth era of budget reform was responsive to increasing demands for accountability and reduced public revenues (Lasher & Greene, 2001). Lasher and Greene (2001) found that many of the reform measures reflect a strong relationship with strategic planning.

Jones (1993) noted that there was generally a lack of effective mechanisms in the common budgeting approaches to carry out an institution's strategic plan. He proposed an approach to strategic budgeting that places decisions with regard to institutional assets at the center of the budget process. This approach allows strategic decisions to focus on the creation and maintenance of institutional capacity and operational decisions to focus on the utilization of that capacity in ways designed to accomplish specified purposes. As such, it places greater responsibilities on institutional level administrators and thus forces them to be proactive in the resource allocation process.

Earlier discussions about linking budgeting and planning revealed the difficulties in optimizing budgeting and planning systems (Chaffee, 1981; Schmidlein, 1981; Brinkman &

Morgan, 1997). The method identified most often was Harvard's "Each Tub on its Own Bottom" model, which involves shifting the level of budget analysis from the institution to the subunits (Chaffee, 1981). Such an approach is commonly called Responsibility Center Management (RCM), Responsibility Center Budgeting (RCB), or incentive-based budgeting. RCB was in operation for many years at private universities such as Harvard, Pennsylvania, Stanford, and Southern California and was cited as an approach that increases understanding of planning and budgeting (Brinkman & Morgan, 1997). It has also proved to be effective at public universities such as Indiana University (Powers, 2000).

Powers (2000) examined the impact of a competitive grants program incorporated in a strategic planning process at Indiana University. The findings indicate that the program has stimulated the adoption of innovations for organizational change. He acknowledged that though the incentive grant program had its shortcomings as a strategy implementation tool, it and other similar programs had the potential to significantly transform the institution. He contended that linking resource allocation to strategic plans can direct institutions to strategic changes in response to external challenges.

RCM as a new approach to resource allocation has been increasingly adopted. It is assumed to promote accountability, elevate transparency, integrate planning and budgeting, and cope with resource reductions, especially for complex institutions (NACUBO, 2006). In contrast, the centralized incremental budgeting systems traditionally employed in academe do not lend themselves to support new revenue generation or effective cost cutting (Massy, 1996). RCM encourages entrepreneurship and thereby growth in the overall resource base and decentralized responsibility for programmatic financial decisions, so that more decisions can be made by those best able to weigh their consequences. In turn, this frees up institutional leaders to focus on

larger issues of financial strategy and priorities (NEU Committee on RCM 2001-02, n.a.). In addition, it is an effective tool for managing diversified revenues (Massy, 1996; Brinkman & Morgan, 1997). Brinkman and Morgan (1997) noted that simplistic models of planning and budgeting could not manage multiple revenue sources as they operate in different markets with varying criteria and constraints for acquisition and use of funds. Diversity of revenue sources requires substantial budgetary independence of subsidiary budgetary units, which is a characteristic of an RCM system.

The trend of implementing RCM or RCM-like management approaches was fostered by entrepreneurial and revenue-diversifying efforts in higher education. Brinkman and Morgan (1997) suggested that RCM engenders entrepreneurism when responsibility centers intensely search for revenues. Priest et. al. (2002) noted that incentive-based budgeting systems emerged as part of the solution to the challenges faced by public institutions including declined state revenues, increasing demand for accountability, and the trends of privatization and marketization in higher education. Many higher education institutions in the U.S., particularly major research universities, have moved away from these centralized, incremental budgeting practices to adopt some form of an RCM budgeting system (NEU Committee on RCM 2001-02, n.a.). Indiana University was the first public institution to adopt this strategy, and it has proved to be successful (Louis & Thompson, 2002). Experiences in some other public universities, such as the University of Minnesota and the University of Michigan, also lend their support to this approach as a catalyst for enhanced resource generation and management effectiveness (Canter & Courant, 1997; Hearn et. al., 2006).

The rationale under RCM is that better decisions can be made at the point closest to the implementation and information source (Whalen, 1991). This is consistent with the prevailing

view in management theory that highly centralized management is generally ineffective and inefficient in rapidly changing environments (Zumeta, 2001). Rather, those closest to the market and production processes are likely to have the best information and ideas about what directions to take or changes to make in a timely fashion (Zumeta, 2001). Nevertheless, the extent of the decentralized responsibilities varies across campuses and across academic units within one institution. RCM is certainly not a panacea. It needs to be implemented after a careful examination of institutional contexts and structures.

Strategies to Cope With Financial Distress in Higher Education

Financial distress is nothing new to higher education institutions. Increasing costs, declining state revenues, and economic recessions are all causes of financial distress on campuses. Massy (1990) mentioned that the cost of operating the average college and university increased 23 percent faster than inflation in the 1970s. Keller (2009) also noted that state contributions to public research universities have declined in real terms by over 15 percent in the last 20 years. Discussions surrounding coping with financial stringency have lasted decades and continue now.

Levine (1978) examined the decline of public organizations and the management of cutbacks. He noted that prevailing organizational structures were designed under assumptions of growth; therefore, it is a problem for managers to make new arrangements in the face of resource scarcity to maintain organizational capacity. Further, retrenchment involves a difficult choice of management strategies because in times of austerity, the money for developing and implementing control and analytic tools is unavailable. However, these tools are needed to help minimize the risk of making decisions. Meanwhile, slack resources also hinder organizational innovation and flexibility. Levin also noted that in times of decline, subunits usually respond to

budget cuts in terms of their long-term survival needs rather than in terms of the impact on the performance of the organization as a whole. This presence of powerful survival instincts, he argued, helps to explain why the political leadership of public organizations responds to legislative directives to cut back whereas the subunit leadership takes actions to resist cuts. Therefore, organizations usually respond to decrement with a mix of inconsistent operative strategies that in most cases either resist or smooth decline.

Cameron (1983) also discussed decline in higher education and adaptive strategies for college and university managers, suggesting that it is important to be proactive in times of declines. He noted that enrollment trends, financial exigencies, federal policy changes, and so on all create conditions of decline. In response, institutions may retrench, consolidate, merge, change or become entrepreneurial. Based on former studies, Cameron concluded that institutional managers tended to be conservative and efficiency-oriented when responding to declining resources. His study results provided further evidence to support this conclusion. However, he argued these orientations may not serve the long-term viability of higher education institutions and campus managers need to seek approaches that are more adaptive to conditions of decline. He suggested that strategies focusing on flexibility, innovation, and proactivity can lead to effective adaptation. These strategies involve diagnoses of the external environment as well as internal conditions of an institution. The internal factors such as the internal distribution of resources, the resource dependence of subunits, the strategic competence of an institution, and the size and complexity of an institution can affect an institution's orientation to conservative strategies (Cameron, 1983). For example, the greater the dependence of a subunit on one source for its support, the greater the pressure for conservative strategies. Furthermore, the larger and more complex the university, the more pressure for a conservative response. Cameron also

suggested alternative strategies that include investing current resources in aggressive recruiting, active public relations programs, and seeking alternative revenue sources. To conclude, one major point of his argument was that higher education institutions should be innovative and proactive in response to financial distress.

Chabotar (2007) argued that the best way to spot financial distress is to monitor indicators from the strategic plan which provide consistency and a rationale. The prevailing measure, he noted, is a deficit in the annual operating budget, or a decrease in operating net assets. In times of budget shortfalls, colleges and universities tend to address financial distress through retrenchment. Retrenchment not only helps reach a balanced budget at the end of a fiscal year, but also offers opportunities for fundamental changes that would not be possible during economic good times (Chabotar, 2007). He concluded four phases on retrenchment. The first phase is a short-term phenomenon that involves increasing net income from auxiliary enterprises, using contingency funds, and deferring purchases and hires. The second phase occurs when there is a large budget deficit, losses of endowment market value, or a second consecutive enrollment shortfall. In this phase, retrenchment strategies include: raising goals of auxiliary programs, increasing student fees, increasing endowment spending, seeking available funds from plant reserves, debt refinancing, deferring maintenance projects and replacement hires, postponing increases in salaries, eliminating temporary positions, adopting an early retirement package and outsourcing and partnering arrangements. Retrenchment is prolonged and severe at the third phase in which land and buildings may be sold, salary increases eliminated, and across-the-board cuts proposed. Using that case of the Evergreen State College in Washington, Chabotar presented the procedure of reductions established by the college to deal with a financial exigency:

(1) Termination of adjunct, visiting, and post-retirement faculty contracts;

(2) Elimination of regular faculty on term appointment;

(3) Involuntary furloughs for regular faculty on continuing appointments; and

(4) Reorganization of the college. (p.31)

The fourth phase is a phase of emergency in which admissions become more open, tuition is further discounted, services and departments are eliminated, and so on (Chabotar, 2007). Some universities in this phase had to close while others retrenched successfully. Chabotar (2007) further claimed that the retrenchment process can be effective to the extent that the institution can accurately detect financial distress and respond according to the severity of the circumstances.

The Association of Public and Land-grant Universities (APLU) had a report on the impact of economic crisis on public universities and concluded the strategies they chose to cope with budget cuts and market losses. They found short-term budget cutting and revenue enhancing strategies chosen by APLU institutions include: (1) use of federal stimulus funds, (2) management of personnel expenses that include elimination of positions, reductions in out-of-state travels, mandatory furloughs, salary freezes, a reduction in merit increases, and suspension of professional development programs, (3) controlling facility and maintenance costs, (4) program eliminations and reduced funding for student activities, and (5) leveraging revenues from auxiliary enterprise. The long-term budget cutting and revenue enhancing strategies include: (1) energy saving measures such as energy efficiency measures and equipment upgrades, (2) extensive reviews of university structures, operations, and programs to reduce redundancies, (3) targeted increases in enrollment, (4) personnel expenditures, and (5) implementation of differential tuition, funding academic programs with grants, creating industry partnerships, fund-raising campaign to generate new revenues.

A prolonged period of financial stringency affects planning and budgeting as well as underlying fiscal strategies (Brinkman & Morgan, 1997). How to incorporate marginal analysis and reallocation as key elements into a fiscal strategy is an important question in budgeting and planning transformation (Brinkman & Morgan, 1997). Such a question involves considerations of a centralized budgeting and planning model versus a decentralized one or a mixed model. Central planning and/or budgeting has long been in place, but decentralized planning and budgeting emerged as a strategy to cope with financial stringencies in many institutions such as Stanford University (Massy, 1990) and Indiana University-Purdue University Indianapolis (Stocum & Rooney, 1997).

Summary

In summary, the American higher education system has experienced tremendous changes since the early 1980s. These changes are reflected by decreased state regulation, reduced dependency on traditional revenues, and increased market initiatives. In response, higher education institutions have become increasingly flexible in their management and operations. The traditional centralized incremental approaches have been replaced or supplemented by more market-oriented, decentralized arrangements. In the face of financial stringency or decline, higher education institutions have to be proactive in adapting their organizational and fiscal strategies in order to achieve long-term survival.

CHAPTER III

CONCEPTUAL FRAMEWORK

As noted in the preceding chapter, higher education institutions are situated in external and internal contexts that influence their management approaches. State governance and the market serve as two important external factors and institutional characteristics, such as size, culture, mission, leadership, students, and faculty are the internal factors.

In the past two to three decades, American higher education was characterized by less state regulation and enhanced institutional autonomy. Decentralizing trends emerged both in state governance and institutional management. These trends revolved around market influences and state financing of higher education. As the market opened up more revenue opportunities for higher education institutions, many public institutions especially flagship universities were either supported or forced by states to get alternative resources or actively sought to get more flexibility in their funding sources in exchange for reduced state funding. Therefore, the equilibrium between the state, market, and institutions was moving toward more market-oriented funding sources while being accountable to meet state needs and priorities for public institutions. The market-driven mindset at public institutions fostered entrepreneurship at the unit level, which pushed the locus of decision making to the unit level as opposed to the central administration.

These trends were accompanied by a debate over the two basic financial management models: centralized versus decentralized. The debate essentially surrounds the question of whether colleges or academic units within a university should bear their own expenses and keep

their share of tuition, grants and gifts or be given a share of resources from the central administration based on established institutional priorities (Stripling, 2010).

The centralized model is conventional and commonly adopted by most public postsecondary institutions, while the decentralized model has a stronger presence among private institutions (Green, Jaschik & Lederman, 2011). Before the crisis, many public institutions implemented a variation of a RCM model, a mix of centralization and decentralization. Many campus leaders wonder which model should be adopted or considered when an economic downturn occurs.

Centralized and decentralized models differ in their strategic directions and locus of control (Jarzabkowski, 2002). The table below indicates the differences of these two models:

Table 1: Strategic implications of centralized and decentralized models

Indicators	**Centralized**	**Decentralized**
Strategic Directions	Longer-term strategies	Existing strengths
	Higher overarching	Higher departmental strategic responsiveness
	Strategic direction	Lower cross-subsidy
Cross-subsidy	Greater cross-subsidy	Lower cross-subsidy
Locus of control	At the center	Departmental heads
	Bids for central resources	Budgetary performance indicators

Source: *Paula Jarzabkowski (2002), Centralised or decentralised? Strategic implications of resource allocation models*

The conventional rationale of a centralized model is that central administration allocating general funds, line item by line item, is one sure way to insure that funds are spent on

institutional priorities, whereas delegation of such decisions raises questions about incentives and follow-up audits to actual spending (Massy, 1990). As the locus of control stays with the central administration, it seems easier for the president or provost to allocate general funds to designated objectives and suit the needs of an institution. In other words, centralized models allow top leaders to set and change priorities and to move funds around to meet the goals of the institution in a changing environment. At the same time, a centralized model generally prohibits operating units from shifting funds among budget categories and thus provides few incentives for operating units to change and little ability to respond to new conditions.

A decentralized model, in contrast, delegates budgetary authorities and responsibilities to individual units. Lasher and Green (1993) synthesized the strengths of a decentralized model in the following aspects:

- It provides a rational approach to budgeting;
- It provides a method for distributing resources that demonstrate an institution's objectives;
- It facilitates accountability;
- There is closer proximity between budget responsibility and control and the institution's operating units;
- Decisions regarding academic changes are made closer to the instructional level;
- Resources can be moved within the institution in direct relation to enrollment patterns;
- The approach is responsive to both public policy and institutional needs;
- It increases competition among "players";
- It increases the effective use of resources;
- It enhances cooperation among campus units;
- Students have more influence across campus because they can "vote on their feet" (p. 522).

Pursuing an innovative and decentralized approach, the central administration at higher education institutions hopes to establish a system in which academic priorities can lead the budget process (Massy, 1990). Quite opposite to a centralized model, a decentralized model allows deans or other unit heads to shift funds from one spending category to another depending

on need. One drawback of such a system is possible lack of central control. Actually, critics of RCM models often suggest they don't give the central administration enough tools to underwrite strategic initiatives across multiple colleges (Stripling, 2011).

The Stanford University experience suggested that centralized budgeting processes can inhibit budget cutting and challenged decision-making to be strategic at the unit level (Massy, 1990). Additionally, centralized budget processes are not ideally suited to large, decentralized, academic organizations in that the professional goals of faculty are at odds with the demands and interests of the institution's constituents (Stocum & Rooney, 1997).

Both models have their promises and drawbacks. In discussing centralization versus decentralization, Peterson (1971) stated:

> The centralization of policy on organizationally related decisions is usually justified in terms of efficient and effective use of resources, while the decentralizing of operating or task related decisions is usually supported in terms of enhancing individual motivation, loyalty, and innovations. Unfortunately, these desired outcomes are often in conflict, especially in the university where measures of either individual or university-wide performance are difficult to define, hard to obtain agreement on, and elusive in use (p.529-530).

The extent and scope of decentralization is adaptive to both external and internal situations. No matter which model is desired internally, an institution is subject to state financing and regulation. State interference during economic downturns can force institutional management to be more centralized. When stressing external influences on institutions, Peterson (1971) remarked that "the responsibility and accountability of persons in higher university positions are primarily determined by relationships with external authorities who control and allocate funds and other resources to the institution, with the legislative bodies who can change legal documents and rulings affecting the institution, and with influential groups whose indirect expectations can affect the resource or legal constraints on the institution" (p.531). From this

perspective, administrative officers have limited formal control over many of the resources. As a matter of fact, institutional leaders find themselves under increasing pressure to meet the demand for accountability from various stakeholders regarding educational quality and the economic relevance of research (Hearn, 2008). Resource accountability demand can put pressure on campus managers to draw decision authority back from lower levels.

From another perspective, higher education institutions are inevitably influenced by the market, which includes economic influences such as cost and price, user satisfaction, and student demand as well as noneconomic influences such as demographic characteristics and new technologies (Richardson, et. al., 1999). All these factors are impetus that drives universities to decentralize so as to be more responsive to market demands. When addressing causes of commercialization in higher education, Bok (2003) pointed out that "financial cutbacks undoubtedly acted as a spur to profit-seeking for some universities and some departments" (p.15). Meanwhile, as universities are treated as economy drivers, state policies are more often than not in favor of transferring technologies from universities to industries (Bok, 2003; Slaughter & Rhoades, 2004), which gives further incentives for universities to be entrepreneurial.

Hackman (1985) found that the significant relation of environmental power to resource allocations suggests a possible rational link between budget decisions and the needs of an institution. He suggested that the link may be stronger in times of financial stress than in times of budgetary slack, which indicates that the current economic crisis can affect resource allocations more than financial stringency did before. He pointed out that in the face of financial stress, core programs in line with the organizational missions will gain internal resources when acquiring external resources while peripheral programs will benefit internationally when focusing on institutional needs and attracting external resources to the institution. Hackman's discussion did

not address particular budgeting and planning techniques but instead considered the resource negotiation strategies units employ to gain internal resources; however, it is reasonable to believe institutions managed under different models would respond to financial distress in different ways.

Institutions are often managed somewhere on the continuum of centralized control and decentralized autonomy due to different forms and dimensions of decentralization (Peterson, 1971). The current economic pressures can provide motivations for institutional transformation. As the opportunities for market resources became slimmer, it may give institutions more incentives to reduce their operational expenses and thus increase central discretion over spending. Also, state regulations during economic downturns can lead to centralized institutional management. Nevertheless, it is always the case that states would also expect institutions to seek external resources to support themselves financially. In those regards, it is also reasonable to believe that both trends of centralization and decentralization coexist, but in different dimensions and levels. Within an institution, schools and departments vary in terms of their revenue-generating capabilities and the impact that the economic crisis had on them. Therefore, central administration may implement campus-wide strategies to resolve broad financial problems while individual units choose their own strategies to cope with financial stringency at the local level. It is interesting to investigate the specifics and differences of those strategies and explore possible trends in institutional management during a financial crisis. Thus, this study intended to examine the trends through budgetary and operational responses to the crisis at different levels and divisions of a major research institution.

Summary

The conceptual framework of this study was based on two basic management models in higher education – centralized and decentralized – and the internal and external factors that

influence the adoption of them: state governance, the market, and institutional entrepreneurship as well as coping strategies of financial shortfalls. The specific strategies the institution chose to respond to the economic recession were expected to reflect on possible trends of centralization and decentralization in institutional management.

CHAPTER IV

METHODOLOGY

As has been noted, the aim of this study was to examine institutional strategies to cope with the financial crisis and explore whether trends toward decentralization have been slowed or reversed by emerging budgetary and operational developments. Many public universities have adopted and practiced decentralized management during the past three decades; however, the current financial stringencies may serve as a force to press universities toward centralization (Peterson, 1971). Therefore, the purpose of this study was to gain an in-depth understanding of how institutional management has been affected by the current economic crisis and to discuss the implications for future institutional operations.

Research Questions

The study built its conceptual framework on conceptions of institution-level decentralization, marketization and entrepreneurism in higher education. The major research questions are as follows:

1) How did a public research university respond as the current economic crisis emerged?
2) What changes took place in the locus of decision authority during the crisis? Why?
3) How did individual units vary in their specific strategies and approaches to dealing with the cuts and revenue losses?
4) How did the economic crisis influence the entrepreneurial activities of units?
5) Are there emerging trends in operational approaches in this public research university?

Design of the Study

This study employed an in-depth case study as its approach. Yin (1994) defined a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p.13). A case is thus a bounded system within which the phenomenon is of interest for a researcher to investigate (Merriam, 1998). Case studies are the preferred method when "1) 'how' or 'why' questions are being posed, 2) the investigator has little control over events, and 3) the focus is on a contemporary phenomenon within a real-life context" (Yin, 2009, p.2). Additionally, case studies seek to understand or explain processes or phenomena of contemporary events rather than to predict or show causality (Yin, 2009). This study sought to understand the impact of the current economic crisis on institutional operations and to investigate trends in the locus of authority in campus management. A higher education institution was a bounded system for an investigation on these issues. Further, the researcher was interested in "how" and "why" questions about the current economic crisis and its impact on a public research university and in understanding changes in its budgetary and general operations. Taken together, the case study approach was appropriate for this research.

Several constraints in sample selection – not many institutions met the selection criteria and were convenient for an investigation – made it more appropriate to use one case than multiple cases. A single-case study design was, therefore, determined. As individual units in a large university vary in terms of their financial conditions and operations, their responses to the economic downturn vary as well within the institutional context. Both academic and non-academic units were thus included to make the study a single embedded case-study with richer information. That is, each unit served as an individual case embedded in the larger case. The

institution investigated has six colleges, and there are schools under each college. There are no academic departments at Georgia Tech. It has 19 major budgetary divisions which include both colleges and non-academic organizations. Therefore, colleges, schools, and non-academic organizations were considered as unit cases.

The purpose of this study called for an interpretive or analytical case study aimed at gathering as much information about the problem as possible with the intent of analyzing and interpreting campus reactions to the economic crisis. Interpretive or analytical case studies differ from descriptive case studies in that they need a theory or theoretical assumptions prior to the data gathering (Merriam, 1998). This study was not solely descriptive because it was built on theories of decentralization and institutional management. The descriptive data in interpretive case studies are used to illustrate, support, or challenge the theoretical assumptions (Merriam, 1998). The analysis of data in an interpretive case-study, therefore, is inductive. This study drew conclusions on trends of centralization/decentralization from descriptions of various strategies chosen at the case site.

Selection of the Case Site

In this study, the Georgia Institute of Technology (Georgia Tech) was selected as the case site based on meeting the criterion of having a mix of centralization and decentralization and on convenience sampling considerations (Patton, 2002). The most appropriate and common sampling strategy is purposeful sampling which must have selection criteria predetermined (Merriam, 1998). The purposeful sampling is based on the assumption that the investigator must select a sample with rich information to study in-depth (Patton, 1990; Merriam, 1998). Convenience sampling is based on time, costs, location, and availability of sites or respondents (Merriam, 1998).

Georgia Tech is conceptually distinctive in that it is a large, highly ranked public research institution with both centralized and decentralized components in its management approaches. Like many other public universities, it is funded in part by state appropriations for its general operations and is subject to state regulations. It is also a large research university with sponsored funding as its largest revenue source. Since the 1960s, its internal management has become increasingly decentralized as size, collegiality, and research activity grew. In addition, it has always been entrepreneurial, which makes decentralized management strategies more likely to emerge, as discussed in the literature, which suggests that entrepreneurism serves as an impetus for decentralized management. These characteristics of Georgia Tech provide a desirable context for an investigation of changes in internal management as a result of the interplay of internal and external factors during the recession. It is also an information-rich case site, given its size and the multiple sources of data collection available from its websites and from the participants of this study.

Data Collection and Data Analysis

Yin (2009) suggested using multiple sources of evidence for data collection to establish validity and reliability in a case study. This single-case study relies primarily on interviews and documentary analysis. Interviews are an essential source of case study information. Well-informed interviewees can provide either important insights into human affairs and behavioral events or the relevant history of such situations (Yin, 2009). Most case studies rely on interviews for either some or all of their data collection (Merriam, 1990). Interviewing in qualitative investigation is more open-ended and less-structured as individual respondents are assumed to define the world in unique ways (Merriam, 1998). Semi-structured interviews, with a mix of more and less structured questions, are appropriate when a researcher wants to get specific

information from all of the respondents as well as to respond to the situation at hand for the emerging worldview of the respondents and new ideas on the topic (Merriam, 1998). In order to get specific as well as new information from the participants, the researcher decided to use semi-structured questions for the interviews. A protocol with semi-structured questions was developed before the site-visits (see Appendix A). Document analysis was another important case study data collection method utilized in this study. Documents are a ready-made source of data easily accessible to the investigator (Merriam, 1998), so they were used to supplement and verify interview information.

This case study sought to investigate decentralization at the unit level from budgetary and administrative perspectives. Therefore, the researcher recruited deans, school chairs, and chief budget officers for interviews. A purposive sample of 30 participants was targeted, and 26 interviewees were finally selected, including seven VPs/Associate VPs/Executive VPs, one Vice Provost, one Associate Vice Provost, thirteen central and divisional budget officers/administrators, and four deans/school chairs. They were from five administrative offices, six associations and administrative departments, four colleges, and three schools (see Appendix D). The non-academic units are non-profit organizations that are either part of or affiliated with Georgia Tech. The Georgia Tech Research Institute (GTRI) and the Enterprise Innovation Institute (EII) are B-units budgeted separately by the state and major units for Georgia Tech's total revenue. GTRI is part of Georgia Tech and EII is attached to Georgia Tech. The Alumni Association and the Athletic Association are affiliated organizations that are mainly self-supporting. These units were included in the study as they either contribute to total revenue and endowments of Georgia Tech and to liaisons between academic units and the outside world, or are included in the resident instruction category of allocation from the state (e.g. the Alumni

Association). The selection process was facilitated by the Director of the Office of Institutional Research and Planning (IRP). The strategy of network sampling was used in the process of selecting participants. This strategy involves asking participants to refer the researcher to other participants in information-rich settings (Patton, 1990; Merriam, 1998). The researcher requested the type of interviewees to be included in the study, and the IRP Director suggested contacts and assisted in contacting them. Some major contacts also recommended other participants from their units. The researcher then sent out email invitations (see Appendix B) to all the participants and set up the interviews. Finally, nineteen semi-structured interviews, averaging approximately 60 minutes, were conducted, and eighteen were tape recorded and transcribed verbatim. Notes were taken for the single interview that was not tape recorded. Five interview sessions included more than one participant (see Appendix D).

The data analysis process involved several stages. The first stage began during data collection. Most interviews were reviewed soon after completion to capture major points, common themes, and questions that could be asked in the following interviews. Merriam (1998) suggested that the right way to analyze data in qualitative research is to do so simultaneously with data collection. After all the interviews were finished, they were each transcribed by the researcher. In the process of transcribing, the researcher worked to understand the interviews in more depth to integrate themes and discern contrasts in the conversations. Themes were identified based on comparing one interview with the next for recurring regularities (Merriam, 1998). Documents were identified and read before, during, and after the interviews. Some were suggested or provided by the interviewees.

The second stage of analysis began after transcriptions were done. In this stage, the researcher read the transcriptions and coded the interview data based on themes/categories

associated with the major questions and identified earlier during transcribing. Subcategories of each broad theme were then derived from coded data. The constant comparative method was used to develop these subcategories as well as compare schools/against each other to define differences and emerging trends (Merriam, 1998). The constant comparative method is compatible with the inductive process of this interpretive case study (Merriam, 1998). A deductive strategy was also used in the process of deriving and testing categories. A deductive mode of thinking is called when the researcher asks if there are sufficient data to support a certain category or hypothesis when tentative categories and hypotheses continually emerge and must be tested against data (Merriam, 1998). After the themes and subcategories were constructed, the pattern matching method was then used to compare the empirically-based pattern with the predicted pattern based on theories (Yin, 2003, 2009), such as the strategies chosen by the university studied as compared to those documented in the literature. A coincidence of two patterns can help strengthen the internal validity of a case study (Yin, 2003). In addition, interview data were triangulated with documentary data to further ensure validity of the study.

Validity and Reliability

Regardless of the research methods used, it is important to verify the quality of a research design—determining whether the findings can be reproduced and are logical in the real world. Two types of validity are common to all social science methods: internal and external (Yin, 2009). Internal validity seeks to establish a causal relationship as distinguished from spurious relationships. Nevertheless, internal validity is not a major concern for interpretive case studies in which causal relationships do not require formal testing (Yin, 2009). In this study, close attention to following the prescribed analysis process helped ensure internal validity.

Triangulation of different sources of data was used to verify results as well.

External validity deals with the ability to generalize the findings of the study to other situations (Merriam, 1990). Case studies rely on analytical generalization rather than statistical generalization to generalize a set of results to some broader theory (Yin, 2009). Problems of external validity occur in research design. Therefore, theoretical propositions were examined to the extent of literature for the study. One way of viewing external validity is called reader or user generalizability that involves leaving the extent to which a study's findings apply to other situations up to the people in those situations (Merriam, 1998). In this regard, the researcher is less concerned with generalizing than the reader or user, but the researcher has an obligation to provide enough detailed description of the study's context so that readers can compare the fit with their situations (Merriam, 1998). This study fell in this category of external validity. It intended to examine a distinctive case and leave it open for readers to decide which practices they want to apply to their own institutions and which not.

Yin (2009) defines reliability as the ability of another investigator to replicate the findings following the same procedures as described by an earlier investigator. The goal of reliability is to minimize errors and researcher biases. Lincoln and Guba (1985) suggest assessing reliability in terms of the consistency of the results obtained from the data. The assumptions and theories behind this study, the basis for selecting participants and case site, and the institutional context for data collection (Merriam, 1998) were all clarified at the outset of this study so as to ensure its reliability. The other two principles of data collection used in this study—triangulation of data and multiple data sources— also increased the reliability of the information.

Limitations of the Study

Because this study focused on a single case, it has its limitations in terms of generalizing to other universities in different contexts. Yin (2003) noted that multiple-case designs may be preferred over single-case designs when resources are available, because the analytic benefits from having two or more cases may be substantial. Further, if common conclusions can be reached from varied circumstances, the external generalizability of the findings is expanded relative to generalizability from a single case (Yin, 2003).

This study also has two limitations with regard to its data. One is the timeframe used to collect data. The study was conducted in the middle of FY10, so it potentially failed to compile valuable information from the interviews, despite that document data was obtainable after the budget cycle. Even though the write-up of this study took more than a year after the interviews were conducted, the researcher failed to conduct follow-up interviews due to various constraints.

The second is that the budget data analyzed failed to include a breakdown analysis of division revenues by source. In addition, the available aggregated revenue data for most divisions did not include sources like sponsored funds. The budget analysis, therefore, could not address diversified revenue sources and reflect on the importance of non-state funds to each division.

The third is that the interviews did not adequately address the question on changes in institutional management before and after the crisis hit and therefore allow the researcher to make less robust inferences on emerging budgetary and operational trends.

CHAPTER V

RESULTS

This chapter presents the findings of the interview and documentary data collected from the study. The analysis of the data begins with an overview of the institution's budget/operation system and a background introduction of state budget cuts and state mandated actions during the economic recession before FY11. Then the data is analyzed and presented in three sections, each addressing the central level, the academic unit level, and the non-academic unit level respectively. Four broad themes emerged in segmenting of the data during analysis. These themes are the impacts of the economic crisis, the strategies in response to the crisis, the budgetary changes, and the centralization/decentralization trends. The aforementioned three sections contain the major responses of the 26 participants and relevant document information organized within the four themes. The final section summarizes these findings.

Overview of Georgia Tech's System

As mentioned in the previous chapters, this study's approach to analyzing the decentralization and centralization trends in campus management is to mainly look at budgetary and general responses to the financial crisis. Therefore, it is necessary to first understand the existing financial and management system at Georgia Tech, with particular attention to the authority and decision making at different levels.

Budget Process

Similar to many other public universities, Georgia Tech's operating budget process involves three major components:

- State executive and legislative budget process
- Georgia Tech's internal budget process and internal committee work
- Board of Regents (BOR) of the University System of Georgia (USG) allocation and tuition/fee determination process

Each year the State of Georgia Legislature appropriates funds to the Board of Regents for support of all institutions in the University System of Georgia for the next fiscal year. State funds are in turn allocated by the Board of Regents to each institution in the University System. In large part the allocations are based on the formula funds generated by the respective institutions. The State Funding formula works as follows:

- Number of faculty required by enrollment mix (undergraduate and graduate students)
- Multiplied by: an assumed salary rate for faculty
- Plus instructional support and operating expenses
- Plus fringe benefits, other support costs, and facilities costs based on square footage
- Plus miscellaneous other costs, including a technology factor
- Equals the total funding formula requirement
- Minus student tuition and fees and other adjustments
- Equals state funding requirement to be provided by Legislature

In addition to the formula funding, the Legislature approves funding for pay raises and increases in fringe benefit costs such as employee health insurance and retirement. Following the General Assembly's approval of the state budget, the Board of Regents determines the level of increase for institutions' tuition rates and sets the levels of institutions' mandatory and elective fees. The Georgia Tech Office of Budget Planning and Administration is required to follow established guidelines and policies set forth by the State of Georgia, the Board of Regents, and Georgia Tech.

Budgeting Divisions

The operation budget is executed in a responsibility budgeting and accounting system which means that division and department heads are responsible for their own budgets. Colleges

are treated as budgetary divisions for bulks of allocations. The major resident instruction divisions in the budgeting system are presented in the following table 2:

Table 2: Resident instruction divisions

Division	**Principal Program Area**
Engineering College	Instruction/Research
College of Sciences	Instruction/Research
College of Architecture	Instruction
Ivan Allen College	Instruction
College of Computing	Instruction
College of Management	Instruction
GT Savannah	Instruction/research
Interdisciplinary Programs	Research
Provost	Academic Support and Other
Library and Information Center	Academic Support
Student Services	Student Services
Office of the President	Institutional Support
Administration and Finance	Institutional Support
Office of Information Technology	Institutional and academic Support
Facilities	Operation & Maintenance of Plant
Communications & Marketing	Institutional Support
Development	Institutional Support
Alumni Association	Institutional Support
Distance Learning and Professional Education	Instruction

Source: Budget Office website.

The "Resident Instruction Budget" together with the "B" Unit Budgets and the Auxiliary Enterprises are referred to as the "Operating Budget", which includes all the financial resources for educational, research, and auxiliary activities during a fiscal year. "B" units are units that have separate appropriations in the State of Georgia budget, which include the Georgia Tech

Research Institute (GTRI), the Enterprise Innovation Institute (EII), and the Advanced Technology Development Center (ATDC). Affiliated organizations, which are separately budgeted and accounted for, include GT Foundation, GT Alumni Association, GT Research Corporation, GT Athletic Association, and Georgia Advanced Technology Ventures, Inc.

One feature of this system is flexibility in managing budgets, by such means as transferring funds internally between subunits within budgetary divisions, transferring budgets between personnel and non-personnel services, and creating positions if funds are available. In addition, budgetary divisions can contract out a service to save money. For example, the facilities department can decide to contract out window washing or painting services to save money on personal services. The funding sources cannot be crossed in this system, that is, funds for instruction and research cannot be used for administration and operation. A zero balance is required at the end of the year for state funded divisions unless special arrangements are made. If, for example, poor timing prevents a college from having start-up funds for hiring a new faculty, the college can negotiate with the central administration to provide money to the institute and get it allocated back in the following fiscal year.

Budgeting Categories: Revenue Sources and Expenditure Categories

For any fiscal year, the resources available for Georgia Tech's operating budget are largely determined by four factors:

- The Legislature's level of appropriations to the University System of Georgia
- Georgia Tech’s enrollment level two years prior to the budget year and decisions of the Board of Regents (BOR) on how appropriations will be allocated among institutions
- The BOR's decisions on tuition and fee levels
- The level of sponsored (grant and contract) funding.

The five main major revenue sources are sponsored operations (grants and contracts), state appropriations, student tuition, auxiliary services, and indirect cost recoveries in descending

shares of the total revenue budget. The general operations sources include state formula funds, tuition and student fees, indirect cost recoveries, and miscellaneous funding sources.

The budgeting and accounting structure is based on fund accounting. Most of Georgia Tech's activities are budgeted in "resident instruction," which includes instruction, research, public service, facilities, and support functions. In addition, there are separate funds for student activities, funded by student fees, auxiliary enterprises, fees, and units with earmarked funding—GTRI (Georgia Tech Research Institute) and EII (Enterprise Innovation Institute).

Resource allocations

Georgia Tech's internal budget process involves the following factors in determining resource allocations to colleges and other units:

- Revenue projections, including the level of expected state funding and tuition and fees and other revenues
- Budget requests from the units
- Expected impact of requests on Tech's overall strategic plan and on individual unit plans
- Committee recommendations

This process links resource allocation to strategic plans. Budget requests developed by individual units are based on their strategic plans. In each unit's budget, resident instruction funding is the base budget for the new year and additional funds added to the base are called "new workload" funds. The base budget allocation is based on three primary factors: the number of faculty and TAs, the number of student credit hours, and the amount of overhead generated. Additional funds are allocated proportionally to workload and revenue generated.

Summary

The information presented above is from documents that were updated before year 2008, which indicates no changes have been made to the budgeting system and processes since the crisis hit. The external budget process at Georgia Tech follows the state budget as well as the

Board of Regents' performance-based funding procedures. The internal budget process was relatively decentralized before and after 2008, with its decentralized budgeting and accounting system in place. The features of the budgeting system at Georgia Tech match some of those of a RCM but not all, so it is a hybrid system which decentralizes some decision-making to individual budgetary divisions but maintains central-administration control over allocation of funds to divisions. For instance, the budget for each division elapses at the end of a fiscal year, and each budgetary division has to stay within its annual budget, unless special arrangements are made with the central administration. The system was decentralized when each budgetary division head was given responsibility to manage budgets within his or her division. The budget sources and expenditures indicated a high volume of research and economic development efforts, which necessitate decentralized management at the unit level.

State Budget Reductions and Mandated Actions

As state funds represent the second largest share of Georgia Tech's total budget and major discretionary funds, it is reasonable to provide an overview of the budget situation in the University System of Georgia after the crisis took place.

The anticipated state budget shortfalls due to the severe economic downturn in 2008 quickly presented public colleges and universities with mid-year budget cutbacks. In August, 2008, the Board of Regents approved a six percent ($136 million) budget reduction plan and accepted two potential plans to increase the reduction to eight percent ($182 million) and ten percent ($228 million) for FY2009 and FY2010. An additional two percent cut was mandated in December 2008. The Regents made several system-wide reductions to meet the additional cut, including reducing employer contribution rates for PPO and HMO health insurance plans from

75 percent to 70 percent, increasing employee contributions accordingly, and implementing mandatory student fees.

In August 2009, the Regents asked institutions to prepare reduction plans including three levels of cuts – four percent, six percent, and eight percent – to their state budgets for consideration. The Regents ultimately mandated six percent reductions at all institutions. Across the institutions, the USG instituted six mandatory furlough days for all employees making over $23,660, resulting in an approximate three-percent pay cut. The USG also made changes to health insurance plans, eliminating the indemnity option and encouraging employees to switch to high deductible policies. The furlough and insurance changes reduced the budget by four percent. The remaining two percent budget cut was met through reduction plans at an individual institution's discretion.

In May 2010, the State required the USG to absorb additional formula and line item appropriation reductions of $161 million, or 8.1 percent, which added up to a cumulative decrease of $227 million, or 10.4 percent, from the original FY2010 state budget of $2.17 billion. Meanwhile, the special institutional fee was doubled for each institutional type. In addition, the state approved tuition increases ranging from a low of $50 per semester at two-year colleges to a high of $500 per semester at the four research universities. The tuition increase will generate $80 million to help offset the $227 million budget cuts in the FY2011 budget. In FY2010, federal stimulus funds were allocated to replace state funds in the state appropriations.

Central Campus

Impacts from the economic crisis

The above section has depicted the budgetary situation Georgia institutions were faced with between year 2008 and 2010. Between FY2009 and FY2011, the total reductions for Georgia Tech added up to $67.2 million, or 23.8 percent of the FY09 base. The State's

mandatory six-day furlough program, the Institutional Fee for all students, and the federal stimulus funds helped offset many of the reductions. The rest of the budget gap was met by reducing the operating budget. The impacts came along with budget reductions in various areas. The FY2011 Budget Narrative asserted that Georgia Tech's accelerated strategic investments in faculty, staff, business systems, physical plant and infrastructure had been slowed and hindered by the significant decline in state support. More specifically, it concluded the issues and challenges faced: (1) Student and faculty ratio reached its record level of 23:1 with enrollment increasing at a higher rate than faculty since FY2008; (2) Fewer course sections were offered to the undergraduates with larger class sizes due to the budget constraints; (3) Georgia Tech's allocation based on state formula continued to lag compared to its earnings; (4) The budget shortfall has severely restricted faculty start-up funds, which affected Georgia Tech's recruiting success; (5) The elimination of administrative support positions caused concern about maintaining accountability as well as growing sponsored research awards, and (6) The central administration of Georgia Tech proposed to incrementally increase tuition charges to reach its peer institution average, with a 5 percent increase per year from FY2010 to FY2012.

These issues and challenges were addressed in the interviews. Among the 26 participants, 22 of them described pain and hardship when discussing the difficulty in keeping things moving forward. The following comment by a budget officer was typical of other interviewees:

> …well, as always the cuts impact us you know, we felt that we always want more money but we feel that, you know, not being able to hire support people to help support the faculty, not being able to hire a lot of new faculty, our student-faculty ratio continues to rise. Our foundation funds, endowments decreased tremendously over the last year. I think everybody did 20-30%. They help us operationally, you know. There are things… we have to eliminate a lot of travel, eliminate the hiring, put a freeze on hiring, reduce some of our new initiatives that we had wanted to do that we just never implemented--could not implement--cause the funding was not there, you know. We were basically trying to keep the status quo and just keep on doing what we are doing now. And again though we have to be strategically thinking about,

> ok, what's on the horizon, where are we going to put resources going forward. And I think with Dr. Peterson (President of Georgia Tech) being here, and the strategic plan, that will help guide us even more

Another remark by an Associate VP was also representative of other participants:

> Well, from a system support [perspective], system being the software systems, yeah, they have been impacted in terms of the degree to which improvements have been…We always have a long list of items we want to do in terms of software maintenance, software development, improvements that to help the efficiency and the effectiveness of the programs. What the budget reductions have done is a great list because of more limited resources. It is stretched all those out, things that because there is limited staff, they cannot now be applied to those activities, so we are not getting the efficiencies we hoped for in the time frame we are. So something that we may have taken in three months may now take six months because resources aren't there. Before, we maybe hire more people, maybe hire consultants to commit to our existing workforce and that's been very limited obviously with the budget cuts, the last two three years. And that's manifested in terms of the length of that particular activity. So we have a progressive rate that we should have progress. We are doing less with less.

Obviously, the economic recession slowed down the progress of Georgia Tech would have made in good economic times. Regarding academic impact, three out of the four participants at the central administration addressed the impact of frozen faculty hires on student-faculty ratio, as revealed in the first quotation. How the increased student-faculty ratio has affected students was not yet evident, but the workload for faculty has increased substantially, an increase which was also attributable to reduced staff support, elimination of part-time instructors, and reductions in teaching assistants. The situation is depicted by faculty head count in relation to credit hours taught. According to the *Impact Summary of State Budget Reductions* (Georgia Tech, 2010), over the fall semesters of 2007, 2008 and 2009, the number of faculty declined by 11, from 1,130 to 1,119; during this same time period, the number of credit hours taught has increased by 5 percent, or 9,191 hours. It is obvious that faculty were doing more teaching. They were also doing more research, as the total research revenues increased reflecting more research conducted by the reduced number of faculty members. The participants contended unanimously

that they would not be able to sustain the current situation for long and that Georgia Tech would have to hire faculty again in order to move forward.

Strategies in response to the crisis

Cost-cutting strategies

The central administration implemented various cost-cutting strategies to meet the state budget reductions. The biggest area of reduction was personnel expenses, which comprise the largest portion of the budget; the budget director explained: "…that the money is in personnel. That's how you save money". According to the *Impact Summary of State Budget Reductions* report (Georgia Tech, 2010), by the end of February 2010, a total of 286 positions had been eliminated, including 99 filled positions, 41 full-time faculty vacant positions, and 262 support staff and administrator positions unfilled. The capacity to hire had been greatly reduced. The report notes that a hiring freeze was imposed on both academic and administrative units. Now, these units need to submit a hiring moratorium approval request form to the central administration, which had not been required before. Only critical vacancies could be filled upon the approval of the provost and executive vice president. Faculty hires were through replacement, and faculty searches were canceled. The university budget director stated, "Let's say if someone comes up with the vacancy, ok, and they want to fill the vacancy, they have to get approval either from the executive vice president or the provost, depending on whether they are an academic unit or an administrative unit. And we administrate that through our office. They have to fill out a form, and they have to jump through a lot of hoops to get permission to fill a position. So even if a department says oh I have plenty of money, they cannot without permission to do that."

Besides position eliminations, according to the report, the central administration has also reduced the hours of staff, delayed start-up funding for new hires, and reduced the numbers of visiting faculty. For instance, one office cut back everybody's time to 90 percent which means that the employees lost 10 percent of their salaries. In addition to the reduction in personnel expenses, Georgia Tech has also cut back on travel, equipment replacements, custodial services, maintenance, and student services across campus. Several units, including the School of Biology and the College of Architecture, conducted reorganizations.

The cutbacks in many areas have slowed operations down, but the central administration preserved some areas from being cut, such as public safety, environmental health and safety, grants and contracts administrative support, student counseling services, student health services, and internal audit. In addition, in order to preserve the core mission of teaching, research, and public service, one strategy Georgia Tech chose was to impose different budget cuts on administrative units, which absorbed substantially higher reductions (7.7 percent), than on academic units (4.5 percent) in FY2009. This was also revealed by two of the four central administrators.

In FY2010, the central administration decided on a 3 percent cut across the board, with the remaining 5 percent absorbed at the central level. Another budgetary strategy adopted was to set up a "stimulus fund reserve" to prepare for the loss of federal funds. The reserve was built up for one-time needs such as faculty start-up, equipment, and repair and renovation projects. A contingency reserve was set aside in FY2010 budget planning for additional reductions in the state appropriations.

In terms of the mandated strategies, the majority of the participants addressed furloughs. The furlough was described as "everybody sharing the pain". Almost all units took furloughs,

including units that were more self-supporting than state funded, but those on sponsored research grants were exempted from the program. The reason was given by a central financial officer as follows:

> … from a management point of view, the furloughs that we've had, not everyone was furloughed. A lot of faculty who have sponsored program activity, outside support, did not participate in the furlough program, at least to the degree of staff personnel, because they had such an external support. Logically to the extent that Georgia Tech and all the state of Georgia didn't receive those dollars associated with those personnel salaries, you know, from the sponsor whether it is the Federal Government or a corporation, then really we lost revenue in indirect recoveries associated with that revenue. So to the extent that we have forced everybody to take the furloughs, actually it would have a multiplier effect on the ultimate cut. That didn't make sense in terms of, you know, keeping dollars flowing in Georgia, so a lot of faculty were exempted in all or part from the furlough program.

Revenue enhancement strategies

The central administration tried to protect research areas from taking furloughs to maintain research revenues, specifically the Georgia Tech Research Institute (GTRI). The grants and contracts generated from research are one of the big three revenue streams, which represent about half of the total budget. The research awards have increased during the recession, so have the indirect cost recoveries.

Tuition is another big revenue source for discretionary funds. Georgia Tech leaders have argued for increasing tuition levels, and the state has approved increases of $500 per semester in 2010. Tuition revenue has also been generated through enrollment increases, distance learning offerings, differential tuition, study abroad programs, and a more financially rewarding mix of residents and non-residents, according to one central budget officer.

Among the revenue enhancement strategies the central administration set out in 2009, two campus-wide revenue strategies focused on tuition and fees revenues. One was a summer school incentive allocation program to promote increased summer program offerings. Schools

that do better than they did the year before would get rewarded. A-million-dollar incentive was added to the program, and ultimately more tuition revenue than invested dollars was generated. The other strategy was to impose selected charges on students for services that were previously free, such as transcripts. In addition, the application fee was increased. Another institutional level strategy was that Georgia Tech started charging the auxiliary enterprises for services like accounting, human resources, and computer support they receive from the central administration. The auxiliary charges generated 1.2 million dollars and helped close the budget gap.

Other strategies

Georgia Tech also reorganized at the central level, in particular, streamlining the Office of Administration and Finance. In addition, the inauguration of a new president in 2008 brought a new leadership team to the campus. A consulting company was brought in by the new Vice President for Administration and Financing to streamline financial operations. The consultants conducted a Strategic Resource Deployment Study to identify areas for improvement in collaboration with academic partners. In 2009, the office was involved in institutional initiatives in procurement, energy, sustainability, human resources, risk management, and information technology governance.

The central administration also sought this crisis as an opportunity to develop programs that could not have been done in good times. Two good examples are investments in a centralized IT system and a centralized e-procurement system. Both IT and procurement used to be decentralized before the crisis and the Executive VP argued they were less cost-effective than centralized systems. The return in these investments, he expected, would be substantial, so it was a strategic move to make these investments during bad times.

One final important response the central administration took was to energize ongoing institutional strategic planning. Some interviewees said the strategic planning started because of Georgia Tech's new leadership, but it is also reasonable to believe that it came in time to provide long-term strategies and guidelines for the university to succeed in a more challenging environment. Several participants mentioned they were looking forward to new plans for guidance.

Taken together, Georgia Tech has adopted various cost reduction and revenue enhancement strategies to make up for the cuts and to preserve its priorities at the central level. These strategies were either contingent or strategic. The institution has been impacted financially as well as operationally, but people became more aware of the need for efficiency, and the institution was forced to run more efficiently after the crisis hit.

Budgetary changes

The above sections have covered the budget cuts after the economic downturn began. This section provides an overview of budgets across years spanning FY06 to FY10. The original revenues by major sources and expenditures by major functions were collected from the original yearly budgets from FY06 to FY10. Table 3 presents Georgia Tech's yearly revenues and expenditures from FY06 to FY10. Table 4 presents the percentages of each revenue source and of each expenditure function.

The total revenues from FY06 to FY10 increased steadily before adjustment for inflation. The increases were larger from FY06 to FY07 and from FY08 to FY09, and the increase between FY09 and FY10 was the smallest in the five-year period. This trend is consistent with what was revealed in the interviews and the overview of state budget cuts above. The category of state appropriations here actually includes state appropriations, federal stimulus funds, if any,

research consortium funds, and special state funds. The 30-million-dollar increase from FY08 to FY09 was predominately in actual state appropriated funds. The biggest drop in state funds happened in FY10, despite the fact that federal stimulus funds offset the drop by 12 million dollars. Nevertheless, state appropriations represented 25 percent of the total revenue in the first four years of this time period and dropped to 23 percent in FY10, offset by student tuition revenue. If we look at the total revenues across the years, the increase between FY09 and FY10 was slight compared to other years, and this increase was not adjusted for inflation and enrollment increases. The adjusted revenue per full-time-equivalent student could have decreased at a faster pace after FY08.

Student tuition revenue has steadily increased year by year during the five-year period with the biggest increase in FY10. When we look at its yearly percentage out of the total revenue, there was a drop from FY06 to FY07 and then an increase in FY08. It leveled off in FY09 but rose again in FY10. This is consistent with what was previously discussed that tuition is a substantial source of revenue used to offset the decreased state funds.

Grants and contracts (sponsored operations) account for the largest share of Georgia Tech's total revenue at an average of 37 percent over the five-year period. The total grants and contracts have increased annually, but their share of the total budget has decreased from FY06 to FY09 and leveled off in FY10 at 36 percent, which is counter-intuitive to the emphasis the interviews put on research as an alternative revenue source. Indirect cost recoveries also implied that the research volume at Georgia Tech increased. From FY06 to FY10, indirect cost recoveries dropped in FY07 and rose again afterwards until FY10 to surpass that of FY06. The share of indirect cost recoveries dropped in FY07 and leveled off in FY08, FY09 and FY10. Combining sponsored operations and indirect cost recoveries, we can conclude that research

volume has remained high at Georgia Tech over the past five years, and it has brought in a significant share of the total revenues each year, but comparatively, combined revenues from student tuition, departmental sales and services, and auxiliary services helped offset state budget shortfalls more after the crisis.

Auxiliary services have increased since FY08 at a rapid pace of around 14 percent in FY08 and FY09 and represented 9 percent of the total budget in FY09 and FY10, increasing from 8 percent. Similarly, departmental sales and services followed a trend of large percentage increases in FY08 and FY09 of 13 percent and 17 percent respectively, but decreased slightly in FY10. Georgia Tech started to impose an overhead charge on the Division of Auxiliary Services in 2009 and charge students for some services as well, which explains the trends here. The revenue from student activities increased gradually each year but represented a small but steady share of the total revenue.

On the expenditure side of the equation, research accounted for the largest share of the total expenditures at an average of 44 percent, and instruction was next at an average of about 21 percent across the years. Other functional areas were each less than 10 percent of the total expenditures each year. The expenditures on research steadily increased, and those for instruction fluctuated across the years. Scholarships and fellowships remained approximately the same during this period of time. Expenditures on auxiliary services increased continuously at a quicker pace after FY08. Academic support expenses increased slightly and student services increased in FY09 and then declined below the level of FY06.

In summary, Georgia Tech mainly relied on research grants and contracts in addition to state appropriations for its revenues. Over the five fiscal years FY06 – 10, the percentages of each revenue source out of the total did not change substantially, but there was a slight increase

in the share of auxiliary services and student tuition in the total revenues. The actual amount of total revenues has not dropped across the years, but the increase rate dropped in FY10. State appropriations dropped in FY10 and were partially offset by increases in student tuition, research revenues, student activities, and auxiliary services.

Table 3: Total original budget summary for revenues and expenditures from FY06 to FY10

	FY06	FY07	FY08	FY09	FY10
Revenue by Source					
Educational & General					
State Appropriations	225,711,903	244255,834	259,185,006	289,308,374	266,547,360
Student Tuition	126,824,241	132,018,863	150,454,494	164,792,220	181,217,379
Indirect Cost Recoveries	83,003,282	79,919,528	80,655,722	86,767,609	97,267,609
Other General (includes Technology Fees	19,808,099	16,013,581	22,702,387	21,135,500	26,816,500
Departmental Sales and Services	27,100,000	38,115,113	43,115,113	50,615,113	50,215,113
Sponsored Operations	345,936,155	384,344,736	384,344,736	406,344,736	419,344,736
Student Activities	8,602,526	9,277,562	10,110,501	10,332,981	10,566,349
Total Educational & General	836,986,206	903,945,217	950,567,959	1,029,296,533	1,051,975,046
Auxiliaries Services	82,381,024	87,427,819	99,753,706	113,654,811	116,765,499
Total Revenue Budget by Source	919,367,230	991,373,036	1,050,321,665	1,142,951,344	1,168,740,545
Expenditure by Function					
Instruction	176,764,796	213,505,083	201,533,433	237,644,960	225,034,669
Research	410,591,309	428,157,051	457,013,772	478,596,246	503,890,860
Public Service	21,221,850	25,664,893	28,767,659	31,919,297	22,198,846
Academic Support	41,604,650	43,002,955	43,439,240	45,763,494	45,413,020
Student Services	27,418,283	28,627,637	29,981,875	31,910,656	22,812,276
Institutional Support	49,224,540	51,074,933	59,071,320	64,609,741	61,533,099
Operation of Plant	75,160,778	78,912,665	95,760,660	103,844,639	106,092,276
Scholarships and Fellowships	35,000,000	35,000,000	35,000,000	35,007,500	35,000,000
Auxiliary Services	77,053,383	80,660,265	83,977,508	98,148,155	106,010,654
Total Expenditure budget by function	914,039,589	984,605,482	1,034,545,467	1,127,444,688	1,157,985,700

Note: State Appropriations include state appropriations, Federal Stimulus Funds, research consortium and state special funding.

Figure 1: Trends of revenues by source between FY06-FY10

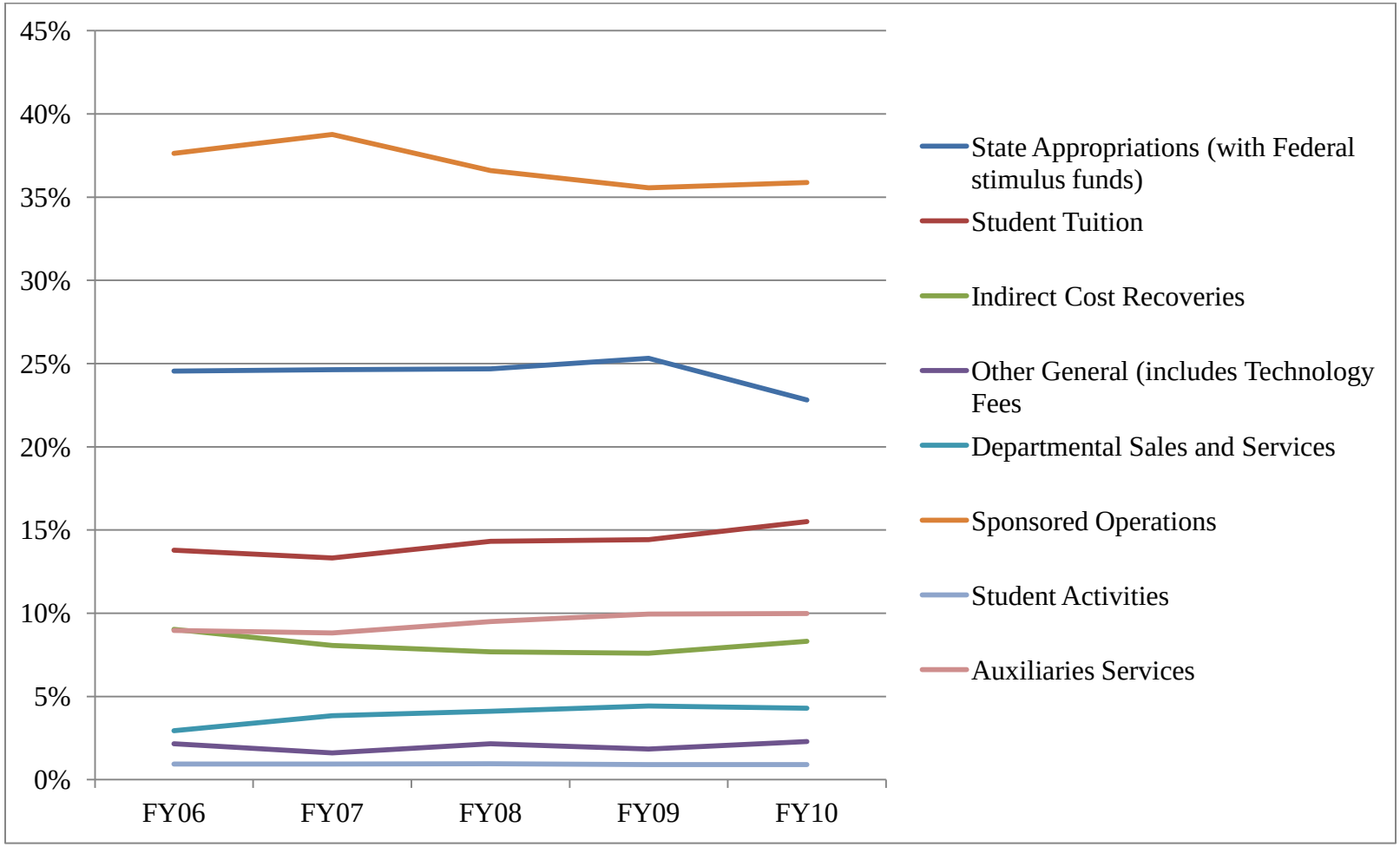


Figure 2: Trends of expenditures by function between FY06- FY10

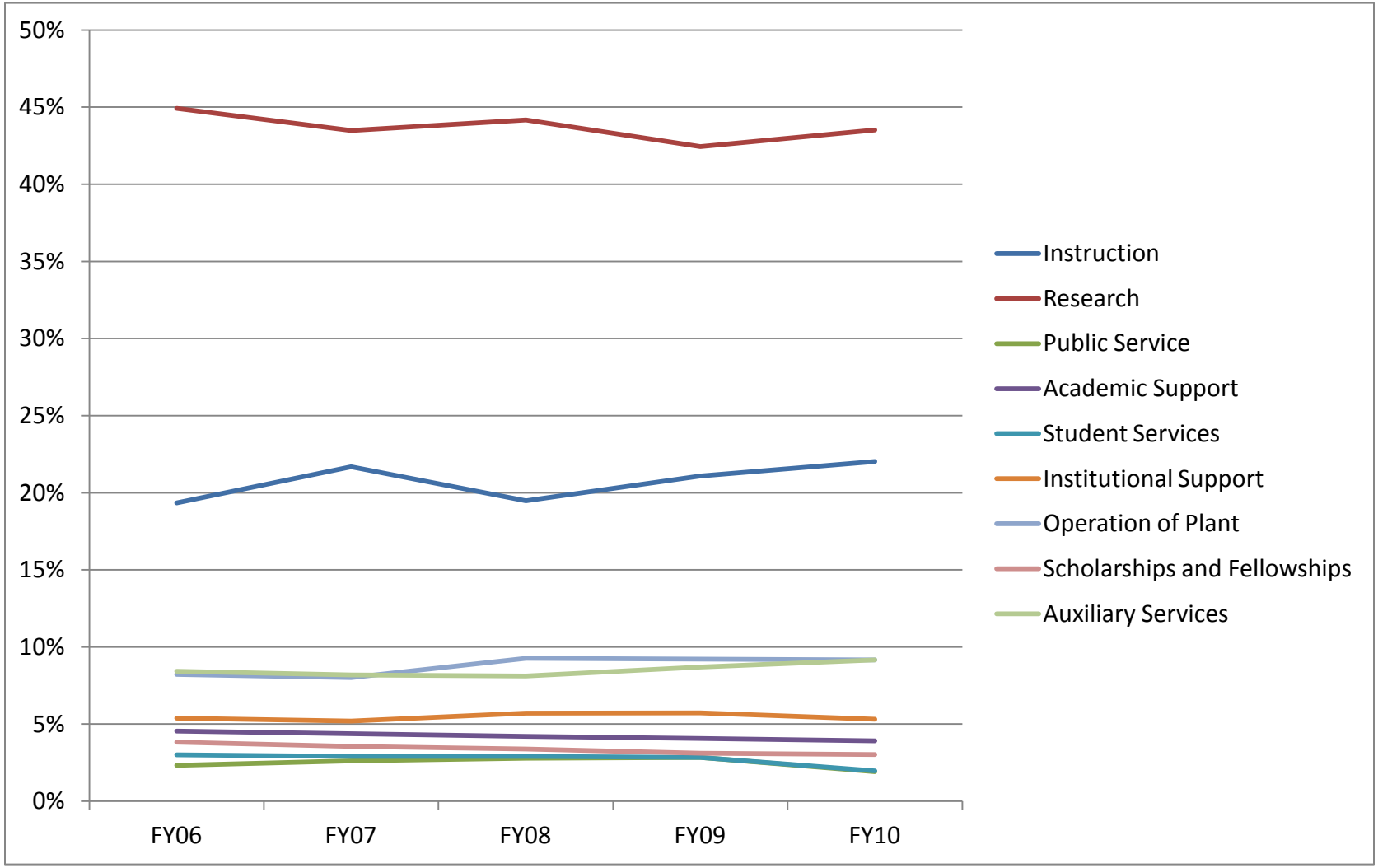


Table 4: Percentage of revenues by source and expenditures by function

Revenue by Source	**FY06**	**FY07**	**FY08**	**FY09**	**FY10**
State Appropriations (with Federal stimulus funds)	25%	25%	25%	25%	23%
Student Tuition	14%	13%	14%	14%	16%
Indirect Cost Recoveries	9%	8%	8%	8%	8%
Other General (includes Technology Fees	2%	2%	2%	2%	2%
Departmental Sales and Services	3%	4%	4%	4%	4%
Sponsored Operations	38%	39%	37%	36%	36%
Student Activities	1%	1%	1%	1%	1%
Auxiliaries Services	9%	9%	9%	10%	10%
Total Revenue Budget by Source	100%	100%	100%	100%	100%
Expenditure by Function	**FY06**	**FY07**	**FY08**	**FY09**	**FY10**
Instruction	19%	22%	19%	21%	22%
Research	45%	43%	44%	42%	44%
Public Service	2%	3%	3%	3%	2%
Academic Support	5%	4%	4%	4%	4%
Student Services	3%	3%	3%	3%	2%
Institutional Support	5%	5%	6%	6%	5%
Operation of Plant	8%	8%	9%	9%	9%
Scholarships and Fellowships	4%	4%	3%	3%	3%
Auxiliary Services	8%	8%	8%	9%	9%
Total Expenditure budget by function	100%	100%	100%	100%	100%

Trends of centralization/decentralization

Decentralized system at the heart

As discussed above, Georgia Tech adopted a responsibility budgeting and accounting system, which is by nature decentralized. All of the participants agreed that budgetary division heads were given flexibility in managing their own budgets, no matter to what extent. Therefore, from a budgetary perspective, Georgia Tech is relatively decentralized compared to a traditional centralized system at the central level. One central financial officer's commented,

> At Georgia Tech, we historically have been proud of our decentralized operations. From a budget perspective, decisions are made in terms of the allocation of funds. It's

> really moved out to the deans and vice presidents as to how best to allocate those dollars within that to limited degrees.

Another central financial officer also stated,

> In my opinion, I worked here 23 years, we have mostly been a decentralized operation. The colleges, the departments, the schools, they get their allocation at the beginning of the fiscal year and it was really up to those departments and schools to manage their sources, including revenue.

One participant briefly introduced the history and the background of Georgia Tech being a decentralized institution. It was traditionally a very small engineering school and was used to being an isolated school with a thin layer of administration. Over time, Georgia Tech expanded by adding new programs, and increasingly specialized schools and colleges were separated from the original engineering school. Georgia Tech has remained a decentralized institution in which each college or department maintains its autonomy in managing its own businesses. After the crisis hit, it continued as a decentralized system.

Georgia Tech's entrepreneurship also provides evidence of decentralization on campus. All of the participants explicitly noted or implied that Georgia Tech was always being very entrepreneurial. One central financial officer said, "Because we are decentralized, the way I describe it is that each college, each department, is very entrepreneurial…" Another central financial officer stated, "We do have a number of units who, you know, entrepreneurship does a lot at will here and who are looking at other types of programs whether they be credit offerings or non-credit offerings... College of management has moved into that big time over the last decades so to speak." Georgia Tech's research grants and contracts represented the largest share of its total budget, 36 percent in FY2010 to be more specific. The steadily increasing research at the central administration suggested that its entrepreneurship in pursuing research dollars has not diminished. The entrepreneurship was also reflected by the fact that Georgia Tech exempted

people on sponsored research from furloughs as well as protected administrative support to grants and contracts from being cut. Meanwhile, Georgia Tech was undergoing a fundraising campaign to raise endowment money. This effort has been endeavored at different levels. Interviews in the non-academic divisions provided further evidence of Georgia Tech's entrepreneurship into the market, which will be discussed in a following section.

Furthermore, a comparison of the new strategic plan implemented in 2010 with the old plan updated in 2006 reveals intensified emphasis on entrepreneurship and innovation. Both plans stated entrepreneurship as a culture of Georgia Tech and supported policies related to commercialization and entrepreneurship that encourage relevant faculty activities. However, in contrast to the old plan, the new plan more explicitly stated entrepreneurship as a core value and defined it as a strategic goal for the next twenty-five years. Entrepreneurship was more embedded in the core values and goals defined in the old plan. Apparently, such a change is an indication of Georgia Tech's further marketization.

Centralizing trend

After the crisis hit, there was a trend toward centralization at the central level. First of all, the state mandated strategies, to some degree, centralized some decisions at the state level to deal with the crisis, such as furlough programs, which were applied to all public institutions. Such mandated programs constrained Georgia Tech's flexibility in deciding its cutting strategies. As some participants suggested, the central administration might have chosen alternative strategies than across-the-board furloughs. One comment was as follows:

> If you had your choice, you would have had the state and the regent say "we need 10 percent back from you, you go figure out how to do it, so that you can prioritize how you want to move money around and find that 50 million dollars." If you did that, probably everybody wouldn't furlough six days then, they might do other things. But the governor was making a political point, saying that all state employees have to take

these many furlough days. Well, the fact is it might not be the best budgetary thing to do.

Furthermore, the savings from furloughs and institutional fees imposed on students were taken away from divisions and thus reduced their resources for daily operations. Individual units were more subject to central control, so to speak. When units are more restrained in handling their budgets and more money remained under central control, centralization emerges.

In addition to state mandates, some strategies chosen by the central administration to cope with financial stringency were also evidence of a centralization trend at the institutional level. One strategy was that Georgia Tech continued its investment in a centralized information technology system as a long-term plan for efficiency. Another was that the central administration imposed a hiring and reclassification moratorium in which only critical vacancies can be filled upon the approval of the provost and executive vice president. The central budget director addressed this, "We started this last year…we've centralized this because we've never had this in place before. Now we have required them to come through. They could hire whatever they want. If they could afford it, afford it, but new game now."

Most of the participants perceived the institution's operations as being about the same after the crisis. Budgetary divisions still had the responsibility for managing their own funds as well as the flexibility to meet the cut requirements, but due to the cuts, less discretionary money was available to them, which hampered their flexibility in making budgetary and operational decisions. Additionally, some participants mentioned that research grants generated at colleges and schools did not significantly help their operational budgets; rather, the overheads generated from research helped increase the total revenue at the central level. In other words, funds were flowing back to the central administration because of the budget cuts. A vice president remarked: "I think there is a movement to try to bring more things together". The central budget director

agreed that there was a centralizing trend, but he also declared that "but we still rely heavily on what we call our division heads, the deans, the vice presidents..yeah there is a lot of relies. We expect them to do their jobs, not only academically and professionally, but we still bet them to stay within budgets and figure out ways to do business more efficiently to come up with savings. So if they want it badly enough, they want to do something badly enough, then they'll figure out a way to help fund it."

To summarize up, Georgia Tech has traditionally been a decentralized institution with regard to its organization and decision-making delegated to the budgetary division level. The economic crisis has resulted in a centralizing trend in some areas to meet the budget cut requirements: some departments underwent reorganization; the hiring process was more restricted than before; major budgetary divisions were left with fewer resources and less flexibility in budgetary and operational decision-making.

Academic Units

Impacts from the economic crisis

The academic units are the core of an institution's mission and operations. Although Georgia Tech has tried to reduce the impacts of the budget cuts on the academic divisions, the impacts were still serious. All of the participants from academic units expressly mentioned that their schools/colleges have been affected, regardless of the budget cuts they had to make or the consequences of these cuts.

The cuts affected these colleges and schools to varied degrees. The School of Mechanical Engineering suffered the most in dealing with reduced staff support and increased student enrollment, as its student enrollment increased the most among the schools studied. Enrollment increase not only added pressure to faculty teaching loads, but also affected the school's research

revenue when faculty had less time for research. Capacity was also an issue due to a lack of space for laboratories to accommodate more students. The School of Public Policy, in contrast, was in a manageable situation with stable research grants, except that not enough funds were available to make spousal hires. Nevertheless, the cuts were normally absorbed at the central level, and then at the college level, so smaller percentages of cuts were passed on to the schools. One school chair pointed out that this helped buffer her school from further suffering. The College of Sciences had been running efficiently before the crisis, so there was relatively less room for reductions. The College of Engineering might be the one college that had more leverage to deal with the cuts as it generates the largest share of revenues among units.

Overall, budget reductions have resulted in increased burdens for faculty, reduced support and services to undergraduate students, and reduced employment opportunities for graduate students. The ultimate impact, one would expect, will be on the students and the quality of education, which was not examined in this study.

Strategies in response to the crisis

Cost-cutting strategies

Georgia Tech has attempted to absorb most of the cuts at the central level in the past years, but cuts were passed down to academic units at 4.5 percent in FY2009 and at 3 percent in FY2010. Each college had to come up with these percentages of cuts in its own way. As one would expect, the biggest area of savings or cuts was in personnel services. All of the colleges and schools had a hiring freeze on staff and faculty after the crisis hit. Most concerns voiced by deans and school chairs were about faculty hiring due to the pressure from increased enrollment and research. The School of Public Policy hired six new faculty in 2009, which was rare. The College of Management also managed to hire people for its MBA programs to increase its tuition

revenues. The College of Computing and the School of Electrical Engineering mentioned they hired faculty only through replacement.

All of these colleges and schools eliminated positions. The chair of the School of Electrical Engineering mentioned they even eliminated one Associate Chair position. Similar to what occurred at the central level, the cuts were applied more on the administrative side of these units so that more support staff and administrative positions were eliminated, or people in those positions were laid off. For instance, the College of Sciences eliminated a total of 23 such positions between 2008 and 2009. In addition, mandated furloughs were taken at all of these colleges and schools. Another big category of cuts was the reduction in the number of graduate teaching and research assistants. For instance, the number of teaching assistants halved in the College of Computing.

The common strategies for cutting discretionary components of the budget included elimination of travel funding, cancellation of holiday parties, and reduction of waste. The School of Public Policy eliminated faculty and student travel except for junior faculty who needed to attend conferences to present papers that counted toward tenure and promotion.

In addition to these common strategies generally chosen by these colleges and schools, two schools and two colleges undertook reorganizations or consolidations to reduce staff size. For instance, the School of Electrical Engineering reorganized its Digital Media Lab by eliminating one position. The College of Sciences also reorganized in an attempt to increase the efficiency of its units.

Faculty buy-out was another strategy used by two colleges and one school. For instance, the College of Science reduced part-time temporary instructors as well as encouraged high-salary faculty buy-outs for lower cost instructors at the same time. Besides faculty buyout, other ways

to save from faculty salaries included savings from faculty who were on leave of absence, those who were being paid from other sources and who retired and got rehired part-time.

Revenue enhancement strategies

On the revenue side of the budget equation, there were no consistent answers across all units. The general situation was that in terms of discretionary money, these units have not been able to generate much new revenues to make up for the state cuts. Most of their revenue increases came from research grants and awards, but these funds could not be used for non-research related activities, which include administrative-side hiring.

The College of Management was one budgetary division that was able to have a relatively higher rate of tuition revenue increase than other units, mostly in its discretionary funds. The College of Sciences also mentioned increasing lab shop fees as well as differential tuition rates. The School of Mechanical Engineering got more endowments than the School of Electrical Engineering but fewer research revenues. The School of Public Policy was still able to maintain its research grants. The College of Engineering, the College of Computing and the College of Sciences all got increased research awards/grants.

Varying approaches

Despite the common strategies and similarities in dealing with the budget cuts, evident differences existed among the four colleges investigated before and after the crisis hit. Notably, the two biggest colleges, the College of Engineering and the College of Sciences, had different management styles. The College of Engineering is the largest budgetary division in size and budget share. Its annual expenditures were about $255 million in FY09, which represented about 20 percent of the Georgia Tech's total expenditures. Its budget was bigger than that of all the other colleges combined. In such a big division, the budgetary strategy chosen at the central level

was to adopt a workload model, which was explained in the following remarks by its associate dean:

> What we've tried to do is that workload model. When we allocate resources to a school, we provide them dollars to meet with what's called the raise plan or their list of employees, permanent employees. And then we give them dollars proportional for instructional workload and research workload. And so as a school gains or losses faculty, we pull the faculty line out. So, you will see big fluctuations in their budget, but because of the allocation model, the dollars beyond payroll tend to remain relatively steady.

This model was in place when the recession started, so it was not a reaction to the crisis. It is a decentralized allocation model, as part of the allocations is proportional to a unit's workload. It rewards and encourages production at individual units as well as provides deans with discretions. In contrast, the College of Sciences chose a very different strategy to streamline their operations within the college. This process was initiated before the crisis hit to centralize some of the functions at its central level. More specifically, problems or issues at schools were directed to the dean's office for assistance or solutions and the dean's office worked very closely with schools in dealing with their financial and personnel problems.

The College of Management differed from the above two colleges because it is a professional college. It relies heavily on tuition as a non-state revenue source. The college has successfully increased differential tuitions for MBA programs during the recession. Its evening MBA program and various executive programs were revenue-generators that helped offset state budget shortfalls in FY09 and FY10.

Budgetary changes

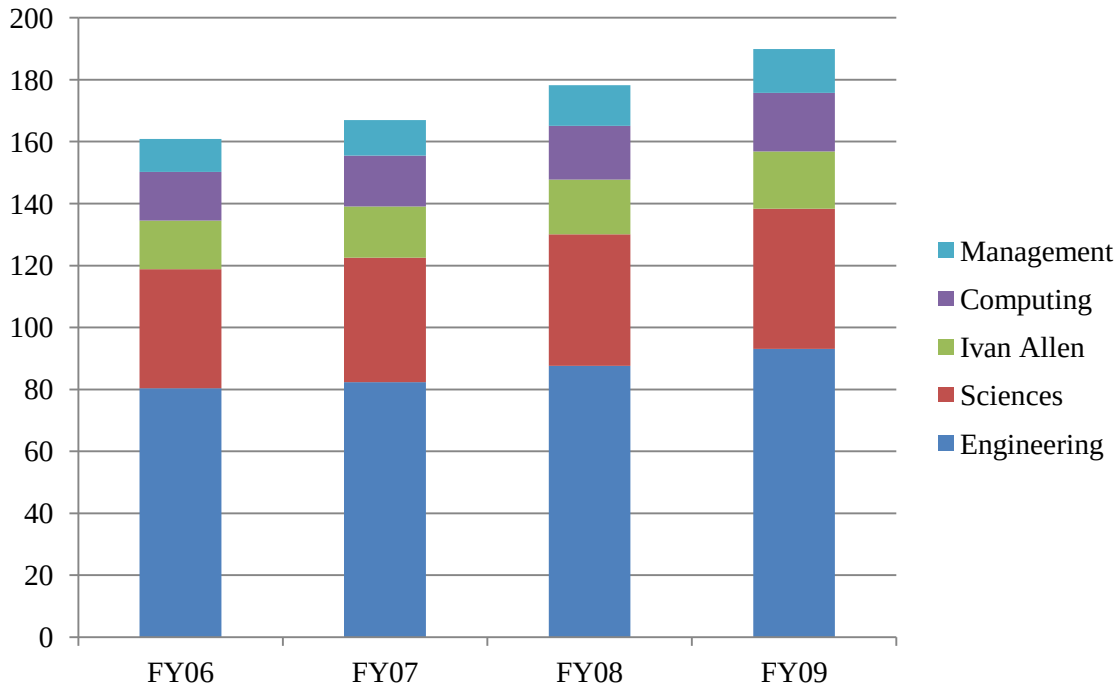
The original budgets by college between FY06 and FY09 are exhibited in the following figure. The budgets were included in the report *Georgia Institute of Technology Budget Trends Fiscal 2004 through Fiscal 2009*. The FY10 budget by college was not presented in the report. In

order to provide a picture of the budget situation by college in FY10, the resident instruction budget by college FY09 – FY10 was exhibited to compare FY10 against FY09 (Table 5).

It is evident that the College of Engineering's annual budget represented about half of the total annual budget of the five colleges investigated. The College of Management, in contrast, had the smallest share of their total budget each year. However, the College of Management had the highest percentage of change in budgets across the four years at 32 percent, followed by the College of Computing at 21 percent. Across the colleges, the annual budgets increased, at a higher rate in FY08 than in other years, which suggests that the academic units had been continuously growing before the crisis hit. In FY09, the increase slowed, and in FY10, there was no increase for each college in its resident instruction budget as shown in Table 5. These changes in FY10 are consistent with the institutional budget by revenue discussed in the above section. The decrease from FY09 to FY10 was the largest by dollar amount for the College of Engineering and the largest by percentage for the College of Computing.

The graph and numbers here suggest that between FY06 and FY10, the academic units examined did not incur decreases in their resident instruction revenues (excluding department service sales and sponsored funds) until FY10. In FY10, all of them experienced negative growth in resident instruction revenues. Nevertheless, this budget is mostly composed of state funds and student tuition, so it cannot reflect revenues from grants and contracts (sponsored funds). The sponsored funds for the College of Computing, the College of Engineering, the College of Sciences, and the Ivan Allen College actually increased in FY10 as compared to FY07. In addition, this budget is not adjusted for inflation and enrollment increase, so it could potentially fail to depict a possible tougher situation during the recession.

Figure 3: Total academic unit budgets by college FY06-09 (in million dollars)



Note: Budgets include original budget figures (general operations, special funding initiatives, research consort consortium) and exclude other sources.
Source: Georgia Institute of Technology Budget Trends Fiscal 2004 through Fiscal 2009.

Table 5: Resident instruction* budget by college FY09-FY10 (in million dollars)

College	FY09	FY10	% of Change
Engineering	87.9	86.4	-1.71%
Sciences	45.2	44.1	-2.43%
Ivan Allen	18.5	18.1	-2.16%
Computing	19.0	18.2	-4.21%
Management	14.1	13.8	-2.13%

*Note: Including General Operations and Research Consortium Excluding Department Service Sales and Sponsored Funds.

Source: Georgia Institute of Technology Budget Summary – FY2010.

Trends of centralization/decentralization

Overall, there was a trend of centralization at the institutional level in areas such as hiring, IT, overheads charge, summer programs, and reserve funds. Due to the decentralized nature of Georgia Tech, there were no consistent trends other than diminished autonomy during the recession at college and school levels because of diminished resources.

The inconsistencies across colleges are related to their varied budgeting and operational structures. The College of Engineering, as noted before, was the largest in size, so it was more organizationally decentralized. It was also budgetarily and operationally decentralized as reflected by its budget system. According to its associate dean, it had a demand responsive budget system that allocates resources to the areas of the greatest pressure as explained in the following excerpt:

> We have a very formal or sort of demand responsive budget system that we try to use the dollars that we get from the central administration and put them into the areas where we see the greatest pressure. And we define pressure as school's percentage of production of research or instruction. So when I created a budget for mechanical engineering, I gave them money to meet their payroll. And then I gave them additional dollars to support instruction, and additional dollars to support research. And those buckets are given to them proportional to their contribution to the overall production of the college. So if they grow their program in research, they get a bigger piece of the pie. If they grow their dollars in instruction, they get more of that. That in fact has moved our dollars out to the units where they have the highest student faculty ratios because in fact they are producing a lot proportional to their peers in the college. So that's how we flex our budgets to follow where the students are actually voting with their enrollments and taking their courses or where our faculty are writing the proposals to create intellectual property. You know they are just writing proposals and getting contracts. It takes money to support that. So we reroll our money out to them.

All these aspects of the College of Engineering have not changed during the recession.

The College of Sciences, in contrast, was centralized in its operations to a large degree, due to some initiatives that took place many years ago. These were initiatives to

streamline processes and address budgetary needs within the college for the purpose of improving efficiencies. The financial director introduced:

> Efficiency and streamlining of processes and addressing budget needs, not something we just started because of the economic crisis, we were doing these well before then… We work very closely with our schools. We know their needs. We know their staffing needs. We work with them to meet those staffing needs. They are not out by themselves just making decisions and getting staff heavy in regards. We've worked with them all along in staffing them appropriately.

The director of administration and human resources added,

> We wanted them to come to us for help. We sat down and came up with a plan and actually worked with them and helped them whether it's sitting behind the desk in the unit helping or helping form a plan or doing an assessment. And so knowing our schools so well…first of all the dean usually doesn't get requests that may not be necessary. Because we know the schools, we know what they want.

Through these initiatives, the dean's office worked very closely with the schools to meet their staffing and financial needs. One specific initiative was the COS financial system that removed duplicated entries in the schools' information. Therefore, financial information can be accessed centrally rather than at individual schools. The financial director stated, "We standardize the processes across the college, so that if a change comes from the institute, a form changes or a process changes, we can make one change within our internal system that addresses all the problems." These initiatives continued after the crisis hit, so the college has not changed its centralized feature.

The College of Computing, however, was somewhere in between the College of Engineering and the College of Science with regard to its budgetary operations. It was quite centralized until a large budget cut in 2005. When a new dean was hired, the college was restructured, and it adopted a new budgeting model which did not fully fund faculty salaries and offered a small amount of operating funds to schools. However, everything else still remained central, and the dean had a great deal of control over resources. The schools did not have much

discretionary money as leverage. Faculty who had research grants could free up some of their salary funds for the schools to cover operational expenditures. Other than that, there were not many flexible funds were available at the school level. Nevertheless, in 2009, the college moved away from that model to one similar to that of the College of Engineering. Therefore, the college moved toward decentralization in recent years. However, by the time the study was conducted, it was uncertain in which direction the college would go. The director of business operations expressed,

> It's really been tough in this budget time because it's much cheaper to keep things centralized. You know, it's much cheaper to have one facilities department versus three or four. So it's been really tough to kind of come up with something that works, but the thought process was very similar in that the schools get a portion of faculty salaries, we used a formula to come up with a dollar amount for staff salaries that they should be given. And then we use their total research expenditures, you know what was the total, what was the portion for each school that contributed to the research expenditures.

Both the College of Management and the Ivan Allen College had some level of decentralization in their budgets and operations, but to what extent was not evident in the interviews. Also, the discussions around centralization and decentralization were divergent between two participants from these two colleges, one of whom viewed a decentralized system like RCM as a myth because she did not perceive everything to be decentralizable at a university. Nevertheless, they both contended that not much change occurred in college operations after the crisis.

Most participants across the varied units agreed that, in responding to budgetary pressures, colleges were given flexibility to make their own decisions on how to come up with the percentage of cuts. When it came to schools, it all depended on how their colleges operated. The College of Engineering, as previously discussed, adopted a relatively decentralized system, thus, the decisions for budgetary cuts were left to the school chairs. The College of Sciences,

however, was more hands-on at the college level for schools to meet cut requirements. Even though some school chairs were left with more discretion over resources than others, the discretion was limited. The big bulk of a school's budget is salaries, leaving a school chair little leverage. A school chair commented, "it's so little that the budget is actually discretionary, so much of it is all on salary that there aren't a whole lot budget decisions to make. Even though I make the travel decisions not everybody else even though I make you know materials and supplies or do we buy computers or not. I make all those decisions but they are very minor decisions." Again, this varies across schools as some school budgets are larger than others.

Generally speaking, on the academic side, the central administration has not decided to step in and micro-manage, according to a central financial officer. The only difference before and after the crisis hit is reduced discretion at unit levels, due to budget constraints, regardless of whether it had centralized or decentralized operations before the recession.

Non-academic Units

Impacts and strategies

In contrast to the academic units, the non-academic units neither experienced common impacts nor employed common coping strategies, due to their varied budget sources. Most of these units have non-state revenue sources, and for around half of them, state funds represent only a small percentage of their total budgets. For instance, only 2 percent or less of the Alumni Association's budget is financed by state budget resources. The Georgia Tech Research Institute (GTRI), Distance Learning and Professional Education (DLPE), and the Department of Auxiliary Services are basically self-supporting. Therefore, these non-academic divisions experienced varied degrees of impact from the state budget cuts and the financial market. Further, these impacts came mostly from the market rather than from state budget reductions.

Georgia Tech Research Institute

GTRI basically suffered no deleterious impacts from the crisis. Actually, its total revenue increased rather than decreased following the crisis. GTRI only had around 7 million dollars of state funds in FY09, which represented a very small part of its total budget. These funds were reduced due to budget cuts, but the reduction barely impacted GTRI since the rest of its revenues increased more rapidly after the crisis hit. These revenues, by and large, were research grants and contracts, which increased more substantively in the past three years because of the federal stimulus funds devoted to research.

GTRI attracts the largest share of Georgia Tech's sponsored funding and is the largest division in its annual budgets. As GTRI performs the most applied research at Georgia Tech, it contributes tremendously to the state and to the university; therefore, the President made the case to the Regents that researchers at GTRI should be exempted from furloughs, as they generate revenues. Thus, GTRI was not affected by state furloughs. However, GTRI is very conscious of how the money is spent on the one hand to be fiscally responsible, and on the other to help reduce costs. Therefore, there is an internal incentive to control costs to avoid budget deficits. As the cost control approaches were not responsive to the economic crisis, or in other words, GTRI was not in financial crisis, the participant did not address any specific cost saving strategies.

Distance Learning and Professional Education

Similar to GTRI, DLPE receives a small portion of state funding and is largely funded by revenues from offering courses and leasing spaces. It has four revenue streams: the professional education programs, the distance learning programs, the language institute, and the global learning center. The first three revenues are mainly related to course offerings, and the last basically involves leasing classrooms and conference rooms. DLPE's state funds were cut, but its

overall revenues have increased in recent years, so DLPE was relatively unaffected by the economic downturn overall, but its different programs were impacted disproportionally. The furloughs greatly impacted DLPE in that they could have generated more revenues if people had not been furloughed. There were also associated costs such as the opportunity cost and buildings' utilities costs. Other than the furloughs, the participants did not specifically mention other economy-based strategies for cost control. DLPE did not lay off employees, but it delayed some hiring in order to meet a zero-balanced budget. It was conservative on non-essential expenditures in the beginning of the fiscal year but did not continue afterwards. One argument by the financial manager was that cutting costs was short-term and detrimental unless it could be achieved through increased efficiencies; otherwise, the long-term strategy was to focus on revenue enhancement, which would not cut off future opportunities when the economy recovers.

Taking into account both the need to balance the budget at the end of the fiscal year and the long-term viability of the department, DLPE adopted a new forecast model in 2008 which called for monthly forecasts to analyze significant trends and to be responsive to the market. It is a new fiscal strategy to monitor expenditures. In addition, DLPE also created a new revenue stream the same year: writing research grants and other funding grants in partnership with other departments, units, or organizations both within and outside of Georgia Tech. These initiatives were not solely responsive to the economic crisis but were sparked by the crisis to some extent because DLPE had to offset the loss of state funds and develop its business at the same time.

Department of Auxiliary Services

The Department of Auxiliary Services is another division that is self-sufficient with some state support. Overall, the department did not encounter a decline in total revenues during the economic recession, but as it is part of the university, some of the campus-wide cutting strategies

were applied to this division as well, such as furloughs and the reduction of travel. The furlough program has impacted the Department of Auxiliary Services in a similar way to the academic units in that employees worked more with less. The campus cutbacks have led departments such as human resources and procurement to lose staff, which impacted the division in that the staffing level was below the increased level of revenue. Moreover, an overhead charge was implemented on the Department of Auxiliary Services in 2009, which was an additional loss from its total revenue. The department was also affected by the Board of Regent's guidelines stipulating that there would be no increase in mandatory fees, which is one of its revenue sources. Although the overall revenue has not seen a decline, there were areas that had declines, such as the bookstore, parking, retail space, and mail services. However, there were other areas that were growing, such as food service sales, housing, and hotels. All in all, as the Department of Auxiliary Services generally has been under pressure to reduce expenses and its total revenue has not declined, the impact from the economic crisis was not as striking in this division as in many other divisions.

Comparatively, other non-academic divisions experienced greater impact from the economic recession. Among them, the Alumni Association and the Athletic Association receive small percentages of state support; the Office of Development relies on state funds as a second major revenue source, and the Division of Student Affairs and the Enterprise Innovation Institute have more state funding. For these divisions, the state budget cuts and the market combined resulted in their total budget reductions, therefore, they suffered significantly from the financial crisis.

Alumni Association

At the Alumni Association, which receives a small amount of state funding, the impacts were pretty significant due to its declining returns from the Georgia Tech Foundation. The Alumni Association was about 70 percent financed by the Foundation and 30 percent by internal revenues such as advertising and royalties. The association raises money for Georgia Tech to give to the Foundation; the Foundation invests the money and allocates it back to the institution, and the institution then reallocates it to the Alumni Association. In FY2009, the donations went down about 10 percent in dollars although the number of donors went up about 2 percent. In addition, the advertising and the travel program revenues were also declining. The state funds, which represent about 2 percent of its total budget, were cut too. Due to these revenue losses, every aspect of its operations has retracted during this recession. However, the Alumni Association was able to manage the crisis without laying anybody off by the time the interview was conducted, but the number of staff declined from 53 employees to 48 between 2007 and early 2010. In addition to the elimination of positions, the furlough program also contributed to a savings of a half million dollars out of its six million dollar budget in FY2009. Besides these cost-cutting strategies, what the Alumni Association did was try to operate in a holistic manner and do things strategically. For instance, one strategy was to combine the publication *Tech Topics* and the Alumni magazine, which helped save 100,000 dollars. In this way, the reductions were made without eliminating the services that the Alumni Association provides to alumni, which is one of its fundamental missions. On the expense side, the association has been very careful in managing its costs; on the revenue side, it has been looking for more advertisers and sponsors and trying to build its travel program as well as its royalties and registrations.

Office of Development

The Alumni Association raises as much as 25,000 dollars annually, and the Office of Development at Georgia Tech raises a larger amount of money, from 25,001 dollars to millions of dollars. The Development Office is the major fundraisers for non-discretionary funds. Before the crisis hit, the Office of Development was 40 percent funded by state appropriations and 60 percent by strategic funds from the Georgia Tech Foundation. Even though the office's senior administrators presented the Office of Development as a revenue center rather than a cost center, it was not exempted from state budget cuts. It took the same cuts as all the other administrative areas, a 4 percent cut in FY09. The cuts were taken in infrastructure, vacated positions, and operational budget such as for computer replacements, conferences and travels. A major theme of its coping strategies was to focus on efficiency. The office reviewed its budgets more frequently and deployed resources to areas that had more income and potential development. The vice president for Development stated,

> We've told our staff that these budgets are not set stone. You are to use your budgets in the most efficient way possible to return revenue to the institution, and so everyone has kept their focus. No professional development unfortunately. (We are) looking at a variety of ways like that that we can cut, so that we can deploy every dollar possible toward revenue generation.

By the time the interview was done, the budget from the foundation had not yet been cut. There was an increase in gifts for operations, but at the loss of gifts for permanent endowment. Individual donors, who might have made a million dollar gift into the endowment, were now giving Georgia Tech's Office of Development the income from what that million dollar gift would have generated if invested in the GaTech Foundation. The reason was the economic impact on their primary constituents. Donors are more conservative about their donations than before. Therefore, the Development Office decided to prioritize prospect and donor engagement

as opposed to solicitation as the priorities during the recession. It did not put pressure on its staff to bring in gifts from donors; instead, it charged them with working on building and maintaining long-term relationships with donors, such as staying in touch with people, corporations, and foundations, and spending time meeting with new constituents, evaluating their ability to make gifts long term and engaging them with the Institute.

Athletic Association

The Athletic Association is self-supporting. Only 1.6 million out of a 55 million dollar budget in FY09 was state funds; therefore, the impact was due more to other financial losses than to state budget cuts. In FY08, the association lost 23 percent of its fundraising dollars invested with the Georgia Tech Foundation, which represented 10 percent of the total budget or 2.5 million dollars in FY10. As the association managers had anticipated the investment losses in 2009, they determined that they would have many meetings to figure out the ways to cut 2.5 million in FY10. First, they met with all the department heads that had budget responsibilities to send out the message about the 3-million-dollar impact on the association. In the meetings, they proposed that the association needed to operate in a more cost-effective manner. Later, they talked about eliminating positions and cutting back the salaries of existing positions, which created a tense environment all around. But before eliminating positions, they tried to cut from other areas, such as large purchases, external advertising, non-central business travels, and a lot of office-type expenses. For instance, the budget for publications was cut in half. These cuts could only help close the gap by one million dollars, so they had to further eliminate positions. By the time the interview was conducted, the association had eliminated four empty positions and laid off sixteen people. When it came to position eliminations, the fear was that if too much of the sport supporting budget was cut, its sports teams would lose their competitiveness with

peer institutions. To guarantee that the student athletes would be able to meet certain academic benchmarks, it eliminated only four positions in the academic support area. It is worth mentioning that about 70 percent of its budget went to support student athletics, so the areas that ended up getting cut were administrative ones. The Athletic Association tried to cut as much as it could from those areas. For example, it had a large marketing budget of about $600,000 for television advertisements. The association cut that budget in FY10, thus relying more on its teams', performance on the field to bring in fans to the games.

Obviously, the cuts have affected the staff's career and professional development due to reduced conference travels, and they have created morale issues because people have had to work more for less. Lay-offs were a devastating blow to those being laid off. The meetings the association had earlier intentionally prepared people for potentially losing their jobs, which assuaged the blow somewhat when the lay-offs really occurred. People who kept their jobs also underwent additional pain from the six-day furloughs. It was uncertain if productivity was affected by furloughs, as people had to work the days before and during games, regardless. In addition, the days were taken off only if they did not affect day-to-day operations.

On the revenue side, the Athletic Association got a million dollars from the Atlanta Coast Conference (ACC) out of a rainy day fund. Also, the association signed a couple of sponsorship agreements in 2009, which generated approximately one million additional dollars of revenue. However, these surpluses were invested in the same type of accounts in the Georgia Tech Foundation, so their value also lost 22 percent. Taken together, the investment with the foundation ended up losing 1.8 million dollars in FY10. The increased mandatory student fees might have contributed to their total revenue to some extent. The association also had a 20-million-dollar bond issue which helped build a practice facility for the basketball team in the

middle of the crisis. Further, it was in an exploratory phase to redo the basketball arena, a project which could hopefully generate more revenue. In addition, it hired a new football coach in 2008 improved team performance. Therefore, the expectation was that its team would win more games and bring in more fans to increase ticket revenue. Also, ACC was expected to generate more revenue from a new contract with television networks. Nevertheless, the ultimate solution to the 22 percent loss of its investment was to wait for the stock market to come back. The financial officer mentioned that as long as they could get through FY12, they would be in good shape, as the current television contract would expire in 2012 and additional revenue would be generated with a new television contract. He remarked, "We think the exercise last year forced us to get our expenses bare-boned. We are very streamlined on the spend side, so if we get our revenues where we think they can be in the next couple of years, we think we are in a position to really be pretty strong for the long run".

Enterprise Innovation Institute

The remaining two divisions are more state-funded than self-supported. The Enterprise Innovation Institute (EII) is one of the B-units that are fully appropriated line items within the Board of Regents system. In FY09, about 44 percent of its budget came from the State and 27 percent from federal sponsorships. As it is a separate entity from Georgia Tech, it only got about 2 percent of its revenue from Georgia Tech. Besides, EII also has departmental sales, indirect revenue from contracts with outside industries, and earmarked research consortium funds.

Both the money EII got from the state and Georgia Tech was cut. More specifically, about a third of its state budget was cut in the last 18 months before the interview was conducted, which was a dramatic impact on EII. About 78 percent of its budget went to personal services and fringe benefits; therefore, EII first had to reduce employees and their working hours. It also

reduced spending on travel but there was not that much to reduce as travels only represented about 3 percent of its total expenses in FY09. The chief finance officer stated that EII suffered more than the academic units as it has a definable budget which can be cut directly by the state than being buffered by the Board of Regents. As in FY09, it got a 2 percent cut on May 28th, one month away from the end of fiscal year, which would have been very devastating if it had not taken cost reducing action before the cuts actually happened.

Nevertheless, EII has managed through those cuts through other strategies in addition to reductions in personnel and travel. Much of EII is not located in the building on Georgia Tech campus. There were twelve offices located all around the state. It reduced the space of these field offices so that it paid less rent. It also reduced the on-campus office space by about 11.6 percent. Accordingly, it was resizing the organization to the number of people and to where they were located. In addition, it merged two units: entrepreneurial services and commercialization services. Another initiative was to change the membership criteria to become a company member of ATDC and increased member companies from 40 to 300. Another thing it did was an organization-wide review of new revenue opportunities. It came up with 193 of them from all over the organization and selected 10 out of the total 130 people to pursue these opportunities. Thus, further diversifying its revenue was another strategy for the future survival of the institute.

However, EII experienced negative growth because of the budget cuts it was experiencing. The chief finance officer argued that the total budget pie was shrinking to the point where it might not even be able to go after new federal funds, because it could not meet the cost-share requirements with the remaining money. The reduction in travel affected EII's ability to go out and get contracts. Again, new contracts need matching funds, but fewer state funds were available to cover the cost-share. The number of its industry contracts was shrinking because of

the economy. Its productivity in regular operations and opportunities was also affected by furloughs. “We have to be very cautious of what we do right now”, a financial officer commented on coping with the crisis in FY11 and FY12.

Division of Student Affairs

The Division of Student Affairs mainly relies on the state budget and student fees, each accounting for four million dollars in FY10. Besides, it has budgets for orientation, a recreation center, and other activities from charges passed on to students and parents. It also has fundraising accounts to support operations in the division. When the state budget was cut− more specifically, a little over 11 percent in FY09 and FY10, or a total of $5,000 dollars, was cut from its state funding −its major strategy was to cut the operating budget, including the money set aside for travels. Student fees gave it more leverage to generate additional revenues to offset some of the state budget losses. For instance, the recreation center had a large budget that by and large came from student fees assessed for recreation. It was able to bring in more revenue with the facilities it has. Areas like the tutoring program and counseling center were places that could implement new fees to students for services but had not enacted this by the time of the interview. Those new fees were in the process of being approved by the provost’s and the president’s offices. That’s to say, many programs and services, formerly offered for free, could not be provided gratis any more due to the budget cuts.

Career Services reorganized based on the budget cuts. The Vice President commented, “Reorganizing is part of the process, I think, when you start losing money, to try to create strengths in different areas, to provide the services and programs that you want to provide to students”. Another response to the cuts was to increase fundraising. The fundraising goal for the Division of Student Affairs was 15 million dollars. The process of fundraising in Student Affairs

started three years before the interview was completed. It hired a full-time fundraiser for this campaign with an expectation to successfully raise money from parents, alumni, and corporations. All in all, division wide, it was prioritizing and strategizing on different programs and services in the various units faster than before the crisis.

To sum up, GTRI was the division that was most intact from the crisis. DLPE and the Auxiliary Services were not affected by the crisis as their bottom-line had increased total revenues. The Office of Development also managed well through the past three years without suffering a decline in fund-raising revenue. The Athletic Association and Student Affairs were able to offset most of the losses from other revenues. The Alumni Association, the Athletic Association and EII all incurred shrinkage in their operational scales to meet fiscal balance.

Budgetary changes

The annual Georgia Tech Budget Summary series FY08 – FY11 provided revenue budget by non-academic division FY07 – FY10, which is presented in Table 6. The numbers in the table for GTRI, EII, Auxiliary Enterprises, and Student Activities were their total revenues. For Resident Instruction Divisions, except for DLPE, the revenue data excluded department service sales and sponsored funds.

As shown in the table, GTRI had a faster growth in its total revenue after the economic crisis hit, a 33.5 percent increase between FY09 and FY10 as compared to 2.2 percent between FY07 and FY08. EII's budget increased in FY08 but then dropped continuously in FY09 and FY10 to below the level of FY07. The Department of Auxiliary Services grew continuously across the years, with similar rate increases in FY08 and FY09 and a slight increase in FY10. DLPE maintained a slight but steady growth across the years. Student Activities' budget includes some of the Athletic Association revenue and the Division of Student Affairs revenue, which

makes it hard to divide between the two divisions, but the numbers combined with those of Student Affairs indicate a steady increase year by year. The endowment funds as well as other gifts and donations were not provided and thus are not shown in the following budget of the Office of Development and the Alumni Association; therefore, the budget information here does not capture the overall trends for these two divisions. What we can tell is that the Alumni Association receives few state dollars, and state investment in the Office of Development has been relatively stable even though there was a drop in FY10.

Table 6: Revenue budget by non-academic division (in million dollars)

	FY07	FY08	FY09	FY10
Georgia Tech Research Institute	139.26	142.30	170.80	228.02
Enterprise Innovation Institute	26.91	34.48	30.77	24.76
Auxiliary Enterprises	87.43	99.75	113.65	116.74
Student Activities	10.82	11.92	11.82	14.83
Resident Instruction Divisions				
Student Affairs	4.10**	4,33	4.67	4.52
Development	2.54**	3.45	3.85	3.59
Distance Learning and Professional Education*	23.50	25.01	25.40	25.92
Alumni Association	.11**	.11	.12	.14

*Note: *DLPE data are total revenues. **Numbers were calculated from other budget documents than from the annual Georgia Tech Budget Summary.*

The budget above does not provide a holistic picture for all the non-academic divisions except GTRI, EII, DLPE, and the Department of Auxiliary Services, four separately funded or self-supporting divisions. These non-academic divisions vary in their budget situation each year but overall have not been greatly affected by the economic crisis in terms of growth and entrepreneurship.

Trends of centralization/decentralization

The non-academic units operate more like businesses as opposed to the academic units, so they were more consistently decentralized with regard to their relationship to the institution

than the academic units before the crisis. The economic crisis has changed the ways they operate to varying degrees, but generally, these units are still decentralized from the central administration within the institution's guidelines and regulations.

The financial officer of GTRI commented that "our director reports to the university, so a lot of policy decisions flow down…there is a direction from the university level, but day to day, we pretty much operate [on our own]". As was discussed earlier, GTRI did not incur losses in its total revenues and was relatively unaffected by the crisis, so that there was less pressure for changes in its operations. As always, it responded to the market in a timely manner to adjust the areas of research, and imposed strict fiscal guidelines for allocation and use of funds at administrative units and research labs when the recession came. Its budget was still adjusted once a quarter. Before and during the recession, GTRI as a whole was decentralized, but individual units within GTRI did not have much leverage in reallocating their resources.

GTRI is a unique division at Georgia Tech in that it has not been subjected to furloughs and additional "taxes" by the central administration, which differentiated it from DLPE and the Department of Auxiliary Services. Both DLPE and Auxiliary Services operate as business models. However, as opposed to GTRI, they have experienced more central control during the recession. The institution imposed furlough programs on both divisions and imposed an overhead fee on Auxiliary Services and a 5 percent tax on distance learning tuition. Also, they confiscated the revenue from the furloughs and 3 percent of the budget cuts, as did most other divisions. Therefore, budgetarily, they encountered more central curbs, but operationally, they still had autonomy in daily management. The Financial Officer of DLPE remarked, "Honestly, I think they view us as a black box…they don't know how we do it. As long as we aren't sending back deficits, they don't care. As long as we are supporting ourselves, as long as we balance to

zero, or higher than zero, they don't always [care]". The financial officer of Auxiliary Services similarly stated, "So, we are given the opportunity to say that this is what we would do in order to accommodate that 3 percent cut. We had no feedback from central administration on what we suggested to deal with these implemented changes."

It is the same situation with the Office of Development. The office did not incur declining revenue in fund-raising before the interview despite state budget cuts. Its assistant vice president stated, "it's up to the institution to make the decision about what our balance is between state funds and Georgia Tech Foundation private funds…the president decides if we are cut or if we remain stable or wants to add more money to it because, you know, if he adds money to us, we will go out and raise more money." She also commented, "The decisions about where we are going to cut have been made internally. How we go about doing our business is certainly directed by our vice president. But I would say that institutionally, the cuts are being implemented across the board. It's been left to the individual department to figure out where in their organization that the cuts need to occur, and those decisions are made inside the units."

Similar comments were made by participants from the Athletic Association, EII, the Alumni Association, and the division of Student Affairs. They pointed out that the division heads all report to the president or participate in meetings with the president so that the central administration can make sure that these divisions operate within institutional policies and procedures and fulfill certain responsibilities; other than that, the president's office does not interfere with the day-to-day operations of the divisions. During the recession period, state mandates such as furloughs came down to the divisions, as did new institutional policies−on hiring, for example. That is, there was a trend toward centralization for cost control.

From a fund-raising perspective, the Assistant Vice President for Development remarked,

> I think from a central perspective, the central administration has a much better view of where these redundancies take place, and therefore centrally may have to as we look at further cuts, you know, look at where there are those redundancies and where things have been generated that may not be much critical, and rather than continue to cross the board cuts, there may at some point be a need to look at problematic cuts.

All these divisions viewed themselves as entrepreneurial or commercial, which fosters decentralization on campus. As reflected by the Vice President of the Alumni Association's remarks,

> You know Georgia Tech is one of those strange places that are very entrepreneurial. That's a strength, but it's a two-edge sword. That entrepreneurial spirit breeds decentralization and lack of control. I think the way to answer [the question about centralization] is we try to leave them alone as much as we can, but we do need to centralize some certain things to gain more economic efficiencies.

With regard to operations within divisions, participants from four divisions perceived their divisions as centralized. The following two participants made similar comments:

> They (departments) each do things that are so different than the others that they have to run their own departments but they are all subject to budgetary review, budgetary approval, and capital budget approval. We have several large projects that are in process right now. And we are watching those budgets very carefully…And those things, we are very sort of centralized and looking at what we are going to do but each department has its own reserves it has to use to do these things.

> All the money further comes in, so there is a big buck of money. And we fund; we pay for the rent; we pay for the utilities, all the plant cost; we pay for those administrative costs centrally. Then we allocate money out to the each of the seven labs, and they pretty much…Now we have some pretty strict guidelines and we review it every month. We have budgets before the beginning of the year. We review our actual [spending] compared to budgets every month. We calculate our overhead rates every month. So I would say that fiscally we are very responsible, and have very good practices. But we do allocate money out to the seven labs and they get to manage that money. We still watch it and do monthly reports that they have to spend it within certain guidelines. But we do pose money out to the seven labs. So the central cost, we pay up front, like the utilities, the rent, [and] the oddment. But then the rest of the money, we push out to the labs and let them spend it. So the labs would be sort of like colleges, but we do have guidelines for how they spend it. So they have a budget and they can spend a certain amount on say DNP proposal work on a certain amount and you know if they want phone, a certain amount on, different kinds of cost, categories of cost. And if they want to change that proportion, they have to tell us.

A financial officer from a division expressed the budget cuts as one reason for centralization in his division:

> We ended up with a budget that's about 3 million dollars less than the one we had last year. And as far as how it affected our management, I think we are much more centralized. We got everybody I think as much more hands on. There is not as many people to delegate things to anymore, so everybody has to be more…I think it forces you to look at every function in your office, thus decide is it central or not. And if it is central, people have to talk roles they didn't previously do because the support staff isn't here. It isn't as big as it used to be.

One Vice President perceived his division as decentralized, as reflected in his following comments:

> I don't say to everybody you are giving back 3 percent. We might take it a little bit more from one area than another area depending on priorities…And so I decided we are not going to reduce our counseling center budgets at all. And so then I ask other departments within our division to give back a little bit more, so that I didn't have to reduce. So then I gave a goal to each of our departments and then they decide their departments, working with their staff, how they are going to come up with that money. And it's kind of a reiterative process, where we talked to the directors quite a bit, saying we are thinking of doing this, what does this mean to your department, how would you come up with some money, how can you get creative to deal with this. And then we eventually hone in on what believe we our recommendation should be.

Participants from three other divisions did not specifically address their management approach from the perspective of centralization and decentralization.

To sum up, the non-academic divisions were independent of state and institutional budgets and thus were decentralized from the central administration before and during the recession. The economic crisis has varied impacts on them, but their relationship to the central administration has not changed much. However, there did emerge a centralizing trend due to financial contingency among most of these divisions.

Summary

Generally speaking, after the crisis hit, Georgia Tech underwent a process of "centralized decentralization" with more budgetary control and focus on efficiencies as a response to the crisis. That is, the basics of its decentralized functions and processes have not changed but a layer of central discretion was added to certain areas. Since the onset of the recession, the central administration has centralized budgetarily and operationally in some areas, such as hiring and campus-level cost-cutting and revenue-enhancing initiatives, but still decentralizes decision-making to individual divisions. Divisions differed in their operations and varied in their budget cutting strategies. Budget cuts have not greatly changed the way they operate, but have resulted in centralization within divisions due to funds being pulled back to deans' and vice presidents' offices to meet budget reduction requirements. Organizationally, there was also a centralizing trend both at the central and divisional levels as both central office(s) and departments reorganized to consolidate units/offices after the crisis hit.

CHAPTER VI

CONCLUSION

This chapter summarizes the results and addresses the research questions introduced in Chapter One. Then, it discusses implications of the findings. Finally, it concludes with recommendations for future research.

Answers to the Research Questions

This case study involved in-depth interviews with twenty-six campus managers at a public research institution to investigate its coping strategies and explore new trends of campus management during the recent economic recession. The investigation was guided by the following five major research questions:

1) How did a public research university respond as the current economic crisis emerged?
2) What changes took place in the locus of decision authority during the crisis? Why?
3) How did individual units vary in their specific strategies and approaches to dealing with the cuts and revenue losses?
4) How did the economic crisis influence the entrepreneurial activities of individual units?
5) Are there emerging trends in operational approaches in this public research university?

In the Results Chapter, the interview and documentary data from the study were analyzed and presented within four themes. In the following section, I will synthesize these themes to address each of the above research questions.

How did a public research university respond as the current economic crisis emerged?

The university studied utilized various cost-cutting and revenue-enhancement strategies, both strategic and contingent, to address the financial impact of the economic downturn at all levels. The cost-control strategies can be summarized as: (1) mandatory state furloughs; (2) management of personnel expenses, such as elimination of positions, delay in hiring or filling positions, reduction in hours of staff in selected units, reduction in student hires, delay of start-up funding for hiring new replacement faculty, reduction in numbers of visiting faculty and scholarly lectures, reduction in travel, and layoffs; (3) reduction in seed funds for new research initiatives and course development; (4) controlling facility and maintenance costs, such as delays in replacing laboratory, computer, and research equipment; (5) a curtailing or eliminating selected facilities operations, such as reductions in custodial and ground support duties, elimination of window washing contracts, and restrictions on new landscaping projects; (6) financial management, such as suspension of several business process improvement initiatives, combining responsibilities of an institute treasurer and an assistant bursar, and applying technology to compensate for staffing shortages in the business offices; (7) reduction in library purchases and student services; and (8) reorganization of departments and offices. The revenue increase strategies included: (1) implementation of an overhead fee for auxiliary enterprises; (2) increasing summer program offerings through an incentive allocation program, increasing registration and tuition revenue; (3) selected charges imposed on students for services that were previously free, such as transcripts and other registrar services; (4) increasing tuition levels and implementing differential tuition; (5) a fund-raising campaign to generate new revenues; and (6) promoting research activities. In addition, Georgia Tech continued to invest in information technology as a long-term strategy to ensure institutional effectiveness and efficiency. The new

strategic planning was also ongoing when the study was conducted, which was intended to guide Georgia Tech through the current recession and toward its five overarching goals over the next twenty-five years.

Overall, at both the central and local levels, personnel expenditures were addressed as a big bulk in Georgia Tech's budget; therefore, reducing expenses for personnel was the most important strategy for cost containment to meet budget cut requirements. Discretionary components of the budget, such as travel, training, supplies, and equipment, were another substantial category for reducing expenses. As for increasing revenues, focusing on student revenue – increasing tuition levels, implementing differential tuition, charging student user fees and registration fees – was among the top revenue-enhancement strategies at the central level. Another top strategy was to attract more research dollars by pursuing federal stimulus research grants. For this purpose, the central administration of Georgia Tech successfully exempted its GTRI from mandatory furloughs and thus, saved losses in research grants. Georgia Tech was also engaged in fund-raising campaign efforts at all levels to increase its endowment funds.

A recent Delta project reported findings different from earlier results suggest that colleges and universities were responding to economic difficulty more strategically than they used to be (Kiley, Sep 2011). Compared to this finding, Georgia Tech as a whole also took a more strategic approach to cuts rather than a more traditional one. That is, the cuts were not met solely through strategies such as cutting travel and freezing salaries and hiring; rather, they were met through a strategic combination of approaches, such as reducing administrative costs and consolidating functions (Kiley, Sep 2011). Across-the-board cuts were avoided and instead cuts were made on functions outside of teaching and research to protect the academic core at both the

central and local levels. Evidently, a radical approach was not attempted in this institution to handle financial distress during this recession.

What changes took place in the locus of decision authority during the crisis? Why? During the recession, the locus of decision authority has not changed substantively, especially within divisions. Campus wide, some budgetary controls shifted from division heads to central administrators. The most evident instance is the hiring memorandum imposed in August 2009. This memorandum added another layer to hiring decisions normally made at the division level before the crisis. The approval of the provost and executive vice president is now required prior to the filling of any existing positions, the creation of new positions, or the reclassification of a filled position with some exceptions, such as the replacement of tenure-track faculty positions and student hires. However, the decision of which person to hire still rests with academic as well as administrative units. In this regard, the change was not dramatic.

Besides specific practices, the budget cut requirements decided by the central administration concentrated resources centrally and left local units with fewer resources. In addition, the budget cuts were absorbed mostly at the central level rather than the local level, and a central reserve was built up to prepare for the anticipated loss of federal funds. All these actions apparently intensified the central authority over disposal of resources and thus, shifted the locus of decision authority more to the central administration and away from the local level.

How did individual units vary in their specific strategies and approaches to dealing with the cuts and revenue losses? Individual units varied in their coping strategies to the crisis due to their differences in revenue sources as well as management models. Overall, academic units shared more common strategies than did non-academic units. In other words, there was a smaller

variation among the colleges/schools than among the administrative/business units in their responses to the financial crisis.

All academic units were faced with state budget cuts, and most of the required cuts were met through common strategies, such as taking furloughs, eliminating positions, freezing faculty and staff hiring, eliminating travel, reducing student assistantships, and reducing waste. They also chose strategies suitable to their own budget and management situations. Some units, such as the School of Electrical Engineering and the College of Sciences, reconfigured their organizations to reduce staff size and increase efficiencies. Other units, such as the College of Sciences, encouraged faculty buy-outs to replace faculty with cheaper part-time instructors. The School of Public Policy and the College of Management employed new hires to meet instructional needs; however, the College of Computing and the School of Electrical Engineering mentioned they hired faculty only through replacement.

Colleges and schools differed more in their strategies to increase revenues. The College of Management relied more on tuition revenues from its MBA programs. The College of Sciences increased its lab shop fees and differential tuition rates. The School of Mechanical Engineering managed to increase its endowment funds and the School of Electrical Engineering was able to boost its research grants.

With regard to the management models, the College of Engineering and the College of Sciences adopted divergent models – one is decentralized while the other is centralized. The College of Engineering employed a workload model that proportionally allocates resources based on a unit's workload. In contrast, the College of Sciences designed a financial system to centralize some functions and streamline operations. The College of Computing was in-between the Colleges of Engineering and Sciences, attempting to move away from a centralized model to

a relatively decentralized one. The College of Management, as a professional college, was also relatively decentralized in managing its various MBA programs, whih continued to attract tuition revenues after the crisis hit.

The non-academic units were more divergent in their financial situations and corresponding reactions. GTRI was not in financial crisis but actually had continued revenue increases after the crisis hit. It did, however, respond to new market needs to shift its focus areas of research. DLPE and the Department of Auxiliary Services are self-sufficient and run in business models. State funds represented only a small share of their budgets, and so the cut in state budgets did not affect them to a large degree. Their revenues from other sources were able to offset state shortfalls and surpass revenues in each of the previous years. DLPE adopted a model in 2008 to forecast, on a monthly basis, the monitoring of expenditures, and created a new revenue stream to attract research grants the same year. It also adjusted its existing programs to meet new market demands. The Department of Auxiliary Services outsourced some functions and reinvested in areas that were revenue-generating, such as food services, housing, and hotels.

The rest of the non-academic divisions experienced greater impact from the downturn, with varying amounts of budget cuts and financial losses in total revenues. The Alumni Association and the Athletic Association received a small portion of state support and relied more on non-state revenues. Due to the market crash, both of them received declining returns from their investments with the Georgia Tech Foundation. The Alumni Association eliminated positions and reduced its staff size, reduced the number of publications, and retracted its operations to contain costs. It also looked for more advertisers and sponsors. The Athletic Association also eliminated positions, laid people off, and cut salaries and office expenses. It relied more on sponsorship agreements signed with the Atlanta Coast Conferences (ACC) in

2009 to generate extra revenues. Besides anticipated revenues from the ACC, the association also expected its teams to increase ticket revenue.

The Office of Development, EII, and the Division of Student Affairs received a higher percentage of state funds and thus, were more adversely impacted by state budget cuts. However, the Office of Development was able to beat its fund-raising goals and offset the loss of state dollars. EII encountered the biggest challenges due to state cuts. The cuts in FY09 force EII to eliminate or leave vacant ten professional and support positions, for a saving of $1.1 million. Additional positions were expected to be cut in FY10, and two regional offices reduced their space requirements by more than 50 percent. The FY10 cuts forced EII to drastically reduce activities for the Traditional Industries programs. In a sense, EII was cut to the bone. It reorganized units and performed organization-wide reviews for new revenue opportunities. The Division of Student Affairs was able to bring in revenues with its current facilities and an increase in student fees for services. It also reorganized units and increased its fund-raising efforts.

How did the economic crisis influence the entrepreneurial activities of individual units? This question was not specifically addressed by many of the participants, but a majority of them generally indicated that they have always been entrepreneurial. From the research activities and other revenue sources reflected in the revenue budgets of divisions, it is evident that the recession, overall, has not hampered individual departments' entrepreneurial aspirations. Interviews with some divisions did reveal that the recession has, to some extent, halted or slowed down the progress of some existing entrepreneurial programs. Also, new initiatives were affected because of the lack of start-up funds, as mentioned by a central financial officer. However, the entrepreneurial spirit has not changed, which was reflected both in the interviews and Georgia

Tech's new strategic plan, the third goal of which is to "ensure that innovation, entrepreneurship, and public service are fundamental characteristics of our graduates"(p.14). As a matter of fact, the non-academic divisions have been entrepreneurial, developing new initiatives and pursuing new revenues during the recession, and some of them have been successful.

Are there emerging trends in operational approaches in this public research university? The answer to this question is based on the answers to the first four questions. The answer to the second question addressed the shift in the locus of decision authority from divisions to the central administration. This shift also represented a trend toward centralization at the institutional level but was not radical in scope, with only some budget areas affected rather than major operation processes, which was reflected in the strategies employed at all levels to cope with the financial distress. Except for some campus-wide strategies such as furloughs, hiring freezes, and summer programs, individual divisions were granted responsibility and authority to meet the required cuts. Just as all the participants contended, the budgeting system and the general operation processes have not changed since the crisis hit. In other words, decisions on how to cut and where to cut, which people to hire and fire, and so on rested with deans and school chairs both during and after the recession. The only differences after the crisis hit, as mentioned in the answer to the second question, were that fewer disposal resources were left at the individual units, and the required cuts were decided at the central level, which suggest a tendency toward centralizing resources at the central administration level, which has more control. Another case is its continued investment in its institutional IT system despite budget shortages. Peterson (1971) noted that technology is one determinant of campus centralization as its development requires centralization to ensure its efficient use.

Despite the centralizing trends in some administrative functions, the campus culture of entrepreneurism has not been affected by the economic crisis as reflected in a majority of the interviews. Actually, the newly implemented Georgia Tech strategic plan – *Designing the Future: A Strategic Vision and Plan*, explicitly listed entrepreneurship as one of Georgia Tech's seven values. In addressing the third goal, the plan stated "our campus culture needs to be one that supports innovation, entrepreneurship, and public service just at it does teaching and research" and "policies that govern faculty activity will be designed to encourage the innovation process, including flexible work status, leaves of absence to pursue entrepreneurial interests, and sabbaticals with companies that are partnering with Georgia Tech on intellectual property development" (p.14-15). Apparently, this technology-based institution will continue to build up its partnerships with corporations and industries and commercialize its research products. Further, the plan encourages engagement of faculty in entrepreneurial activities through relevant policies, and this encouragement extends to the tenure process. It seems likely that the institution will go further with its entrepreneurial and decentralized approach. However, the timeframe of this study did not allow the investigation to continue after the implementation of the new strategic plan.

In all, the interview data, in addition to the document data of this study, reflected a centralizing trend in some budgetary and functional areas, but the general operations on campus still remained the same after the crisis hit. However, there may be another decentralization trend in operations at the local level after this study was conducted. One reason for this possibility is that the new strategic plan fosters faculty entrepreneurship, and another reason is that the entrepreneurism of the non-academic units has not been affected by the economic downturn. Almost all of the participants agreed they were and still are entrepreneurial in various aspects. This trend, however, could not be confirmed during the period of this research study.

Discussions

The strategies Georgia Tech used at the central and local levels to address to address short-term needs and long-term prosperity were both contingent and strategic. To a great extent, the cutting strategies were contingent in the beginning of the recession as most of the cuts were made in personnel areas, supplies and equipment, instructional areas, and support services, where cuts were easy and did not need careful examination to quickly meet reduction requirements. A school chair stated, "It's hard to do something strategically in the middle of the crisis. Some of the things were strategic; some of the things probably needed to be done [quickly]".

Nevertheless, Georgia Tech did react strategically as the recession continued. At the central level, different cuts were imposed on academic and administrative units in FY2009 and some areas, such as the police department, grants and contracts administrative support, student counseling services, and internal audit, were exempted from being cut. In addition, the central administration successfully exempted mandated furloughs on GTRI to prevent losses in research revenues. Further, the Office of Administration and Finance reorganized its structure and streamlined functions to provide enhanced executive support to the President and campus. The central administration also used the crisis as an incentive for initiatives that could not have been accomplished during economic good times, such as investments in the central IT system and e-procurement. An executive VP stated, "This really is an example of where a crisis has actually given us an opportunity to do things we would not have done I believe. It would be more difficult to get people around the table to pay attention to it." These initiatives also took place at UC-Berkeley, UNC-Chapel Hill, and Cornell University, institutions that explored areas to encourage efficiency (Kiley, Sep 2011).

Besides the actions taken by the central administration, similar actions were also taken at

college and schools. For instance, a school was able to close a machine shop of limited use. Its chair commented, "I think overall that was a sound strategic move which probably couldn't have been done easily without the crisis." The College of Sciences has had streamlined operations using a centralized financial system, which gave it more opportunities to make strategic moves during financial distress. For instance, it reduced use of part-time temporary instructors but at the same time used faculty buy-out for lower cost instructors.

In terms of long-term strategies, the institutional strategic planning started in 2009 was an impetus for individual units to reexamine their goals and priorities. The planning process has helped units spend more strategically and plan for the long run. Nevertheless, some colleges already had good initiatives and practices from a long-term perspective before the crisis, for example, the College of Sciences' financial system, which increases efficiency and reduces duplications, and the College of Engineering's workload allocation model, which motivates schools for increased productivities. Other colleges reconsidered their models or programs for revenue opportunities during the recession.

Taken together, Georgia Tech is a distinct university that has resources to be able to respond to the financial crisis more easily than many institutions that are more dependent on instruction for revenues, and thus has not made any radical changes in its operations. Its size and complexity in organization allowed various strategies to be chosen at different levels to buffer financial impacts. Its feature of mixed centralization and decentralization also facilitated the flexibility of units in different responses. Leaders of institutions alike can refer to the practices examined in this study for better decision-making.

Implications

Conducted in the middle of the current economic slowdown, this study has practical

implications for campus managers who are confronted with continued financial challenges. Besides generic cost containment strategies, campuses should also explore ways to invest in new areas for long-term efficiency, such as reorganizing administrative structures in areas of purchasing, human resources, and IT management.

One of the study's aims was to investigate trends in institutional management during the economic downturn from the perspective of decentralization. A recent *Inside Higher Ed* Survey of College & University Business Offices suggested that the current financial downturn has been a catalyst for some campuses to migrate to new budget models, but the survey report did not specify the direction of the migration, from decentralized models to centralized models, or the opposite (Green, Jaschik and Lederman, 2011). In the case of some institutions, the attempt to change was bi-directional. Vanderbilt University adopted greater budgetary centralization in academic year 2009-10, and Cornell University was considering moving toward more central budget control; in contrast, UCLA's business school was seeking a different direction (Stripling, 2010).

The trend toward centralization found at Georgia Tech has implications for public institutions that are considering a different model. First of all, the centralizing trend at Georgia Tech was partially due to state control. Georgia Tech, together with other public institutions, had to follow state mandated actions, such as furloughs, to meet cut requirements. The relationship between Georgia Tech and the state played a role in determining campus management approaches during budgetary shortfalls. The latest Delta Project Report (Desrochers and Wellman, 2011) pointed out that public institutions are still chartered to serve public purposes despite fewer public appropriations. Therefore, public institutions cannot deviate from state guidelines and regulations. Second, the extent of this trend was relevant to external resources

available for Georgia Tech to offset state budget cuts. Third, the extent of centralization was also related to the campus culture which either supports or opposes a radical change. Georgia Tech has always been a relatively decentralized institution because of its fields of research and its links to corporations and industries. Its decentralized budgeting system was in place for a long time, so it was difficult to initiate fundamental changes to happen. Fourth, the leadership mattered.

In light of these points, a more in-depth discussion of the Georgia Tech case is appropriate to better inform managers and leaders. The data of this study indicated that the university investigated did not make radical changes to its existing budgeting system and management approach amid the economic recession. There are several reasons. First of all, the institution was not in such a difficult situation that rigorous steps had to be taken to preserve its business. Georgia Tech has always relied on sponsored funds and this revenue source did not decline during the recession. Moreover, tuition charges are another potential source for revenue increases as the tuition levels in Georgia remained relatively low compared to many other states. Georgia Tech tried to make an argument to the Board of Regents that its tuition levels were below the average of its peer institutions, so it should be allowed to increase tuitions. Tuition revenues were anticipated to increase with increasing student enrollment. According to a central financial officer, Georgia Tech would not encounter an enrollment problem as more students always apply than are accepted. Another reason is that the campus was engaged in creating its new strategic plan under the leadership of a new president. It is evident in the new strategic plan that the new leadership supports campus innovation and entrepreneurship, which suggests that the president chose to preserve and foster the institution's culture in those regards. A complete change to a centralized system would be counter-active to facilitating innovative and

entrepreneurial activities. The participants conveyed their general content with the autonomy they had and their compliance with campus regulations through regular communication with the central administration. The final reason Georgia Tech did not make radical changes to its budgeting and management approach is that campus managers made a united effort to get through the difficult time. Rarely did the researcher get the impression from a participant that a different approach should be taken by the central administration to deal with the budget cuts. Almost all of the participants seemed to be willing to meet the requirements decided by the central administration. Obviously, the campus was in harmony rather than turmoil after financial difficulties occurred, which renders smooth changes more palatable than drastic ones.

The centralizing trend occurred as a matter of some budgetary controls, but in terms of general operations, it seemed that decentralization continued during the recession and after at the local level, given sustained efforts in entrepreneurship in various aspects. It was not clear in this study if these two trends would conflict with each other, but if well managed, they can exist together in a system. Just as the Executive Vice President commented, "Well, if we are doing our job effectively, we are looking at where we need to be central and where we need to let things remain at local level. There is no good model that takes everything and makes it central because it's probably going to hamper something at the unit level, and vice versa. There is no completely decentralized model because if you would have to do that, every unit would have built in capabilities to do everything and there would be redundancy across all these different units. And there is probably very poor integration, so [there is] something that is definitely in the middle." From this perspective, campus managers who are interested in transforming their institutions can choose appropriate strategies to avoid conflicts and opposition and make changes more smoothly.

Recommendations for Future Research

Little research has been conducted to examine institution-level decentralization, so it is an area that needs further research. One recommendation for higher education scholars is to include the perspective of faculty and staff in examining a decentralized system. This study of campus management only took the perspective of administrators. Further studies would benefit from including the opinions of faculty and staff who may have a different view on the authorities and responsibilities they have in managing their academic affairs. The gist of a decentralized management system is delegated authority to subunits of an organization. Faculty and staff normally work at the local level, so their viewpoints can supplement those of deans, school chairs, and local budget officers.

Scholars can also further investigate the reasons why an institution with a mixture of centralization and decentralization chose to centralize or decentralize in some areas. This study only generally looked at emerging trends rather than dug into the underlying reasons for these trends. It would be interesting to conduct more in-depth interviews with participants who are knowledgeable of campus changes or who have expertise in this area to further understand the trends.

This study employed a single case-study approach. Scholars can also utilize a survey investigation, a multiple case-study, or a quantitative analysis approach to examine multiple institutions. Such a study can provide a holistic picture of institutions that adopted some variation of the decentralized management approach and explore their similarities and differences.

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APPENDIX A – INTERVIEW PROTOCOL

The interviewees will be asked the following questions, and the interviews will be taped.

Questions for all interviewees:

1. Georgia Tech is among the institutions that have the least impact from the economic crisis than many others in Georgia, but can you tell me about the impacts on campus/unit operations?
2. What do you perceive as the biggest impact? Can you explain why you think it is?
3. Could you please tell me about the challenges for Georgia Tech (your school/department) to deal with the economic crisis? And what are the opportunities?
4. What are the strategies and approaches Georgia Tech (your school/department) used to cope with these challenges or use those opportunities? Can you explain them to me?
   - You mentioned….., can you tell me more about?
5. How have these strategies and approaches worked? Can you identify the ones that are most effective?
   - Why do you think they are?
   - What are the factors associated with their effectiveness?
6. The budget situation has impacted the Georgia University System as a whole. There have been actions imposed by the regent to address the budget situation, such as employee health benefit plans, institutional mandatory fee, and mandatory employee furloughs. What do you think of these actions? Is there any impact of these actions on institutional/departmental operations? Are these mandated requirements in conflict with institutional/departmental

flexibility in dealing with its own budgetary problems? Can you explain?

7. Has the operational efficiency at Georgia Tech (or in your department) been affected by the economic crisis?
   - If not, how has it been achieved?
   - What do you think as the most important factors?
8. What are or will be the long-term strategies for Georgia Tech to cope with uncertainties in the future? Can you explain?
9. In a president's message to the campus, it was emphasized that Georgia Tech would stay committed to high-quality programs. Could you please tell me about what you perceive as the actions to achieve this goal?
10. Georgia Tech has been increasingly relied on tuition and research revenues to meet the budgets in recent years. How have these revenue sources been impacted by the crisis? What are the strategies chosen to deal with these problems?
11. How has the economic crisis influenced the market efforts to attract other revenues than state appropriations? Do you see more entrepreneurial efforts on campus (or in your department) to attract more revenue sources? Can you tell me more about these efforts?
12. Would you characterize campus management at Georgia Tech as decentralized, relative to many other institutions? If not overall, are there aspects of it that are decentralized? To what extent do colleges or departments here have controls over their choices with financial implications, and thus over their revenues and costs?
13. Could you please recall what have been the major changes in campus/departmental operations in the last five years? Are these changes attributable to the economic crisis? Can you explain? Do you perceive this change to be a decentralizing move or a centralizing move

in campus management?

14. Have you seen any emerging trends of campus operations at Georgia Tech? What are they?

15. Can you think of anything I haven't asked you that perhaps we should discuss?

Questions for budget officers:

- Could you please tell me about the campus wide strategies to cope with budget cuts and other financial losses?
- What have been the major changes in the strategic plans at Georgia Tech in the last five years?
- Also what have been the major budget changes in the last five years?
- Do you think the economic crisis has shifted the budget patterns in a major way? How? (Could you please tell me more about…..)
- Are there any changes in state funding formulas for appropriations? What are they? Can you tell me about how these changes have influenced the patterns of resource allocation across individual units?

Questions for deans/school chairs:

- To what extent do you think the economic crisis has influenced your school/departmental operations relative to other units? Can you explain why?
- How has your school/department managed to align its strategies with campus-wide and system-wide actions to address the budget situation?
- How have your departmental strategic priorities changed in the recent five years due to the economic crisis? What have been the budget shifts associated with these changes? How have

academic programs been influenced by these changes?

- Do you perceive more control over departmental operations from the central administration after the economic crisis? If so, could you please be more specific about these controls? If not, could you explain why?
- What are the flexibilities in your departmental management with regard to financial and operational decisions? Have there been any changes in the recent five years?
- How has faculty involvement in research-related and other market-related efforts changed due to the economic crisis in the recent five years?

Questions for non-academic unit directors:

- To what extent do you think the economic crisis has influenced your departmental operations relative to other units? Can you explain why?
- How has your department managed to align its strategies with campus-wide and system-wide actions to address the budget situation?
- How have your departmental strategic priorities changed in the recent five years due to the economic crisis? What have been the budget shifts associated with these changes?
- Do you perceive more control over departmental operations from the central administration after the economic crisis? Could you please be more specific about these controls? If so, could you please be more specific about these controls? If not, could you explain why?
- What are the flexibilities in your departmental management with regard to financial and operational decisions? Have there been any changes in the recent five years?

APPENDIX B – INTERVIEW INVITATION EMAIL

Dear _____,

I am Yang Yang, the Ph.D. student at the University of Georgia's Institute of Higher Education whom Sandi Bramblett has assisted in contacting you. I really appreciate your willingness to participate in my dissertation project and I would like to schedule a 45-60 minute interview with you. As I am in Athens and need to drive to Atlanta, it would be more efficient for me to schedule two to three interviews a day between the hours of 10AM and 4PM. Therefore, would you please let me know your availability over the next four weeks? I will confirm the specific day and time with you as soon as possible.

In the interview, you will be asked questions about the impact of the economic crisis on the university and its academic and administrative units and the approaches being taken to deal with the financial stringencies. Sandi attached the interview protocol in her earlier email to you, so please use it as your reference. Also, I will ask your permission to digitally record the interview. As required by the Institutional Review Board of the University of Georgia, a consent form is to be signed by the researcher and the participant. I have attached a copy of it for your reference if you have concerns over privacy and confidentiality. Two copies will be prepared for your signature at the beginning of the interview.

In advance, thank you for your time and assistance with helping me complete this project and my doctoral degree.

Sincerely,

Yang Yang

Doctoral candidate

Institute of Higher Education

University of Georgia

APPENDIX C – CONSENT FORM

Dear _____,

You are invited to participate in a research study titled "A case study of institutional management in response to economic crisis" conducted by Yang Yang from the Institute of Higher Education at the University of Georgia (542-0545) under the direction of Dr. Hearn, Institute of Higher Education, University of Georgia (542-8729). Your participation is voluntary. You may refuse to participate or stop taking part at any time without penalty or loss of benefits to which you are otherwise entitled.

The purpose of this research study is to understand how public research universities have managed to deal with the economic crisis and the potential trends of financing and managing public universities. The information generated will be used for my dissertation or publication.

For this study, you will participate in a 45-60 minutes semi-structured interview, and your permission to record the interview will be asked. The researcher will ask you a number of questions concerning your knowledge and perceptions on the strategies and approaches the university as well as each unit took to deal with the economic crisis. Should you agree to take part, I request you to please answer the questions as openly and honestly as you can. Though not necessary, you may be notified via email for follow-up questions for clarification and/or further explanation. You are free to decline or choose the way you want to answer the questions, either via phone or email.

Any report based on the findings of the study will not identify individuals or institutions. All individually identifiable information will be confidential, and pseudonyms will be used in the transcription from the interview. You will have the opportunity to see the transcription of the interview before any written report is done. At that point, you may delete information you do not want to use, or add further information that you may have recalled. Once no further modifications are expected from the participants, the personal identifiers including contact information will be removed from the data. The recordings will be stored on the researcher's personal computer with access only by the researcher and the supervising professor. The recordings will not be publicly disseminated and will be destroyed in five years from the end of the study.

Please understand that no risk is expected and no benefits to you are expected. But you may benefit from the research findings in making informed administrative decisions or in increasing your understanding of the decisions of others. You are free to withdraw your participation at any time should you become uncomfortable with it. By signing this form, you agree to participate in this study and understand that you will receive a signed copy for your records.

If you have any questions or concerns, feel free to contact me at 617-319-1773 or

sarahyy@uga.edu. I hope you will enjoy this opportunity to share your insights and experiences with me. Thank you very much for your help!

Sincerely,

Yang Yang

_____	_____
Signature of Researcher	Date
_____	_____
Signature of Participant	Date

Please sign both copies, keep one and return one to the researcher

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; Email address IRB@uga.edu

APPENDIX D – INTERVIEW SCHEDULE

	Date	Time	Division	No of Participants
1	02/11/2010	2:00-3:30pm	Office of Budgeting Planning & Administration	1
2	02/15/2010	2:00-3:00pm	School of Public Policy	1
3	02/16/2010	1:00-2:00pm	College of Sciences	1
4	02/16/2011	4:00-5:00pm	Alumni Association	1
5	02/17/2010	10:30-11:30am	School of Electrical Engineering	1
6	02/17/2010	2:00-3:00pm	School of Mechanical Engineering	1
7	02/18/2010	11:00-12:00pm	DLPE	3
8	02/18/2010	2:00-3:00pm	Financial Services	1
9	02/22/2010	10:00-11:00am	Office of the Provost	1
10	02/22/2010	1:00-2:30pm	College of Engineering	1
11	02/22/2010	4:00-5:00pm	Student Affairs	1
12	02/23/2010	2:00-3:00pm	Auxiliary Services	3
13	02/25/2010	1:00-2:00pm	GTRI	2
14	02/25/2010	3:00-4:00pm	Athletic Association	1
15	02/26/2010	10:00-11:00am	College of Management	1
16	03/01/2010	11:00-12:00pm	College of Computing	1
17	03/01/2010	2:00-3:00pm	Office of Development	2

18	03/03/2010	11:00-12:00pm	Office of Administration & Finance	1
19	04/09/2010	2:00-3:00pm	EII	2