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University Research Development Offices: Perceptions and Experiences of Research University Administrators

Roxana Ross

Nova Southeastern University, rr877@nova.edu

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University Research Development Offices: Perceptions and
Experiences of Research University Administrators

by
Roxana Ross

An Applied Dissertation Submitted to the
Abraham S. Fischler College of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

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2017

Approval Page

This applied dissertation was submitted by Roxana Ross under the direction of the persons listed below. It was submitted to the Abraham S. Fischler College of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Jennifer Reeves, Ph.D.
Committee Chair

Katrina Pann, Ph.D.
Committee Member

Kimberly Durham, Psy.D.
Interim Dean

Statement of Original Work

I declare the following:

I have read the Code of Student Conduct and Academic Responsibility as described in the *Student Handbook* of Nova Southeastern University. This applied dissertation represents my original work, except where I have acknowledged the ideas, words, or material of other authors.

Where another author's ideas have been presented in this applied dissertation, I have acknowledged the author's ideas by citing them in the required style.

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Roxana Ross

Name

March 19, 2017

Date

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Abstract

University Research Development Offices: Perceptions and Experiences of Research University Administrators. Roxana Ross, 2017: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education. Keywords: research development, research office, research administration, research capacity, university research support

Universities are struggling to keep up with the cost of doing research. Some are searching for new ways to improve their likelihood of getting grant funding to support their research efforts. As a function of the academic research enterprise, research development offices and research development staff at universities utilize specific activities to enhance grant funding success and support university research goals. This study examines university research development activities and research development offices to determine if formal research development offices are perceived to have value and what research development activities are most impactful. The issue of fair measures of success for research development offices is also explored. The outcomes of this study contribute to the knowledge base about research development at universities, and identify best practices currently being implemented on university campuses.

The researcher carried out this sequential explanatory mixed methods study as follows. First, the researcher examined the literature on university research development activities to establish the current knowledge base on this topic. Next, the researcher collected quantitative and qualitative data, via an electronic survey and one-on-one interviews, to determine what research development activities and best practices have contributed to increasing sponsored grant funding, and to collect research university administrators' experiences with leading a research development office. The synthesis of the data collected resulted in recommendations for establishing a successful research development office.

The resulting recommendations include learning from research development colleagues and identifying the needs and strengths of university stakeholders. Study results revealed that as a relative newcomer to the academe, research development can improve the likelihood of getting grant funding and support university research goals. To demonstrate this value and to justify investment in office and personnel, it is necessary to conduct research development efforts strategically to best utilize office resources while accomplishing the research goals of the institution. Growing a university research enterprise can often involve a cultural shift. It can take years for such a shift in an institution's research culture to happen, and this must be recognized when assessing the return on investment for research development activities and offices. Thus, metrics are needed to demonstrate impact, and while these metrics may include the level of annual sponsored funding, there are many other measures that can and should be used to assess the office fairly. Best practices identified in this study include the selection of support for large, multi-investigator project grants as the most important and impactful research development activity. Other highly ranked research development activities are internal grant programs, grant team project management, and grant writing workshops.

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Chapter 1: Introduction

The global economy is driven by innovation, much of it originating in university research projects. Discoveries like the computer, the laser, the Internet, penicillin, the atomic bomb, and Viagra all had their origins in university research labs (National Research Council, 2012). In addition to being motivated to solve the world's problems and improve global health and quality of life, universities have economic motivations to do research. Research success is increasingly an indicator of a university's prestige and value in today's competitive higher education environment (Connell, 2005; Hazelkorn, 2004; Nash & Wright, 2013; National Research Council, 2012).

Statement of the Problem

But who pays for all this research? According to the National Science Foundation (2015), the largest funder for American university research is the United States federal government, but this support has been declining. In fiscal year 2013 federal government funds for academic research and development declined by 3.1%, echoing the trend of the last few years. In contrast, institutions of higher education are spending more on research, with a 9.8% increase in fiscal year 2013 (National Science Foundation, 2015).

Universities are struggling to keep up with the cost of doing research, and are searching for new ways to improve their likelihood of getting grant funding for research (Nguyen & Meek, 2015). As a function of the academic research enterprise, research development offices and research development staff at universities utilize specific activities to enhance funding success. This study identified research development activities and the best practices of university research development offices to determine what activities and practices increase funding success.

Research development activities at institutions of higher education are being used to increase sponsored funding (Blanco & Lee, 2012; Nguyen & Meek, 2015). For many universities, research development activities are implemented through a research development office. These offices are distinct in the university organizational structure from research administration offices, which manage the pre- and post-award administration of sponsored funding (Nguyen & Meek, 2015). This study investigated the nature of research development office activities and organizational aspects. The outcomes of this study contribute to the knowledge base about research development offices at universities, and identify best practices currently being implemented on university campuses.

The research problem. A university in the southeastern United States is an emerging research institution, and incurs \$27 million annually in sponsored funding expenditures. The university president set ambitious goals for increasing sponsored funding by the year 2020. The problem that was addressed in this study is that 9 years into the 12-year campaign, the university is just over half way to its goal. Consequently, the university is exploring implementing additional research development resources and functions to enhance research capacity and increase sponsored funding.

Background and justification. In order to substantially increase sponsored funding, universities must improve their management of research in order to get federal funding from government agencies (Nguyen, 2013; Nguyen & Meek, 2015; Rosales, 2010; Schweitzer, Sessler, & Martin, 2008). Kirkland (2008) defines this emerging trend of university research development as “activity instituted at the level of the institution, which seeks to add value to the research activity of the research staff, without being part

of the research process itself” (p. 718). The dramatic growth of research development support systems in universities is evidence of the increasing recognition that research development functions and resources improve a university’s ability to acquire sponsored funding (Kirkland, 2008).

The increasing need for more external funding for university research is well documented. A 2014 survey of university chief financial officers (CFOs) explored their perceptions of how to maintain university financial sustainability in the future (Huron Consulting Group & Selingo, 2014). Universities typically depend on tuition revenue to finance growing research programs, laboratories, and hiring research faculty. Now, the financial sustainability of the higher education research enterprise is in jeopardy. Nearly half the 248 survey respondents stated they did not meet their enrollment targets, and most of the CFOs predicted that lower enrollment is a trend that will continue into the next decade. Forty-five percent of the CFOs at private 4-year universities studied stated they fell short of their enrollment targets in the 2014-2015 academic year (Huron Consulting Group & Selingo, 2014). The private 4-year university that is the setting for this study has experienced a trend of falling student enrollment each year between 2010 and 2014. Even with this decline in revenue, the private university has an ambitious goal to expand its research capacity and be recognized by the year 2020 for research excellence and innovation. Without expectation of revenue from student tuition dollars to fund an increase in research capacity, the university plans to facilitate this growth through increased external sponsored funding. The university’s 10-year business plan states that the university is making a concerted effort to increase their non-tuition revenue from sources like external grants. Currently, the progress toward the 2020 sponsored funding

goal is behind schedule. In order to reach this goal, the university is exploring implementing additional research development resources and functions to enhance research capacity and increase sponsored funding.

There is evidence in the literature that the increasing reliance on non-tuition funding for research is a growing trend in higher education (Birx, Anderson-Fletcher, & Whitney, 2013; Edgar & Geare, 2013; Nguyen, 2013; Nguyen & Meek, 2015). Many universities are reevaluating the support structures for their research enterprise, with the goal of maximizing their competitiveness for sponsored funding. Research development functions, often facilitated through a formal research development office at a university, have been identified as an essential element to achieving this goal (Langley & Heinze, 2009; Nguyen, 2013; Nguyen & Meek, 2015).

Deficiencies in the evidence. There have been several foundational studies in the last 20 years on what makes faculty successful in winning federal funding. Campbell's (2000) study attempted to develop an understanding of federal funding success factors in research fields of mathematics and biology, so that faculty and institutions could use the information to maximize their federal funding capabilities and increase their federal funding levels. Cole (2006) used Campbell's model (2000) as a basis for an expanded model which could be generalized to all disciplines. Both researchers contributed to the development of a faculty success profile, but acknowledged that additional study was needed on the perspectives of university administrators as to how to improve funding success, and a comprehensive investigation of the impacts of university research environments on funding success (Campbell, 2000; Cole, 2006, 2007).

Boyer and Cockriel (1998) examined the problem of getting federal funding for

university research, and found evidence that faculty viewed grant writing as a barrier to getting federal funding because they lack training and mentorship in proposal writing, and lack knowledge of funding sources and budget development. Bryan and Walden (2010) replicated Boyer and Cockriel's (1998) study 12 years later to examine the motivators and detractors to grant writing for faculty. One barrier was identified; a university culture and infrastructure that did not support or reward grant seeking. Bryan and Walden make recommendations for improving university infrastructure for administering grants and for providing incentives and education for the task of grant writing. For future studies, the authors recommend further investigation into the university culture in regard to writing and administering grants (Bryan & Walden, 2010).

The aforementioned studies each examined research funding success from the perspectives of faculty, in an attempt to identify what qualities and characteristics made a faculty member successful in the university research environment. While faculty characteristics logically play a part in determining funding success, the nature and efficacy of research support provided to faculty must be considered. Birx, Anderson-Fletcher, and Whitney (2013) evaluated methods for increasing research capacity in emerging research institutions, and identified the study of research development at universities as increasingly important, as the challenges of growing university research are made more difficult by reduced government support and increased competition for research funding. They are not alone in calling for this type of study. The National Organization of Research Development Professionals (NORDP, 2015) calls for empirical research on the topic of research development, and describes the importance of building a knowledge base about this emerging field. This study sought to expand the body of

knowledge in the field of research development by examining university research administrators' experiences with research development activities and research development offices in today's higher education environment.

Audience. The audience for this study includes university leadership and university administrators, as well as stakeholders in the research community. The agencies and organizations that fund research can also benefit from a better understanding of research development, in order to more effectively support and interface with the institutions that receive their funding. Ultimately, enhancing the knowledge base about research development functions and resources enhances an institution's ability to get sponsored funding, accomplish institutional research goals, and contribute to more support for innovative research.

The data collected from this study will be of particular interest to university employees who consider themselves research development professionals. The National Organization of Research Development Professionals (NORDP) is a professional organization for research development professionals. Established in 2010, NORDP is an outcome of a grassroots movement to formalize the network of people who engaged in research development functions at universities and research institutions. In 2015, NORDP had grown to 570 members. Ninety-four percent of NORDP members work for a university, and 73% of NORDP members work in an office designated as a research development office (NORDP, 2015a). This group will benefit from this study through the expansion of knowledge about the field of research development, and the data derived from this study can serve as a baseline for future studies on this topic. Results from this study could also help research university administrators identify gaps in their own

organization's research support structure, and help to inform effective strategies that can be employed to increase sponsored funding.

Setting of the Study

The setting for this study is a not-for-profit, independent university in the southeastern United States. This university is an emerging research institution, and incurs \$27 million annually in sponsored funding expenditures. The university currently has no research development office or any positions dedicated exclusively to research development activities. The university is exploring ways to enhance research capacity and increase sponsored funding. Although survey participants for this study were not chosen from this university, the findings help inform a proposal for the development of a university research development office.

Researcher's Role

The researcher's experience with research development in an emerging research university motivated her desire to understand the increasingly important role that research support plays in university success in getting sponsored funding. The researcher works as a research university administrator in the university that is the setting for this study, and in that role develops and implements research development strategic planning, initiatives, activities, and programs. In addition, the researcher coaches faculty who are applying for sponsored funding on grantsmanship and proposal development. The researcher's goal is to collect data on research development activities and offices and determine what is needed to establish a successful research development office at an emerging research university.

Purpose of the Study

The purpose of this sequential explanatory mixed methods design was threefold: to (a) determine administrators' perceptions of what research development activities and best practices have contributed to increasing a university's annual sponsored funding totals; (b) understand administrators' experiences with leading a research development office; and (c) determine research university administrators' recommendations for establishing a successful research development office.

This purpose was achieved through several means. First, the researcher examined the literature on university research development to establish (a) a definition of research development, (b) the need for research development, (c) the current trends in research development, and (d) models of university research development activities and offices. Next, the researcher used a quantitative survey instrument to collect data from research university administrators on what research development activities and best practices have contributed to increasing their institution's sponsored funding. Survey participants with a research development office were asked to self-identify the measures used to assess the success of that office. Finally, the researcher conducted qualitative interviews to collect research university administrators' experiences with leading a research development office. The synthesis of the data collected provides research university administrators recommendations for what is needed to establish a successful research development office.

Definition of Terms

For the purposes of this dissertation, several terms are defined.

In *applied research* the objective "is to gain knowledge or understanding

necessary for determining the means by which a recognized need may be met” (National Science Foundation, 2010, para. 4).

In *basic research* the objective “is to gain more complete knowledge or understanding of the fundamental aspects of phenomena and of observable facts, without specific applications toward processes or products in mind” (National Science Foundation, 2010, para. 3).

A *grant* is a “financial assistance mechanism providing money, property, or both to an eligible entity to carry out an approved project or activity” (National Institutes of Health, 2015, Section G, para. 12).

A *principal investigator* is the “individual responsible for the conduct of research or other activity described in a proposal for an award” (UCLA Office of Contract and Grant Administration, 2015, Section P, para. 9).

A *proposal* is “an application for funding that contains all information necessary to describe project plans, staff capabilities, and funds requested. Formal proposals are officially approved and submitted by an organization in the name of a principal investigator” (UCLA Office of Contract and Grant Administration, 2015, Section P, para. 16).

R&D, also known as research and development, “comprises creative work undertaken on a systematic basis to increase the stock of knowledge—including knowledge of man, culture, and society—and its use to devise new applications” (National Science Foundation, 2010, para.1).

Research development at universities can be defined as activities that support and enhance the university's research activity and increase institutional competitiveness for

funding, without being a part of the actual research (Kirkland, 2008).

A *sponsor* is “the organization that funds a research project” (UCLA Office of Contract and Grant Administration, 2015, Section S, para. 11).

Chapter 2: Literature Review

A review of the literature revealed a common agreement that research and research capacity are measures of the success and value of today's institutions of higher education (Connell, 2005; Hazelkorn, 2004; Lombardi, 2013; Nash & Wright, 2013; National Research Council, 2012). Universities are responding to this reality by establishing new internal structures to support the development of research (Kirkland, 2008). The key issues examined in this review include the theoretical framework that supports this investigation, the history of research in universities, the definition of research development, the need for research development, current trends in research development, and models of university research development.

Theoretical Framework

Organizational theorists since the 1960's have emphasized the critical role that environment plays in an organization. Since that time, the concept of open systems models, where organizations adapt to internal and external forces, has been applied to the management of institutions in response to changing environments (Helmer, 2005). Scientific management theories like contingency theory must be applied with the understanding of the university environment as a system (Kezar, 2014). The changing university environment is shaped by the drive to expand research capacity even while the availability of funding is reduced. This calls for a theoretical framework that encompasses the many internal and external forces and the complex interactions between them in a university environment.

Contingency theory, developed and refined by several researchers including Lawrence and Lorsch (1967), takes the concept of open systems and frames it with three

main ideas. First, an organization is an open system with permeable borders that adapts to internal and external forces and needs. Next, there is no right way to organize; rather, the optimal organization depends on the environment. Finally, organizational leadership must align market demands with capabilities and resources (Morgan, 2007). Contingency theory can be applied to the current challenge facing institutions of higher education. The external forces of reduced funding and pressure to be competitive in the higher education marketplace by increasing research status are challenges that shape the university environment. The internal forces that influence the organizational environment include the university's research capacity, faculty expertise in research and grant-seeking, and the support systems for the university research enterprise (Rosales, 2010). Given the nature of the environment, institutions who wish to have success with new research opportunities must adapt their management practices and structures to remain competitive in the higher education marketplace (Helmer, 2005). Research development activities and offices are tangible responses to the changing environment, and this study seeks to provide information on how these activities and offices are improving the university research environment.

In examining the internal and external environment of a research university, contingency theory provides a framework that supports change actions such as initiatives to formalize research development functions in a university. For this framework to be successful, however, it must be applied with systems thinking, as described by Meadows (2008) and Senge (2014a). Systems thinking is a way of thinking about systems, their interconnected parts, and how these parts interact and result in behavior (Meadows, 2008; Senge, 2014b). Organizations, including universities, are highly complex systems, and

systems thinking can help to understand issues and overcome obstacles by recognizing the interconnectedness of many forces. Systems thinking also helps to recognize the big picture, as opposed to focusing on an issue in isolation. Understanding and applying systems thinking requires looking beyond a shallow definition of systems that brings to mind something technological or a simple method for managing. Senge (2014a) likens a system to a family. Family members have an obvious connection, but their relationship has a lot to do with how they interact. There is a complexity of interactions among family members that can produce unpredictable results, both negative and positive.

Meadows (2008) breaks a system down to three essential components: elements, functions, and interconnections. She provides an example of how these components form a system—a football team. The coach and players are elements in the system, while the interactions of the players are the interconnections. The team has a definite purpose, to win games, and thus the three components demonstrate a robust system. Similar to a football team or a family, a university is a robust and complex system. In a university, elements could include faculty, staff, students, curriculum, and campus facilities. The interactions of these elements in the day-to-day university environment are the interconnections. Most universities, like most sports teams, share the same purpose. For a university, it is to produce education, research, and service (Baum, Kurose, & McPherson, 2013). As an approach to problem solving and strategic planning, systems thinking can help an organization avoid taking actions that cause unintended consequences that often occur by taking a traditional approach to problem solving—breaking down an issue into separate elements and addressing things in isolation (Meadows, 2008; Senge, 2014a).

Understanding the university environment and the interplay of forces in that environment are critical to successfully implementing change such as the creation of a new office within the university. Kezar (2014) states that in addition to focusing on the content of a change, it is critical to consider the type of change, and the internal and external context for the change, and the approach to change. The type of change establishing a research development office will create is a second order change. Kezar (2014) defines a second order change as that which involves a change to underlying values, culture, processes, and structures. This is an important consideration in implementing a change such as establishment of a new research development office. Understanding the meaning of this change for stakeholders like faculty, administration, and students is as important as planning for how to support this change. Bolman and Deal (2013) point out that an essential strategy to managing the framework for an organizational change is to facilitate training and create active channels for stakeholders to provide input.

The following review of the literature explores the history of the university research environment, the current knowledge about research development, and how research development in the university environment responds to external and internal forces by facilitating an increase in research capacity and sponsored funding.

The History of the University Research Environment

Research was not originally a primary goal of institutions of higher education (Ben-David & Zloczower, 1962). Today's research university dates back to the early 19th century, when Wilhelm von Humboldt developed the University of Berlin based on a holistic combination of research and teaching. Prior to that time, universities focused

primarily on teaching and preparing the professional workforce of the era in fields of theology, medicine, and law. Humboldt's model focused on research as the basis of learning, and gave rise to the development of fields like economics, social sciences, chemistry, and physics (Sam & van der Sijde, 2014). The American version of the Humboldt model began to appear in the late 19th century, after the Land Grant acts were instituted, and American universities performed research to improve agriculture and related industries. The major supporting role that the government plays in university research began with the Chamberlain-Kahn Act of 1918, which authorized grant funding to 25 universities for research on venereal diseases, a major problem in the U.S. military at that time (Stern, 2015).

Federal expenditures for research exploded with the onset of World War II, when two significant changes transformed the government-university research relationship. First, the government began to pay for exploratory research where the approach and outcomes were not specified in advance. This, along with the federal government's agreement to compensate universities for the indirect costs of research (in addition to the direct costs of research), established the modern format of government grant funding. Second, academic researchers began to work on wartime research projects in university laboratories. Previously, scientists who worked on military-related research were members of the military, and often performed the research in government laboratories (National Academy of Sciences, 1995).

Another milestone in the history of the university research environment happened in 1945, when Dr. Vannevar Bush, the leader of the American wartime research effort, documented the intellectual rationale for the government's support of academic research.

Bush's (1945) report, *Science—The Endless Frontier* set the stage for government support and funding for future basic research, and research related to public health, industry, and national security. Bush's plan defined and consolidated postwar federal support for research, and helped to establish the field of research administration, both in government and university environments. The scope of federal support for research grew slowly after the initial scale busting progress of the World War II era. The next impetus for major expansion of federal research support to universities came with the 1957 launch of Sputnik by Russia. National dismay that the United States may have lost its standing as a technological superpower motivated major federal investments in scientific research, with much of that funding going to university research (National Academy of Sciences, 1995).

As a result of this external influence on university research, universities needed to formalize their research administration infrastructure and support. This support manifested in the form of staff and offices to manage the pre- and post-award administration of grant funding, but also brought about the first research development support activities like assisting faculty researchers with identifying funding opportunities and proposal development assistance. As universities began to dedicate time and resources to research missions, the university environment began to include new job functions and career paths for those involved in managing the university's research enterprise. In 1960, the formation of the National Council of University Research Administrators (NCURA) signaled the formalization of university research administration as a profession, and thus universities who received external funding for research created staff and offices to manage research administration. University research

administrators today have formal certification programs available, along with Master's level research administration degree programs (Roberts, Sanders, & Sharp, 2008).

A long record of success in mobilizing scientific advances to meet national needs has made government investment in academic research an essential component of the federal budget. While economic and cultural forces have caused that investment to fluctuate, the long-term trend since World War II has been one of sustained investment. The results and benefits, both to society and to American universities, has been significant. Discoveries in a wide range of fields has enabled problem solving on many fronts: responses to new tools for warfare; environmental disasters like oil spills and the depletion of the ozone layer; and diagnosis, therapy, and prevention of modern diseases like HIV/AIDS. There are many examples of government-supported academic research that have changed our world. Support from the Department of Defense and the National Science Foundation led to the creation of the internet. The National Institutes of Health's investment in academic research facilitated the development of modern biotechnology. The nature of scientific inquiry is such that research results are often not predictable and the application of research results is not always known in advance. Unforeseen research results led to the invention of global positioning systems, lasers, magnetic resonance imaging systems, and dramatically effective new drugs and therapies (National Academy of Sciences, 1995). Today's modern American research universities dominate global higher education marketplace, and help to define the world's research agenda. Research universities have come a long way from that early 19th century model that Humboldt developed (Sam & van der Sijde, 2014). The evolution of research by universities has resulted in a mutualistic relationship between American universities and their primary

funder, the U.S. government.

Research Development Defined

To understand the emerging field of university research development, it is necessary to establish the context of American research universities: institutions with significant investment in the world of academic research. Lombardi (2013) describes the organization of a research university as having two related, but operationally independent structures: an academic core and an administrative shell. The academic core comprises the faculty, who provide the university's academic substance. Lombardi describes university faculty as each belonging to discipline-defined guilds, which create and enforce the standards for the discipline. The university's academic standing is a reflection of the guild's success at recruiting and retaining high quality faculty. The academic core is surrounded and supported by the other structure in the research university, the administrative shell (Lombardi, 2013).

The administrative shell in the American research university is the university's leadership and management. These stakeholders mobilize and distribute resources, manage interactions among different university groups, protect faculty from harmful external forces, and manage the university's money. The administrative shell and the academic core both work to achieve the university's products: students, public service, research outcomes, and economic development (Lombardi, 2013). While all universities strive to have high quality academics and a robust cultural environment, the literature on the relationship of research to education in the higher education setting reflects a common theme. In the tug-of-war for resources and priority in today's research university, research is usually the winner (Baum et al., 2013; Birx et al., 2013; Cantwell

& Mathies, 2012; Locke, 2014; Lombardi, 2013; Petrova & Hadjianastasis, 2015). This new reality is concerning for some experts who predict an erosion of educational quality and student learning as a result of the reduction in focus on education (Locke, 2014; Petrova & Hadjianastasis, 2015). Locke (2014) describes a trend where teaching in the university enterprise is increasingly subordinate to research, which is given priority in today's research university organization. He states that there is a disparity between how the two structures of the university are acknowledged and resourced, with research and research outputs being prioritized by university leadership. Petrova and Hadjianastasis (2015) also discuss the two aspects of academic practice, stating that often research development activities are supported in universities at the expense of educational enhancement. This concern may be valid and is definitely worthy of further examination and discussion. For the purposes of this study, however, the evidence of increased emphasis on and resources for the development of the university research enterprise is an important foundation for examining the growth of research development functions in a university.

NORDP defines the emerging field of research development as a “set of strategic, proactive, catalytic, and capacity-building activities designed to facilitate individual faculty members, teams of researchers, and central research administrations in attracting extramural research funding, creating relationships, and developing and implementing strategies that increase institutional competitiveness” (NORDP, 2015b, para. 1). Research development activities undertaken by this group of professionals encompass a broad spectrum, and vary by institution. Common research development activities for NORDP members are finding and communicating funding opportunities, grant proposal

development, outreach activities, collaboration support, team science, interaction with funders, interaction with institutional stakeholders, and training (NORDP, 2015b).

While it is generally agreed that a university's research enterprise is of primary importance to the success of the university in today's environment, it is not clearly defined in the literature which research development activities are most likely to enhance a university's research capacity and increase annual sponsored funding totals. Both Edgar and Geare (2013) and Bosch and Taylor (2011) describe the mounting pressure on universities to produce research and increase research capacity, but also acknowledge the dearth of information about building research capacity in today's university setting. Bosch and Taylor note that there is a gap in existing literature, which does not describe the developmental phases of an institution as it evolves from a non-active research environment to research active. They state that a knowledge base about developing a research active environment could assist administrators responsible for managing the university research environment. Improving the current understanding of research development strategies "will lead to the stimulation and growth of research" (Bosch & Taylor, 2011, p. 445).

The Need for Research Development

Lombardi, Capaldi-Phillips, Abbey, and Craig (2014) point out that the essential ingredient for success in the university research environment is money. In fiscal year 2013, American universities spent more than \$67 billion on research and development (R&D). The sources for this expenditure are varied. Almost \$40 billion came from the federal government, while the universities themselves provided more than \$15 billion of the funding for R&D. The balance of the funding, or approximately \$12 billion came

from other sources like state and local governments, nonprofits, and businesses (National Science Foundation, 2015). Lombardi (2013) points out that in order for research universities to successfully compete for grant funding, they must heavily invest their own money. He characterizes research as a money-losing proposition. This happens because no matter how large a grant is, it never completely covers the cost of the research project. Also, there can be gaps in grant funding where research projects and research staff need financial support after one grant award ends, but before the next begins. Universities must support the cost of research facilities and research talent with funds from sources other than grants, because grant funding is simply not sufficient to cover the cost of doing research (Lombardi, 2013).

Research development to retain faculty talent. The funding universities get from government and other sources covers multiple research costs; one of the major costs is the scientific talent who do the research. Hoag (2015) states that human resources in scientific research, not equipment or supplies, are the most expensive budget items. As more universities join the intensely competitive world of university research, the competition to recruit and retain the top faculty talent in the global marketplace is growing. The market price for faculty research talent is steadily increasing, especially in the fields of science and engineering. Experts in these fields command high salaries and along with that, hiring a successfully funded senior researcher may require millions in startup costs for laboratories, equipment, and personnel (Lombardi et al., 2014). In the US, a tenure-track assistant professor in a biomedical field can command startup packages of around \$1 million (Hoag, 2015).

Lombardi (2013) calls faculty the most important capital asset of a university. The

investment in top faculty research talent can enhance a university's reputation, increase research outputs like publications and patents, increase the university's external funding portfolio, and attract high-caliber students. But the obvious concern for universities is how do they retain the talent, once the investment is made? Lombardi states that faculty of all fields, including research talent, are highly individualistic and managing and retaining them is an individualized art. The higher the investment the university has made in a faculty member, the more likely it is that there will be a substantive support structure and management effort to keep the faculty member from leaving the university for another job. Briar-Lawson et al. (2008) state that a key feature of any university research development program is a strategy, backed up by institutional resources, to retain faculty research hires. Among the research development activities that Briar-Lawson et al. cite as effective for retaining faculty are scientific and tenure-related mentoring programs, robust onboarding support, and assistance with finding grant funding.

Research development to increase scientific productivity. Rosenbloom, Ginther, Juhl, and Heppert (2015) performed a study on the impact of R&D funding on scientific productivity. Their research looked at publications and citations in the fields of academic chemistry and chemical engineering produced between 1990 and 2009 to investigate the effect of federal funding on knowledge production. Crow and Dabars (2015) state that these two measures, publications and citations, are often used as evidence of scholarly and scientific productivity. Rosenbloom et al. chose the field of chemical sciences for their study because research in basic and applied chemistry receives a significant amount of federal R&D funding and research outcomes like patents and various forms of commercialization are relatively likely in this discipline.

Rosenbloom et al. defined the cost of research as labor (i.e., faculty and their research assistants) and capital (i.e., a broad category that includes physical and administrative infrastructure). The study confirmed the positive relationship between knowledge production and R&D funding (Rosenbloom et al., 2015). The results of this study are important because it confirms the return on investment for funding to produce university research. Although there may be cases where scientific discoveries result quickly without a great financial investment, in general, significant knowledge production in the university environment results from significant investment of funding.

Falk-Krzesinski and Tobin (2015) recently examined the issue of the type of guidance that research development professionals can provide to faculty researchers. They indicate that coaching faculty to better understand and respond to grant proposal review criteria can help improve the likelihood of those faculty winning federal funding. Research development offices have the responsibility to sustain and enhance university research programs by aiding new researchers in applying for grant support. Faculty who are new to applying for federal funding may not have a mastery of grant writing, which is distinctly different from academic writing for scholarly publications. Providing coaching and guidance to new researchers can make the difference between funding success and failure. For senior researchers, Falk-Krzesinski and Tobin suggest that the research development support come in the form of finding the researchers suitable funding opportunities, including those often less considered: private philanthropic, corporate, and internal institutional grant programs. Once these funding opportunities are identified, even senior researchers can benefit from guidance in crafting a successful proposal. Faculty who may be very familiar with federal agency grant proposal formats may need

help in addressing the different rules, formats, and writing style for alternative funding sources (Falk-Krzesinski & Tobin, 2015).

Research development to build a university's research capacity. Building a university's research capacity is a topic that is getting increasing attention in the literature (Bosch & Taylor, 2011; Briar-Lawson et al., 2008; Edgar & Geare, 2013; Hazelkorn, 2004; Kirkland, 2008; Manyibe, Aref, Hunter, Moore, & Washington, 2015; Nguyen, 2013; Rosales, 2010). Manyibe et al. (2015) defined research capacity building in universities as the process of building individual skills and institutional infrastructure to perform more research and increase research outputs. While established research universities already have well developed research infrastructure and faculty with a high level of research skills, there are universities that are relative newcomers to the arena of university research. Hazelkorn (2004) described established institutions that have a new focus on building their research enterprise as late developers; and institutions that are new, but prioritize research in their missions as newcomers. Both types of institutions face barriers to entering the world of high research activity. Hazelkorn points out that late comers and newcomers often have poor institutional infrastructure for research, and a lack of technical support. Another barrier is that faculty who were originally hired to teach often lack the research skills and knowledge necessary to be competitive in the research environment. This lack of research expertise and experience results in reduced capacity to win sponsored funding for research (Hazelkorn, 2004).

The importance of a robust university research enterprise cannot be understated; the status of research universities is often measured based on how much research they produce and the amount of sponsored funding they receive (Baum et al., 2013; Boyer &

Cockriel, 1998; Hazelkorn, 2004; Kirkland, 2008; Lombardi, 2013; Nguyen, 2013). The issue of how to best support research administratively is one that has produced numerous suggestions in the literature. McMillin (2004), for example, states that many universities invest in research by providing seed funding for faculty research projects, travel support, sabbaticals, and release from heavy teaching loads. Universities are motivated to make this investment because “institutional rewards and institutional reputation seem to follow research productivity” (McMillin, 2004, p. 44). Connell (2005) studied eight universities and found that the research infrastructure of universities holds increasing significance to the success of their research enterprise. Connell calls for universities to invest in research management positions to help an institution build its research capacity. Nguyen and Meek (2015) concur with this recommendation for investment in research management positions. They state that most of the current research management positions at universities have been created relatively recently, and created in response to the increasing demand for administrative support systems to grow and enhance university research (Nguyen & Meek, 2015).

Mintrom (2008) studied the problem of managing the university research function in a time when having a robust research capacity can be fundamental to a university’s economic survival. Mintrom presented a model of the research process, and described linkages to other university functions and external stakeholders. Once he has established this model and linkages, Mintrom identified policy options for university administrators to use in managing research more effectively. Mintrom framed his research process model by stating that the teaching function of a university has and always will be vital, but the research function is what will allow universities to distinguish themselves from

other universities and advance economically. Mintrom described how the teaching, service, and administrative aspects of a university affect the research function, stressing that all these functions should be viewed as synergistic. In implementing new policies for the research function, Mintrom cautioned university administrators to be realistic about how fast change can be imposed on the university population. Changes that support research and can yield significant rewards include recruiting high potential research faculty and quality students, along with encouraging research collaborations and mentorship (Mintrom, 2008).

Research development offices. Research support activities often take place in the context of a university research development or research support office. Nguyen and Meek (2015) state that “a research support office is a key structural and organizational ingredient to help create a helpful working environment for conducting research” (p. 54). The establishment of a formal office to support the development of research has been suggested by other authors as well, including Connell (2005), Taylor (2006), and Kirkland (2008). Nguyen and Meek state that the role of such an office in the university setting is to coordinate initiatives and strategies for university research; disseminate funding opportunities; and advise on legal, compliance, and intellectual property aspects of research.

Current Trends in Research Development

Langley and Heinze (2009) state that, “it is not uncommon to find that the research support office in a university or organization has been, is going through or is about to be restructured” (p. 37). They attribute this ongoing revamping of the research support office to the deficiencies in traditional models of research support offices and

also the dynamic environment of university research. Langley and Heinze point to the trends of research growth at universities and the associated complexity and increased administrative requirements.

Nguyen (2013) recently examined university research management and organizational research capacity building. He states that a university must build its research management structure in order to enhance research activity. He points out that there has been little published on the infrastructure that supports a successful university research enterprise. Nguyen states that his study builds on several other investigations of research management such as Briar-Lawson et al. (2008) and Kirkland (2008). Among the steps Nguyen outlines as critical for organizing research in a late developer or newcomer university is the creation of a research office (Nguyen, 2013).

Taylor (2006) points out that there is no ideal university research organizational structure; a suitable organizational structure has to reflect the institutional culture, goals, and financial constraints. The changing structure of the research development functions within universities is reflective of the changing research environment with increasing importance placed on successful grant funding. Taylor calls for assessment of how research is managed and supported in research-intensive universities (Taylor, 2006). The gap in knowledge that Taylor identifies can begin to be filled by examining recent successful models of university research development.

Yoon, Wolfe, Yucha, and Tsai (2002) conducted a study in 2000 of research support offices within colleges of nursing. A decade later, Bevil, Cohen, Sherlock, Yoon, and Yucha (2012) replicated the study. Both studies confirmed that although their structures may differ, research support offices share common goals of enhancing faculty

research capacity, facilitating professional development, and increasing sponsored funding. Although the authors of these studies did not label the research support offices as research development offices, the goals and services of the research support offices mirror the research development offices discussed in this dissertation. The functions of the research offices examined in 2000 and 2010 studies did not change; these offices and their staff provided multiple services intended to increase research funding. It is interesting to note that in both studies, the authors stated that they did not examine which of the research support services were most impactful in achieving funding success, but suggested this as an area for future study (Bevil et al., 2012; Yoon et al., 2002). In the 2000 study, the respondents identified 20 different research development services they offered to faculty. The majority of the schools who responded offered assistance with grant development (96.4%), grant preparation (98.2%), budget development (96.4%), statistical consultation (85.7%), and research seminars (91.1%). Yoon et al. (2002) stated that the least common types of assistance identified in the 2000 study were data collection (29.1%), physiologic measurement usage (25.5%), and short courses on biophysical instruments (21.4%).

Bevil et al. (2012) stated that the respondents in the 2010 study identified 33 research development services, with the same services ranking highest on the list of most commonly offered: grant development (100%), grant assembly (92.9%), budget development (90%), and research seminars (90%). The authors of both studies agreed that colleges of nursing were making significant investments in the support of research activities, and usually that investment materialized in the form of a designated research support office. In the 2000 study, the authors reported that 71% of colleges with a

research support office had received funding from the National Institutes of Health (NIH) in the previous year (Yoon et al., 2002). In the 2010 study, this figure remained fairly similar at 70% (Bevil et al., 2012). The results of both studies showed that colleges with dedicated research support offices are more successful at increasing research funding than colleges without research support offices. Specifically, both studies showed that higher levels of NIH funding are associated with research support offices that have existed for longer periods and that employ more staff (Bevil et al., 2012; Yoon et al., 2002).

The 2010 study by Bevil et al. (2012) examined one topic that the original study by Yoon et al. (2002) did not. The evaluation of research offices was investigated via the survey. This new component was added based on the need to identify outcomes that would justify the investment in research development offices and activities. The results showed that there are a wide variety of evaluation methods for research support offices, without much consistency among evaluation processes, making benchmarking with other college research offices difficult. Regardless of the method, in general the evaluation content focused on outcomes such as sponsored funding dollars, number of grant awards, percentage of grant proposals funded, and number of scholarly publications (Bevil et al., 2012). There has been some discussion in the literature about whether it is appropriate to measure the success of research development offices and the research university or college administrators who staff them by outcomes such as grant dollars since they are not conceiving of or conducting the research (Birx et al., 2013; Briar-Lawson et al., 2008; Cantwell & Mathies, 2012; Evans, 2011; Lintz, 2008; Rosenbloom et al., 2015). While there is no agreement on what fair measures of success should be for research

development offices, Bevil et al.'s study (2012) shows that the research offices surveyed rely on similar outcomes to evaluate their performance: grant dollars and grant funding success.

Models of Research Development

The growing popularity of research development offices and staff in universities suggests that there has been a return on investment, even if it is not quantified well in the literature. Interestingly, although much is written about administering university research, there is a lack of published scholarly work on administrative strategies to develop university research. To better understand how research development as an administrative function is being operationalized in today's university environment, it is useful to examine successful models of research development.

Froman, Hall, Shah, Bernstein, and Galloway (2003) conducted an assessment of their own nursing college research development office after 2 years of operation. This college of nursing is an academic unit in a large research university, the University of Texas. The assessment focused on the services offered to support investigators and the office organization. Froman et al. noted that the office goals were the same as those of research support offices at other universities: to increase grant funding, support and enhance research capacity, facilitate professional development, and support public relations. The services offered by their research development office included grant development, grant editing, grant coordination, budget preparation, Institutional Review Board application assistance, literature searches, statistical analysis assistance, and writing assistance in the form of boiler plate or for non-technical grant components like biographic sketches. The outcomes of this support are impressive. In 2 years of operation,

11 federal agency grants were developed with assistance from the research development office. At the time the article was published, 5 had been funded, 3 scored competitively and were waiting decisions, 1 was awaiting review, and 2 were being revised for resubmission (Froman et al., 2003). Considering that the NIH success rate in 2003 was 30% for research program grants (National Institutes of Health, 2003), Froman et al. were able to claim a much higher percentage. Froman et al. cited a federal award success rate that was at minimum 45%, and potentially much higher once all the submitted grants received review and decisions.

Froman et al. (2003) were not the only ones who were assessing their research development activities and how those contributed to grant funding success. Feldman and Acord (2002), faculty at the Lienhard School of Nursing at Pace University and the College of Nursing at Montana State University, respectively, analyzed their institutions approach to research development and the research development activities offered at each institution. Both institutions share the same goals: to increase research capacity and grant funding. While neither Pace University nor Montana State University is research intensive, both institutions aspire to significantly expand their research enterprise. The infrastructure in the two universities is different; Pace is a private university without a dedicated research development office, and Montana State is a public land grant institution with an office within its College of Nursing dedicated to research development. However, both institutions recognized the need for support for faculty in order to achieve the universities' research goals. Both institutions implemented specific activities designed to increase research capacity and increase grant funding. These activities included research and grant writing training, statistical consultation,

activities/events to encourage collaboration, and annual retreats for research-active faculty. Of these activities, Feldman and Acord recommended the annual retreats as the activity with the most impact.

Another example of a successful research development model is the Research Development Core (RDC) at the University of Michigan. The RDC was established in 2006, and offers consultations to assist principal investigators in securing grant funding. These consultations are performed by a multidisciplinary team with expertise in grant development, including senior scientists, a scientific grant writer, research development professionals, and a biostatistician. The support the RDC provides encompasses the entire proposal and project development process, from initial concept development to proposal submission. The RDC clients achieved an overall success rate of 47% for research proposal submissions to the National Institutes of Health (NIH; Havermahl et al., 2015), compared to the NIH's (2014) published averages success rate of 18.1%. Notably, the RDC clients who applied for NIH K-series awards had a 75% success rate (Havermahl et al., 2015), compared to the average success rate published by NIH of 30% (National Institutes of Health, 2014).

The University of Michigan is not the only university research development model that has shown success. Garton (2012) describes the proposal development support provided for principal investigators at Texas A&M University's College of Engineering as key to helping them successfully navigate the grant submission process. She points out that faculty members' proposal development skills vary widely and are often underdeveloped. Garton states that the Texas A&M Office of Strategic Research Development launched support initiatives focusing on specific grant mechanisms such as

the National Science Foundation (NSF) CAREER award. This office conducted workshops and provided guidance for faculty throughout their proposal development process. Garton describes the support activities offered to faculty as continuing throughout the typical 18-month proposal development process. Activities included identifying funders; researching the funder's mission, program requirements, and previously funded proposals; developing collaborations; editing the proposal; developing the budget; and contacting program officers. The outcomes of this proposal development support were more grant submissions and more grant awards. Specifically, the Texas A&M College of Engineering's submissions doubled within 4 years of the first proposal development workshop, and success rates for NSF CAREER awards since instituting this proposal development initiative have equaled or exceeded the NSF success rates for that grant program (Garton, 2012).

Briar-Lawson et al. (2008) studied administrative support for university research development at 14 universities that received NIH funding for research infrastructure. This study showed that these universities have demonstrated benefits from additional support for university research. Examples of the support these universities offer include grant information, proposal review and editing, form preparation, assistance with the institutional review board process, budget development, secretarial supports, and incentives to faculty who submit grants (Briar-Lawson et al., 2008).

Summary

A review of the literature revealed major themes in the examination of research development activities at institutions of higher education and how these are being used to increase sponsored funding. The first theme is that many universities are responding to

the need to increase their research capacity and the sponsored funding that supports that growth by implementing new activities and structures to support the development of research. Research development activities often include finding and communicating funding opportunities, grant proposal development, outreach activities, collaboration support, team science, interaction with funders, interaction with institutional stakeholders, and training (NORDP, 2015a). Another major theme in the literature concerns the need for research development activities and how these are often implemented in the context of a university research development or research support office. The current trends in organizational research capacity building include a focus on the research development functions within universities and how they are reflective of the changing research environment. Finally, the gap in knowledge about research development activities and offices can begin to be filled by examining recent successful models of university research development.

Research Questions

This study employed a sequential, explanatory mixed methods design to (a) determine administrators' perceptions of what research development activities and best practices have contributed to increasing a university's annual sponsored funding totals; (b) understand administrators' experiences with leading a research development office; and (c) determine research university administrators' recommendations for establishing a successful research development office. Two quantitative research questions, one qualitative research question, and one mixed methods research question guided this study.

1. How do research university administrators perceive the value of research

development activities and research development offices in universities?

2. How do research university administrators measure the success of the university's research development office?

3. What are research university administrators' experiences with leading a research development office?

4. What recommendations do research university administrators have for establishing a successful research development office?

Chapter 3: Methodology

Introduction

Universities are struggling to keep up with the cost of doing research, and are searching for new ways to improve their likelihood of getting grant funding for research (Nguyen & Meek, 2015). As a function of the academic research enterprise, research development offices and research development staff at universities utilize specific activities to enhance funding success. This study investigated university research development activities and models of university research development offices to determine what activities and models increase funding success. Data derived from this study contributes to the knowledge base about research development offices at universities, and identifies best practices currently being implemented on university campuses. The purpose of this sequential explanatory mixed methods design was threefold: to (a) determine administrators' perceptions of what research development activities and best practices have contributed to increasing a university's annual sponsored funding totals; (b) understand administrators' experiences with leading a research development office; and (c) determine research university administrators' recommendations for establishing a successful research development office. This chapter describes the participants, quantitative survey and qualitative interview guide created for this study, and the data collection and analysis procedures.

Participants

The population of interest for this investigation was research university administrators who are involved in research development activities. In some cases, a person from this population may work in a position that is 100% dedicated to research

development activities. In other cases, a person from this population may have a position with another focus (such as a sponsored programs officer/director), but may be involved in research development activities.

Quantitative sampling procedures. The study utilized a convenience sampling method. Creswell (2015) defines convenience sampling as the selection of survey participants based on their availability and willingness to participate. The target population for this study was the membership of the National Organization for Research Development Professionals (NORDP). The NORDP organization provided a group of people who have self-identified their interest in research development by virtue of their membership in the organization. This group provided a convenient and accessible target population for this study. The members of this population of interest who responded to this survey were those who were available and willing to participate in the present study.

The researcher used a quantitative instrument, the Research Development Survey, to collect data from research university administrators on what research development activities implemented at their workplace have contributed to increasing their institution's sponsored funding. For survey participants with a research development office, data was collected on the characteristics of the office, impact of the office, and measures of office success. A total of 116 people responded to the Research Development Survey. Four of these responses came from people who did not work for a university, and these were eliminated from the data.

Qualitative sampling procedures. The qualitative portion of this study was conducted using purposeful sampling. According to Creswell (2015), in purposeful sampling individuals are intentionally chosen by the researcher because they are

information rich with regard to the study parameters. For this study, the individuals with information that could provide valuable information on Research Question 3 (i.e., What are research university administrators' experiences with leading a research development office?) were selected based on two criteria: (a) they hold a leadership position in an established university research development office and (b) they have established a university research development office. These criteria ensured that the interviewees had sufficient experience in research development and information about establishing a formal research development office to provide useful information. The data collection from these three individuals was conducted via individual interviews that utilized the Research Development Interview Guide (see Appendix B). The interview consisted of seven questions, and the interview was recorded in a GoToTraining session and transcribed using Same Day Transcriptions, a professional transcription service.

Instruments

The Research Development Survey (see Appendix A and <http://goo.gl/forms/zcP5zhTvJDtCZVsE3>), created by the researcher with the assistance of a formative and summative committee, includes 27 items and is a mix of multiple choice, Likert scale, short answer, and open-ended questions. The Research Development Interview Guide (see Appendix B), created by the researcher with the assistance of a formative committee, includes seven questions, three short answer and four open-ended questions. The descriptions that follow provide a synopsis of the survey development, a description of the interview guide development, and validity and reliability information.

Research Development Survey. The Research Development Survey was created in Google Forms. The participants were sent an email explaining the survey's purpose

and requesting their participation. This email included a link to the survey in Google Forms, where participants were able to complete the survey. The advantage of using a web-based survey is that it facilitates access to a national sample of university administrators connected to research development. Also, a web-based survey has advantages of economies of scale, little cost, and speed (Dillman, Smyth, & Christian, 2014). The Google Forms mechanism has some analytics capability which aided in the analysis of the responses.

Survey development process. The survey development process began with establishing who would be a survey participant. Since NORDP is a national organization where members have self-identified as professionals with a connection to research development, it seemed logical to use NORDP membership and employment in a university as criteria for selecting the sample. Since a small number of NORDP members do not work for a university, when a survey respondent indicates that they do not work at a university, their responses were eliminated from the data set.

Once the sample was identified, survey questions were drafted to address participant demographics and institutional data. The rest of the survey questions were drafted based the present study's research questions and survey objectives. The initial survey draft was submitted to two formative committee members, an Associate Provost for Research at a large, private research university; and the Director of Research Development at a large, public research university. They are seasoned research development professionals who provided in-depth review and valuable feedback. As a result of their input, the demographic and institutional data sections were expanded and several questions were reworded for clarity. In addition, several open-ended questions on

limiting factors in research development were added, along with a few open-ended follow-up questions to the existing questions.

The summative review was provided by a professor of research and statistics at the private university, an Associate Professor in education at the private university, the Vice President for Research and Technology Transfer, and the head of the university statistical analysis center. The feedback from the summative committee helped to refine the survey questions and responses, including adding scale labels where there were none. While the formative review process had caused the survey to grow longer, the summative reviewers helped to focus the survey design on answering the study's research questions. While there are many topics of interest related to the present study, any survey questions that did not directly connect with the study's research questions were removed. This was an important result of the summative review, because two reviewers expressed concern that the survey was overly long and that this could impact the response rate. The other major change that came from summative committee feedback was that three open-ended questions were converted to multiple choice formats. The summative reviewers recommended this to make analyzing the survey responses easier, while still providing important information.

Pilot test. Once the formative and summative review process was complete, the survey was sent to nine pilot participants. The people chosen to pilot test the survey all worked at universities in positions that dealt directly with research development. Eight of nine people responded to the invitation to pilot test the survey.

Pilot participants were asked to take the survey and answer the following questions:

1. Were the survey instructions clear and easy to understand?
2. Were any of the survey questions confusing or hard to understand?
3. Were the response choices mutually exclusive?
4. Were the response choices exhaustive?
5. Did you have difficulty answering any of the questions?
6. Were the questions presented in a logical order?
7. Approximately how long did it take you to complete the survey?
8. Do you feel your privacy was respected and protected?
9. Do you have any suggestions regarding the addition or deletion of questions, clarification of instructions, or improvement of the format?

The feedback from the pilot participants was in general positive. Seven of the pilot participants took the survey and answered the feedback questions as requested. The eighth pilot participant viewed the survey, but decided not to take it. She stated that her role at her university did not make her a suitable survey participant, and she felt she would have trouble answering the questions. Of those who took the survey, four pilot participants stated that the survey took 10 minutes to complete, two stated that it took 15 minutes, and one pilot participant said the survey took 30 minutes to complete.

The pilot participants all agreed that the survey instructions were clear. One pilot participant asked for a link to the Carnegie designation descriptions to be included, in case anyone was unfamiliar with those designations. Another pilot participant suggested that the two questions about sponsored funding totals needed to be clarified as to the organization level (i.e., whether the totals are requested for the college level or university level). The final comment regarding survey instructions and questions was a suggestion

that research development offices needed to be defined within the survey, since these types of offices are a relatively new phenomenon.

In regard to response options, there were three suggestions. One had to do with the survey question, *How do you know the activities you identified were most impactful?* Two pilot participants pointed out that they would judge activities as impactful based on their own observations, which was not something included in the response options. The second suggestion was in reference to the survey questions that asked for most impactful, second most impactful, and third most impactful. The pilot participant noticed that she could submit the same response for each of these. This concern was discussed with a summative committee member, and it was determined that it was unlikely that a survey participant would choose the same response for all three questions. The final response option suggestion had to do with creating response pathways, so that the survey would automatically skip questions that were not applicable based on a participant's responses. All this feedback was shared with a summative committee member, who provided guidance and additional suggestions regarding the survey. Response pathways were added in the survey, and then tested to ensure they were functioning properly.

There were several improvements to the survey as a result of the feedback from the pilot participants. A link to the Carnegie designation descriptions was included, in case participants were unfamiliar with those designations. The word *university* was added to two questions about sponsored funding totals to clarify the intended level of the organization. A description of research development offices was included at the beginning of the research development office section.

Two of the three pilot tester suggestions regarding response options were

implemented. First, a response option of *I base my selections of top 3 activities on my own observations* was added for the survey question, *How do you know the activities you identified were most impactful?* The next change created response pathways, so that if a participant indicated they do not have a research development office at their university, the survey skipped the questions that collected information on the research development office. Finally, the research professor's suggestion to add an option of *I'm not sure* to the question about research development office impact was implemented.

Content validity. Creswell (2015) defines validity as ensuring that the instrument measures what it claims to measure. Content validity for this survey was assessed by having content experts and survey experts review the survey, take the survey, and provide feedback. The formative and summative committees contributed greatly to establishing content validity for this instrument. Their feedback and suggestions, along with feedback from the eight pilot participants, was used to refine and focus the survey to make sure that it measured what it was intended to measure.

Instrument description. The survey included 27 items and was a mix of multiple choice, Likert scale, short answer, and open-ended questions. The scales used for multiple choice responses varied; there are some questions with only two response options (e.g., *yes/no*, *public/private*), and some in the demographics section with as many as 10 response options (e.g., approximate total annual sponsored funding). The Likert scale questions each had five response options (i.e., *no importance* to *critically important*). Response pathways in the survey were activated by the responses to two questions. First, if the participant responded *I don't work for a university* to the question about their position at a university, the participant was pathed to the end of the survey

and their response was not be recorded in the data set. Next, if a survey participant responded *yes* when asked about whether their university has a research development office the participant was pathed to questions about that office. If the participant chose *no*, the survey branched to a question assessing their perceptions of whether establishing a research development office would impact sponsored funding success. There were 6 numerical response questions, 6 ordinal response questions, 12 nominal response questions, and 3 open-ended questions. The Research Development Survey (Appendix A) can be accessed at the following link: <http://goo.gl/forms/zcP5zhTvJDtCZVsE3>.

Research Development Interview Guide. One-on-one interviews were conducted with three research university administrators who lead a university research development office and have established a research development office. The Research Development Interview Guide (see Appendix B) included a total of seven questions. The first three questions were short answer and collected data on the interviewee's perception of themselves as a research development professional, and their experience in university research development as a field and in their current research development office. The next four questions were open-ended and covered topics on the establishment of their university research development office, the most impactful research development activities, and recommendations to universities seeking to establish a research development office.

Interview guide development process. The interview guide was drafted to address the present study's Research Question 3 and study objectives. The initial draft was submitted to four formative committee members, an Assistant Vice President for Research at a public research university, an Associate Provost for Research at a private

research university, a Research Development Director at another public research university, and the Vice President at a university research development consulting firm. All are NORDP members and seasoned research development professionals who provided in-depth review and valuable feedback. Committee members were asked to review the Research Development Interview Guide and answer the following questions:

1. Were the interview instructions clear and easy to understand?
2. Were any of the interview questions confusing or hard to understand?
3. Did you have difficulty answering any of the questions?
4. Were the questions presented in a logical order?
5. Do you have any suggestions regarding the addition or deletion of questions, clarification of instructions, or improvement of the format?

As a result of their input, several changes were made to the wording of the questions. The first question, *Do you consider yourself a research development professional*, was modified to be, *Why do you consider yourself a research development professional, versus another type of research administrator?* This change, suggested by one of the committee members, provided more useful information than the original, since it was highly likely that each of the interviewees, who lead a research development office, would respond ‘yes’ to the original question. Next, three of the committee members noted it would be informative to know how long interviewees had worked in any research development office, so Question 3 was changed to reflect that. Another comment had to do with Question 4, *What are your perceptions of the importance of research development activities and offices for increasing a university’s annual sponsored research funding?* A committee member suggested adding other outcomes in

addition to increasing sponsored research funding. Since the literature supports the idea that research development produces more benefits for a university than just increased research funding, the question was modified. The potential for institutional collaboration and institutional capacity building were added as outcomes. Question 5 queried about whether the interviewee's institutional research development activities were sufficient to meet their institution's goals, and one committee member suggested changing the wording to be, *What are the main activities of your RD office, and do you have plans for expanding offerings to better serve your institution's goals?* This wording elicited a more informative response and the suggestion was accepted. Finally, one committee member suggested ending the survey by asking what factors are important for considering the unique needs of different types of institutions. However, although interesting, this question was beyond the scope of this study and this suggestion was not accepted.

Interview guide pilot test. Once the formative review process was complete, the Research Development Interview Guide was tested on three pilot participants. Pilot participants were provided with a description of the study's purpose, the length of the pilot test interview, the purpose of the pilot test, and an informed consent form. Two pilot tests were conducted via Skype, and one was conducted in person.

After each pilot test interview, the pilot testers were asked the following questions:

1. Were the interview instructions clear and easy to understand?
2. Were any of the interview questions confusing or hard to understand?
3. Did you have difficulty answering any of the questions?
4. Were the questions presented in a logical order?

5. Do you have any suggestions regarding the addition or deletion of questions, clarification of instructions, or improvement of the format?

The feedback from the pilot participants was very positive. All three pilot testers confirmed that the questions were clear, understandable, and in a logical order. The only issue that surfaced during the pilot test interviews was one of interview length. The first pilot test interview took more than an hour to complete, the second interview 50 minutes, and the third interview 40 minutes. The interview time reduced as the researcher became more practiced at conducting the interview, and controlling off-topic conversations and moving efficiently from one question to the next. Based on an improvement in the researcher's interview technique due to this opportunity to practice, it is anticipated that the actual interviews will take approximately 45 minutes.

Procedures

Design. This descriptive study employed a sequential explanatory mixed methods design. According to Creswell (2015), integrating quantitative and qualitative data can improve scientific inquiry and is an effective approach to mixed methods research. For this study, data was collected via a quantitative survey first, followed by qualitative interviews. The qualitative data built on the quantitative data, and the findings of both data collection methods were converged to develop a robust picture of university research development activities and research development offices, and how they impact funding success. Data derived from this study contributed to the knowledge base about research development offices at universities, and identified best practices currently being implemented on university campuses.

Quantitative data collection procedures. The quantitative survey was

disseminated to the NORDP membership, which includes approximately 700 research development professionals. The target population's membership in NORDP indicates that they have an interest in research development, and this also helped to assure external validity. Future studies will need to be undertaken to confirm that the results of this survey are generalizable to the population of research university administrators. To control against threats to internal validity, the 35-day survey timeline was not implemented during the month of May when NORDP holds its annual conference, an event attended by the majority of NORDP membership and one that would have taken participants out of their offices and possibly make it less likely that they would respond to a survey request.

To encourage maximum participation, the participants were contacted via an initial email from the researcher posted on the NORDP listserv, which was strategically crafted to highlight the benefits of participating in the survey. A supporting email with a link to the survey was sent to the NORDP listserv by the founder and former president of the organization, encouraging participation by the membership. According to Dillman, Smyth, and Christian (2014), this type of support by a legitimate authority makes it more likely that people will respond to the survey. Dillman et al. also state that social exchange principles motivate people to respond to surveys, and that people usually decide whether or not to respond to a survey very quickly after receiving it, which makes the contents of the initial solicitation critical. Key concepts that were impactful in the solicitation for this survey were the sponsorship of NORDP's founder, usefulness of the results, an appeal to participants for their help, and posing questions that were interesting to the participants.

Dillman et al. (2014) describe tailored survey design as "getting inside the

heads of respondents, to understand what appeals to them and why, and adjusting the survey procedures accordingly” (p. 17). For the members of NORDP, an incentive to complete the survey could have been the expansion of knowledge about the research development field. The NORDP (2015) has called for empirical research on this topic, and providing data to build the knowledge base served to support this request.

Additionally, making the data available to NORDP members could have served as an incentive to them to participate.

The next step in the timeline was to post a follow-up email to the NORDP listserv 6 days after the survey solicitation was first sent. Dillman et al. (2014) state that one of the best ways to increase the rate of responses is to send multiple contacts to potential participants. This strategy was used again 9 days after the initial survey solicitation was sent, and again 10 days later. Four separate email contacts were posted to the NORDP listserv (initial survey solicitation and three follow-ups) during the survey’s 35-day timeline. (see Figure 1). The contents of the four follow-up emails were varied to utilize

	Day 1	Day 4	Day 7	Day 10	Day 13	Day 16	Day 19	Day 21	Day 24	Day 27	→	Day 35
Initial email	→											
Follow-up email						→						
Follow-up email									→			
Follow-up email											→	
Survey closes												✕

Figure 1. Timeline for Survey Data Collection

different types of appeals to potential participants, and to reduce the likelihood of the

messages getting caught in spam filters.

Thirty-five days after the initial survey solicitation was sent the survey closed. A total of 116 people responded to the Research Development Survey. Four of these responses came from people who did not work for a university, and these were eliminated from the data. The survey data was coded, reviewed for missing data, compiled, validated for accuracy, and cleaned. Data was analyzed using descriptive statistics. Where appropriate, the data was analyzed for frequencies, median, mode, and standard deviation. Once the qualitative data collection process was complete, both sets of data were integrated to develop a robust picture of university research development activities and models of university research development offices, and how they impact funding success and other research development outcomes.

Quantitative data analysis procedures. A data management plan was created to define how the survey data was to be coded, reviewed for missing data, validated for accuracy, and cleaned. This survey included three types of data: nominal, ordinal, and numerical. The data was analyzed using SPSS software to get descriptive statistics including frequencies, median, mode, and standard deviation.

This quantitative survey addressed two research questions and satisfied four survey objectives. Research Question 1, *How do research university administrators perceive the value of research development activities and research development offices in universities?* had two objectives. First, to identify research university administrators' perception of the importance of research development activities to increasing sponsored funding at universities. Second, to identify research university administrators' perception of the importance of research development offices to increasing sponsored funding at

universities. Research Question 1 had one variable of interest, the perception of the importance of research development activities and research development at universities.

Research Question 2, *How do research university administrators measure the success of the university's research development office?* had two objectives. First, to identify of the measures of success used for university research development offices, and second, to determine if the increase or decrease in a university's annual sponsored funding is a fair measure of the impact of university research development offices. Research Question 2 had one variable of interest, the measures of success of the university's research development office.

The survey data collected for these variables of interest was analyzed using descriptive statistics. For the numerical data, mean, median, mode and standard deviation was calculated. For the ordinal data, frequencies were calculated. For nominal data, frequencies and mode(s) were calculated.

Qualitative data collection procedures. The subjects for the qualitative interviews were selected based on certain criteria. The criteria were (a) they currently lead a university research development office, and (b) they have established a university research development office. The goal of these qualitative interviews was to collect three research university administrators' experiences with leading a research development office. The data collected from the interviews was used to answer Research Question 3. The synthesis of the data collected, together with the data collected from the quantitative survey, was used to answer Research Question 4 and determine research university administrators' recommendations for establishing a research development office.

The interviewees were solicited via an email followed by a phone call. The 60-

minute interviews were conducted over a 2-week period in a setting that was private and free from distractions for both the interviewer and interviewee. The interview was recorded and the interviewer took brief notes. Prior to the interview, the interviewee received an informed consent form. This form was sent in an email that described the project, telling the interviewee about (a) the study's purpose, (b) the length of the interview, (c) the intended use of the results from the interview, (d) the confidentiality of their responses, and (e) the availability of the study results after the study is completed. The interviewee had at least 24 hours to review, sign, and return the consent form. The interviews were recorded in a Go To Training session and transcribed using Same Day Transcriptions, a professional transcription service.

Qualitative data analysis procedures. The researcher used Colaizzi's (1973) method to analyze the data that was collected through interviews using the Research Development Interview Guide (see Appendix). Colaizzi's method is highly suitable for this study since it revealed the fundamental structure of the university research administrator's experiences and served to uncover the essence of their experiences in establishing and leading a research development office. The researcher used the following steps in Colaizzi's method to guide the analysis.

1. Read each transcript several times to acquire a feeling for the interviewees' experiences.
2. Extracted and recorded significant statements that relate directly to the study's phenomenon.
3. Formulated meanings for each of the significant statements.
4. Sorted the formulated meanings into categories and connected the categories to

themes that were similar for all participants.

5. Integrated the findings of the study into a comprehensive description of the study's phenomenon.

6. Validated the findings by having a qualitative expert verify the meanings, categories, and descriptions.

7. Incorporated changes if any suggestions were made during the expert verification.

Data integration. Creswell (2015) described the convergence of data that occurs in a mixed methods study as a process where the qualitative and quantitative data are merged, the results compared, and any discrepancies explained. Utilizing both quantitative and qualitative data collection methods in a research study can provide a more detailed and well-rounded understanding of the research problem than either data collection method alone (Creswell, 2015). For this study, both data sets were collected and analyzed separately. Next, the results were compared to determine if the quantitative results and the qualitative results supported each other or diverged from each other. Finally, the qualitative results were used to help explain and refine the quantitative results (Creswell, 2015). Specifically, to answer Research Question 4, the data collected on impactful research development activities and offices, methods for measuring success of research development offices, and research university administrators' experiences with leading a research development office were synthesized to determine research university administrators' recommendations for establishing a research development office.

Chapter 4: Results

Introduction

The purpose of this sequential explanatory mixed methods design was threefold: to (a) determine administrators' perceptions of what research development activities and best practices have contributed to increasing a university's annual sponsored funding totals; (b) understand administrators' experiences with leading a research development office; and (c) determine research university administrators' recommendations for establishing a research development office. This chapter describes the data collected through a quantitative survey and qualitative interviews.

Quantitative data was collected from the Research Development Survey (see Appendix A) of research university administrators on what research development activities implemented at their workplace have contributed to increasing their institution's sponsored funding. For survey participants with a research development office, data was collected on the characteristics of the office, impact of the office, and measures of office success. Simultaneously, qualitative data was collected from interviews with three research university administrators who lead a university research development office and have established a research development office. These interviews utilized the Research Development Interview Guide (Appendix B). The qualitative data collected in these interviews was supplemented by data from two open-ended questions on the electronic survey.

Profile of Survey Participants

A total of 116 people responded to the Research Development Survey. Four of these responses came from people who did not work for a university, and these were

eliminated from the data. The majority of the 112 remaining participants worked for a public university (82.1%) that has a Carnegie Classification of research university with high research activity (18.8%) or very high research activity (59.8%). Participants were also likely to work for a university with more than 20,000 students enrolled (58.9%). To gauge the level of research activity at their universities, survey participants were asked to identify their institution's total annual sponsored research funding expenditures. The National Science Foundation (2016) ranks academic institutions based on total research and development expenditures, and universities often describe their level of research activity in terms of sponsored research expenditures. Figure 2 depicts the distribution of total annual sponsored research expenditures at the participants' universities. It is notable that almost 31% of participants selected *I don't have that information* as their response to this question.

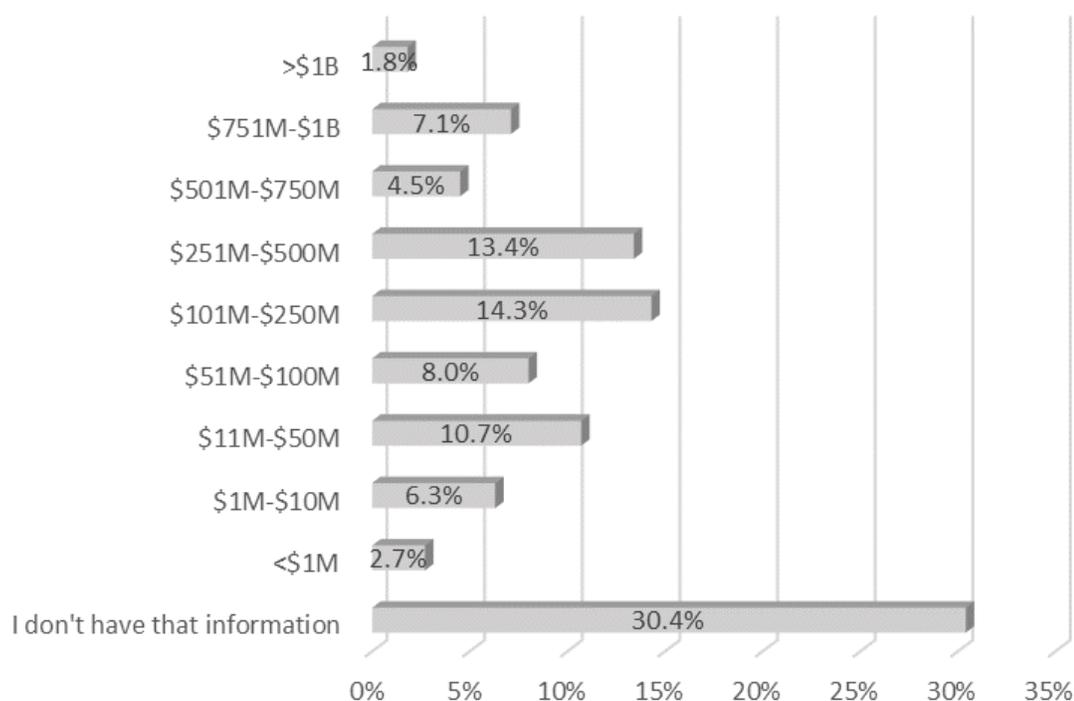


Figure 2. Total Annual Sponsored Research Expenditures

Participants seemed more familiar with the total approximate annual sponsored funding at their universities, where only 12.5% selected *I don't have that information* as their response. Figure 3 shows that annual sponsored funding at the participants' universities ranged from \$1 million to over \$1 billion.

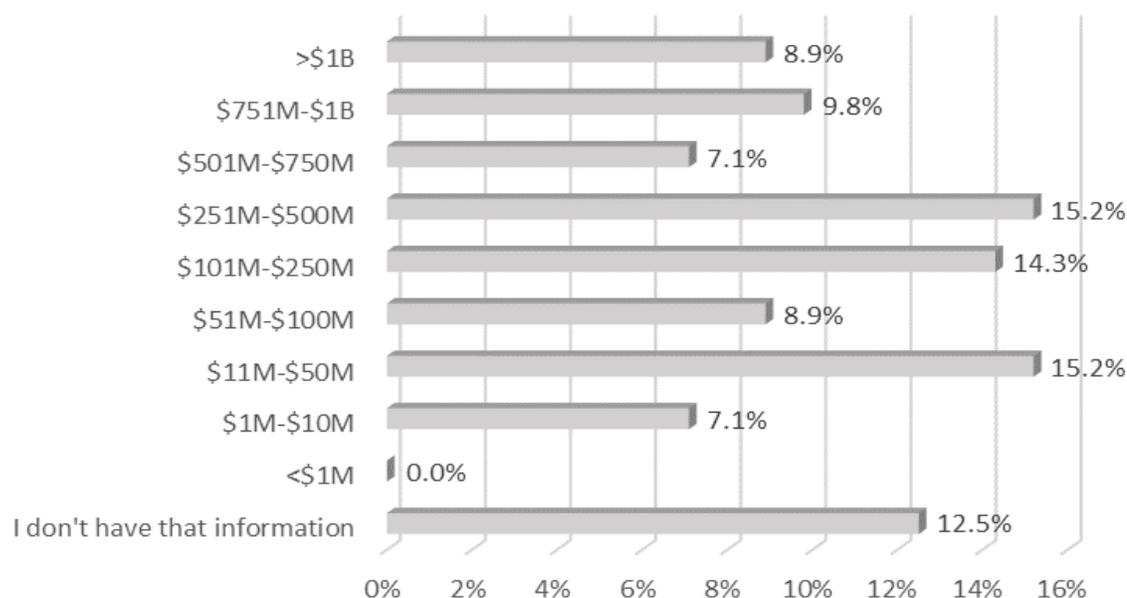


Figure 3. Total Approximate Annual Sponsored Funding

In addition to data that described the participants' institutions, the survey provided data that profiled the participants themselves. Participants indicated that 42.9% hold the position of director or manager. The next most common response for participant position was *Coordinator/ Officer/ Specialist/ Administrator* (23.2%). More than half of survey participants (57.1%) had more than 5 years' experience in university research development, with 27.7% of total participants indicating they have more than 10 years' experience. Only 3.6% of participants have less than 1 year of experience in university research development. Most participants responded that a high percentage of their job duties pertained to research development, with 58% selecting 76% - 100% of job duties.

The survey included a question that asked if participants considered themselves research development professionals. The responses indicated that 92% of participants considered themselves research development professionals. The participants who answered no to this question (3.6%) either held the position of dean or did not work in their university's research development office. A total of 33% of respondents do not work in a separate office dedicated to research development, while 67% indicated that they do.

Survey participants without a university research development office. A majority of survey participants (67%) indicated that their institutions have an office dedicated to research development functions and processes that is separate from their sponsored programs or other research administration office. Participants who answered that their institutions did not have a dedicated research development office, or 33% of the total participants, were asked what impact creating such an office would have at their institution; 83.3% indicated that creating a dedicated research development office would have some impact or a major impact. No one selected the response *No impact*.

Survey participants with a university research development office. Participants who have a dedicated research development office at their institution provided the following information about the office. The majority of participants with a research development office (85.3%) have a central office that serves the entire institution, while 12% have an office that only serves a particular college or other unit (such as a medical school) within the university. Two participants (2.6% of those who have a research development office) responded that they have both central and unit level research development offices. Survey participants were also asked when their institution's research development office was established. Figure 4 shows the responses

to this question, and demonstrates a trend of increase in the number of research development offices established between 1980 and 2016.

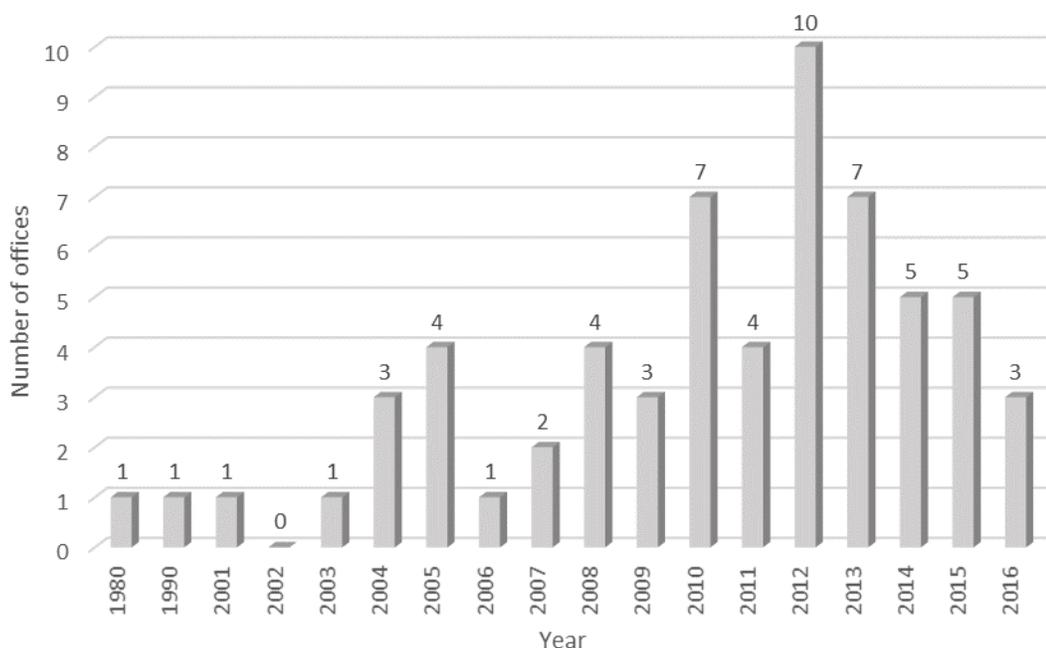


Figure 4. Year Research Development Office Was Established

Of the survey participants who have a research development office, 63.1% have three or more full time employees, and 17.5% have seven or more full time employees. Among the survey participants who have a research development office, 81% work in that office. The data collected on participants, their institutions, and institutional research development offices helped to provide a context for the data collected about the functions and activities of the offices.

Research Question 1

Research Question 1 asked how do research university administrators perceive the value of research development activities and research development offices in universities. Data for this research question was collected through survey questions that explored the value placed on research development offices and participants' perceptions of the

importance of various research development activities to increasing sponsored funding success at universities. Survey data was analyzed using descriptive statistics.

The value of research development offices. The value of separate university research development offices was gauged with a survey question that asked if participants would recommend that universities without a separate office establish one for the purpose of providing enhanced research development functions to increase the university's sponsored funding success. A majority of participants, 77.7%, responded that they would recommend establishing a research development office, while 5.4% would not recommend this, and 17% were not sure.

An open-ended follow up question asking why or why not in reference to the recommendation produced numerous statements regarding the value of research development offices and their role in a university's research infrastructure. The

Table 1

Value of RDO "Why or Why Not" Response Categories

Response Categories	Yes Recommend	Not Sure	Do Not Recommend
RDO's have purpose beyond increasing university's sponsored funding totals	13	1	
RDO is a specialized service provider	22	1	
Researchers need help to have funding success	24	1	
Recommend research development services but not an office		4	2
The decision to establish an RDO depends on institutional goals		7	
Recommend unit level RDO's rather than one central office		2	

researcher sorted the 46 responses to the why or why not question into three groups: those who would recommend establishing a research development office (RDO), those who would not recommend this, and those who were not sure. Then the researcher read and reread the participants' responses, looking for similarities. Six general categories of responses were identified, with some responses including statements that fell into more than one category. The results of this analysis are depicted in Table 1.

The value of research development activities. Another survey question asked participants to indicate the importance of research development activities to increasing sponsored funding success at universities. The highest-ranking activity that participants chose as either important or critically important is proposal development support for large, multi-investigator project grants. Table 2 shows the distribution of responses.

Survey participants were then asked to choose their top three research development activities as far as most impactful at their institution in terms of increasing their university's sponsored funding. Table 3 shows the first, second, and third place rankings and the overall rankings for most impactful research development activity.

The next survey question regarding the impact of research development activities asked participants how they knew that the activities they identified were the most impactful. Participants were offered five response options and invited to check all that apply. Of the 104 participants who answered this question, the most common response (88.5%) was "I base my selections of top 3 activities on my own observations." Only one participant chose "Other," and commented that their institution gets feedback from a federal affairs firm. Table 4 shows the distribution of responses.

Table 2

The Importance of Research Development Activities

Research Development Activity	Important or Critically Important
Proposal development support for large, multi-investigator project grants	92.9%
Internal grant programs to provide seed funding for research	83.9%
Grant team project management (coordination of meetings, proposal development deadlines, shared documents, etc.)	83.1%
Facilitating internal collaborations	83.0%
Working with investigators on re-submissions	83.0%
Grant proposal editing	80.3%
Grant writing workshops	78.6%
Mentorship program for investigators	76.8%
Coordinating the limited submission process	75.0%
Research faculty onboarding	74.1%
Helping/training faculty to find funding opportunities	71.5%
Facilitating external collaborations	69.6%
Grant writing of non-technical sections of a proposal	67.8%
Helping faculty in navigating through internal pre- and post-award processes	66.1%
Assisting investigators in getting a peer review of their proposal	65.2%
Disseminating funding opportunities	64.3%
Research events such as faculty symposia	47.4%
Research communications (newsletters, listservs, brochures, webpages, etc.)	45.5%
Creating a library of successful proposals	40.2%
Recognition events/programs for investigators' success	39.3%
Grant writing of technical sections of a proposal	30.3%

Table 3

Rankings for Most Impactful Research Development Activities

Research Development Activity	Most Impactful	2nd Most Impactful	3rd Most Impactful	Overall
Proposal development support for large, multi-investigator project grants	25.0%	9.8%	9.8%	44.6%
Grant team project management (coordination of meetings, proposal development deadlines, shared documents, etc.)	8.9%	11.6%	8.0%	28.5%
Grant writing workshops	10.7%	12.5%	3.6%	26.8%
Internal grant programs to provide seed funding for research	8.0%	7.1%	5.4%	20.5%
Grant proposal editing	8.9%	8.0%	3.6%	20.5%
Facilitating internal collaborations	5.4%	4.5%	9.8%	19.7%
Mentorship program for investigators	5.4%	4.5%	8.0%	17.9%
Helping faculty in navigating through internal pre- and post-award processes	4.5%	7.1%	4.5%	16.1%
Helping/training faculty to find funding opportunities	2.7%	3.6%	6.3%	12.6%
Facilitating external collaborations	4.5%	5.4%	1.8%	11.7%
Grant writing of non-technical sections of a proposal	1.8%	4.5%	5.4%	11.7%
Research faculty onboarding	1.8%	6.3%	2.7%	10.8%
Working with investigators on re-submissions	0.0%	1.8%	6.3%	8.1%
Coordinating the limited submission process	1.8%	0.9%	4.5%	7.2%
Disseminating funding opportunities	2.7%	0.9%	2.7%	6.3%
Assisting investigators in getting a peer review of their proposal	0.9%	2.7%	1.8%	5.4%
Research communications (newsletters, listservs, brochures, webpages, etc.)	0.9%	0.0%	3.6%	4.5%
Research events such as faculty symposia	0.0%	0.9%	1.8%	2.7%
Creating a library of successful proposals	0.0%	0.0%	0.9%	0.9%
Grant writing of technical sections of a proposal	0.0%	0.0%	0.9%	0.9%
Recognition events/programs for investigators' success	0.0%	0.0%	0.0%	0.0%

Table 4

How Do You Know the Most Impactful Activities?

<u>How Do You Know Most Impactful Activities?</u>	
I base my selections of top 3 activities on my own observations	88.5%
We track the outcomes of our research development activities	19.2%
Feedback from faculty	41.3%
Feedback from university administration	15.4%
Other	0.9%

The last survey question about research development activities asked participants if the research development activities in their institution were sufficient to meet their institution's research goals. Of the 110 participants who answered this question, 34.5% responded *No, they are not sufficient*, and 38.2% responded *Yes, they are somewhat sufficient*. The remaining participants who answered this question, or 27.3%, responded that their institution's research development activities are often sufficient or extremely sufficient to meet their institution's research goals.

Research Question 2

Research Question 2 asked how do research university administrators measure the success of the university's research development office. There were three questions on the survey that directly explored the issue of measuring the success of research development offices. First, participants were asked how their institution's research development office measures the success of the office. Participants were given eight response options including an open-ended response of *Other*, and invited to check all that apply. The responses are shown in Figure 5.

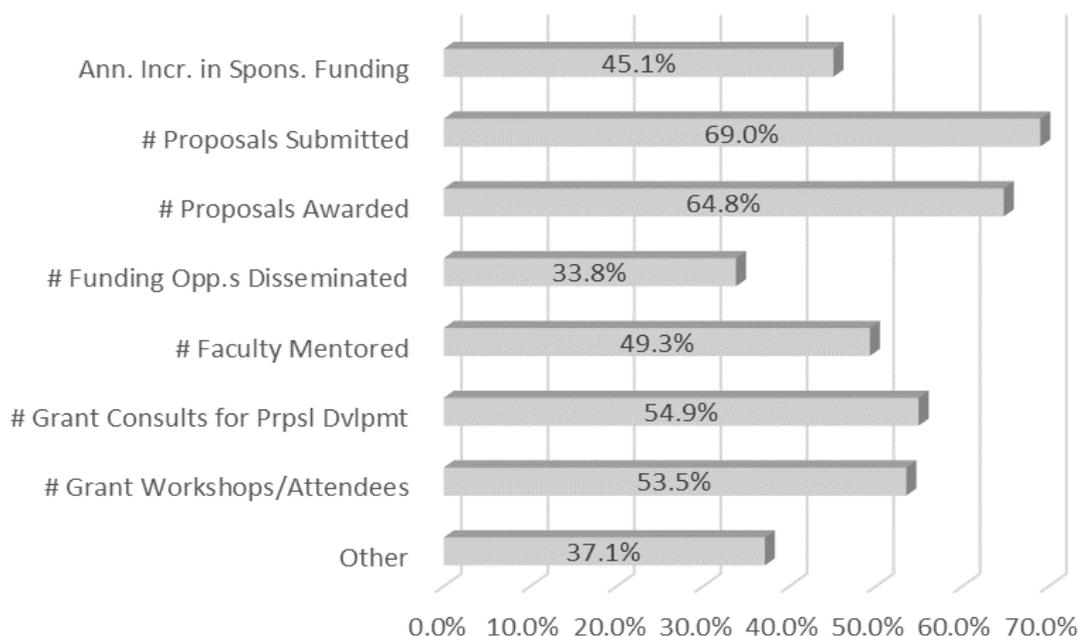


Figure 5. How does your institution's RDO measure the success of the office? (check all that apply)

Most survey participants indicated they used multiple metrics to measure the success of the research development office. The analysis of the responses showed that mean number of response options chosen by participants was 4 and the mode was 5. The comments shared for the response option *Other* revealed some interesting data on measuring success of research development offices. The most common metric mentioned was that of faculty satisfaction (included in 35% of comments). Five of the 26 comments (19%) noted that they did not know what metrics were used to measure the success of the research development office. Two of the 26 comments (8%) noted that they did not use metrics to determine success. Many other metrics were mentioned throughout the comments. These other metrics included the number of new faculty encounters, publications, patents, presentations, resubmissions, return customers to research development office, collaborations, large funding initiatives pursued, and proposals

awarded by faculty directly served by research development office (not all those awarded).

The next survey question on the topic of measurement asked whether the increase or decrease of a university's annual sponsored funding is a fair measure of the impact of a university research development office. Participants were offered response options of *Yes*, *No*, or *Not Sure*. The distribution of responses is depicted in Figure 6.

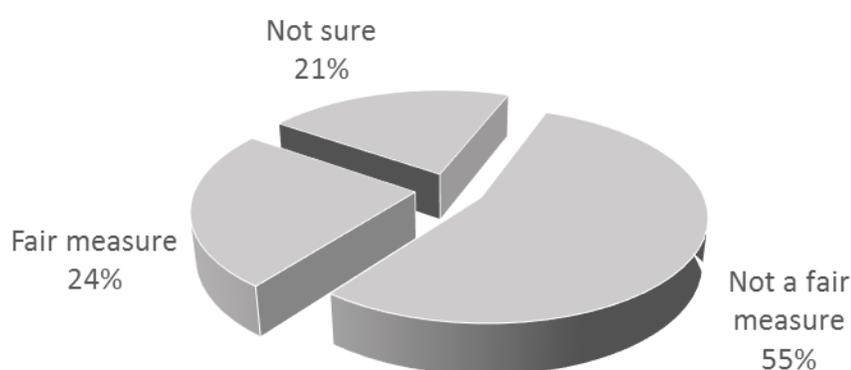


Figure 6. Is the increase or decrease of a university's sponsored funding a fair measure of the impact of a university's research development office?

Finally, participants were asked, in regard to their answer to the question about whether the increase or decrease of a university's annual sponsored funding is a fair measure of the impact of a university research development office, *why or why not?* This open-ended question elicited 97 responses. The researcher sorted the responses into three groups: those who felt it was a fair measure, those who did not, and those who were not sure. The researcher then read and reread the participants' responses looking for similarities. Five general categories of responses were identified, with some responses

including statements that fell into more than one category. The results of this analysis are depicted in Table 5.

Table 5

Measuring Success “Why or Why Not” Response Categories

Response Categories	Fair Measure	Not a Fair Measure	Not Sure
Many factors influence funding success	4	35	11
RDO cannot control many success factors	3	30	5
RDO services/resources are often directed to new faculty or large, multidisciplinary proposals	1	2	0
RDO impact on researchers and research proposal success may take several proposals/years to pay off	3	11	4
It is difficult to determine fair measures of success	22	22	10

Research Question 3

Research Question 3 asked, what are research university administrators’ experiences with leading a research development office? To address this research question, one-on-one interviews were conducted with three research university administrators who have established and currently lead a university research development office. These interviews were conducted utilizing the seven-question Research Development Interview Guide developed for this purpose. The researcher used Colaizzi’s (1973) method to analyze the data that was collected through interviews and to reveal the fundamental structure of the university research administrator’s experiences with research development and in a research development office. The researcher began by reading and rereading the interview transcripts multiple times to acquire a feeling for the interviewees’ experiences. The researcher extracted significant statements, sorted the

significant statements into categories, and then connected the categories to themes. The categories and themes were validated by a qualitative expert. The analysis served to divide the responses into those that profiled the interviewees as research development professionals, and those that represented interviewee experiences as leaders of research development offices.

Identity and role of research development professionals. The first three questions in the Research Development Interview Guide explored the identity of the interviewees as research development professionals. Subsequent questions also revealed the perceptions of interviewees of the role that a research development professional plays in a university's research enterprise. The researcher's analysis of interview responses revealed two categories, self-identity as a research development professional and the role of research development professionals. From these categories the theme of research development as an emerging profession emerged.

Question 1 of the Research Development Interview Guide asked *Why do you consider yourself a research development professional, versus another type of research administrator?* Two of the interviewees indicated that while they consider themselves research development professionals, they serve in other capacities as well. One of these two indicated that she serves numerous other roles, including research administrator, faculty member, and researcher. The other interviewee who serves in other capacities considers himself both a research development professional and a research administrator. The third interviewee responded that she has always considered herself to be a research development professional and has never considered herself to a research administrator.

Question 2 asked how many years of experience the interviewees had in the area

of research development. One interviewee responded that she has been working in research development since 2000 (17 years), another interviewee stated between 15 and 20 years, and the third interviewee stated she has been working in research development more than 25 years.

Question 3 explored the length of time the interviewees had worked in their current research development office and if applicable, how long they worked in research development offices prior to their current office. One interviewee worked for 5 years in her current office, and for 12 years in other research development offices. The next interviewee worked in his current office for 4 years, and for 11 years in other research development offices. The third interviewee has worked in her current research development office for 10 years, and did not work in a formal research development office prior to that time although she has been performing research development functions for her entire professional career. Table 6 shows significant statements from the interviewees regarding their identity as a research development professional.

Table 6

Significant Statements Related to Self-Identity as Research Development Professionals

Category	Significant Statements
Self-Identity as Research Development Professional	<ol style="list-style-type: none"> 1. I am both a research development professional and a research administrator 2. I have always been in research development 3. Many of our NORDP colleagues did start from the grants and contracts type of administrator and it kind of morphed into research development, where that was never my role 4. I wear many hats

Table 7 shows significant statements made by the interviewees regarding the role

of research development professionals in a university research enterprise.

Table 7

Significant Statements Related to the Role of Research Development Professionals

Category	Significant Statements
Role of Research Development Professionals	<ol style="list-style-type: none"> 1. If a research development professional can also serve as the project coordinator, or, if you have someone on the team that can do that, that relieves the faculty of so much administrative burden 2. I see the research development professional as the facilitator or conduit to help [intra- and inter-institutional collaboration] happen. 3. The research development professional as the proposal integrator can put [the proposal] together into a very coherent one voice sounding proposal. I've seen this prove successful time and time again. 4. That is what we bring to the table; we know what kind of tools we should use in order to have a good proposal 5. Is to provide all the management, planning, organizing, strategizing and actually helping shape the proposal to respond to agency requirements

Importance of research development activities and offices. Question 4 on the interview guide explored the interviewee's perceptions of the importance of research development activities and offices for increasing a university's sponsored funding, the potential for both intra- and inter-institutional collaboration, and institutional capacity building. The researcher analyzed the responses to this interview question by reviewing the transcripts multiple times to extract significant statements that related directly to the interviewees' perceptions of the importance of research development activities and offices. The researcher's subsequent coding process included organizing, sorting, and

labeling the responses. Interviewees each indicated that they thought research development activities and offices are very important, citing numerous examples of how research development support positively impacted the success of grant proposals at their institutions. Interviewees also indicated that goals of increasing annual sponsored

Table 8

Categories and Significant Statements Related to the Value of Research Development and the Need for Metrics

Categories	Significant Statements
Capacity Building	<ol style="list-style-type: none"> 1. [Institutional capacity building] is one of our goals. We do that in ...different ways...workshops...[bringing] new faculty up to NSF to meet their program manager...[looking] for funding opportunities 2. We are constantly looking at opportunities to build capacity in areas that we want to grow...or areas that are current areas of strength 3. [Research development office] plays a very, very important role in facilitating research funding...and helping our research capacity 4. No faculty has time to dedicate to running such a large effort and doing all the planning, the organizing, the strategizing....so that is where we play an essential role
Collaboration	<ol style="list-style-type: none"> 1. Our office is very good at building a team [through] intra-institutional collaborations
Increased Funding	<ol style="list-style-type: none"> 1. We serve faculty who struggle more than we do the highly successful people. That group would normally have a pretty low funding rate, and we probably improve it. 2. Sponsored funding. Well, that's kind of what we're all about
Quantifying Value	<ol style="list-style-type: none"> 1. We don't quantify it very well. 2. I think it is critical 3. My impression is that [research development activities] make a difference. It's just sometimes hard to point to where it is.

funding, increasing collaboration, and institutional capacity building are supported by research development activities and offices. The idea of metrics for the impact of research development at a university was discussed in terms of the lack of metrics and the need for metrics. The coding process for these responses allowed the researcher to identify categories of capacity building, collaboration, increased funding, and quantifying value. From those categories, themes of the value of research development and the need for metrics emerged. The categories and significant statements related to these themes are depicted in Table 8.

Interviewees' experiences. Next the researcher extracted significant statements that related directly to the interviewees' experiences in research development offices and establishing a research development office. Questions 5 and 6 of the Research Development Interview Guide explored the interviewees' experiences as leaders of research development offices. Question 5 asked about the main activities of interviewees' research development offices and if they have plans for expanding offerings to better serve their institution's research goals. Question 6 asked interviewees to describe their experiences with establishing a research development office. The researcher's coding process included organizing, sorting, and labeling the responses. This coding process allowed the researcher to identify three categories related to leading a research development office: structure, activities, and challenges. Significant statements pertaining to the interviewees' experiences with leading a research development office are shown in Tables 9-11. From the three categories, two themes emerged.

First, interview responses revealed a theme of the changing structure of research development offices brought on by new challenges. This theme was highlighted through

interviewee comments about some research development offices that are reducing staff while the institution's research funding goals remain the same or increase. The second theme that emerged is that successful research development offices strategically implement similar research development activities. Table 9 shows significant statements related research development office structure.

Table 9

Significant Statements Related to RDO structure

Category	Significant Statements
RDO Structure	<ol style="list-style-type: none"> 1. We have three and a half FTEs that are doing research development...the total cost of operations is around \$275,000 a year. 2. I have lost 50% of my staff since we started [the RDO], mostly through attrition...[the university] is struggling from a budget perspective so those positions won't be replaced 3. what it costs to run an office...includes...salary and fringes plus about a \$40,000 operating budget 4. I contract out some of the opportunity identification 5. We have three full-time and two part-time people not including me 6. There was a resistance to calling it [a research development office] 7. [our RDO] has a director and a couple of [grant] writers

Numerous comments were made by interviewees on the topic of research development activities, including which activities their offices facilitate and which activities have the most value from a strategy perspective. Table 10 shows significant statements related to research development office activities.

Table 10

Significant Statements Related to RDO Activities

Category	Significant Statements
RDO Activities	<ol style="list-style-type: none"> 1. Professional development activities primarily through workshops 2. We try to train people to use Pivot 3. We offer some editing ... 4. We arrange for peer review, so if someone wants to identify who they want, we will arrange that for them and pay the reviewers some money 5. We do limited submissions 6. A lot of targeted opportunity announcements 7. We maintain a website for research development 8. We definitely work on finding collaborators, probably more internally than externally 9. We do a lot of collaboration building 10. We hire in clusters these days...we meet with cluster leads and cluster administrators...we'll help in any way we can. 11. Communication of research and research opportunities, proposal development 12. Enhancement of collaboration and team science 13. Proposal development 14. Strategic research planning, and supporting the VPR with special reports and projects 15. From a strategy perspective...large multi-investigator proposals 16. Funding opportunity identification, understanding faculty interests; both their research interests and where they want to be in five years, grant strategy, grant training 17. We understand the culture and priorities of the funders 18. We do the entire spectrum [of research development activities]

Interviewees also shared the challenges they face in their research development

offices. Table 11 shows significant statements related to research development office challenges.

Table 11

Significant Statements Related to RDO Challenges

Category	Significant Statements
RDO Challenges	<ol style="list-style-type: none"> 1. Our objective is to double research funding in five years...to do that we have to be more strategic about large grants 2. Our institution has had some real budget woes...as a result our office instead of expanding has shrunk 3. We are in the process of changing the culture here to one that encourages grantseeking 4. I look to see how we can strategically leverage other resources in the university as opposed to trying to grow our office 5. We are trying to increase the [research development] services that the colleges provide the faculty

The answer to Research Question 3 is revealed through several means. First, understanding the identity and role of the research development professional provides a context for the experiences of the interviewees. Each interviewee identified themselves as a research development professional, but two of them qualified this by stating they have other roles. The significant statements and categories revealed a theme of research development as an emerging profession. Interviewee comments included, “my titles were very different...but my role has always been doing research development” and “our previous vice president didn’t like the term research development. He thought it would be confused with [university fundraising].” The theme of research development as an emerging profession is significant in understanding that those wishing to establish research development offices in universities also have the challenge of making decision

makers understand research development as a profession and as a component of the university research enterprise.

Other themes that emerged include the value of research development. The research development function is seen to support and enable an increase in a university's sponsored funding, the potential for both intra- and inter-institutional collaboration, and institutional capacity building. Interviewees stated that research development activities "make a difference" and "almost every tier one research institution has a research development office...they are seeing the value and the return on investment." The theme of the need for standardized metrics was emphasized by interviewees, who stated that leaders of research development offices, "need to get evidence of the value." The last two themes that emerged to answer Research Question 3 have to do with the research development office structure and challenges and research development activities. In some cases research development office sizes are shrinking while the institution's research funding goals remain the same or increase. One interviewee commented, "Our objective is to double research funding in five years" and "I look to see how we can strategically leverage other resources in the university as opposed to trying to grow our office." Also, it is apparent that successful research development offices strategically implement similar research development activities. All the interviewees stated that support of large multi-institution/ multi-investigator proposals was one of the most impactful activities of their research development office, "from a strategy perspective our office focuses on large multi-investigator proposals." Each of these themes contribute to an overall picture of what research university administrators' experiences are with leading a research development office.

Research Question 4

Research Question 4 asked what is needed to establish a successful research development office. To answer to this question, quantitative survey data and qualitative interview data were merged. As part of the data integration process, the researcher compared the results of the survey with the categories, themes, and significant statements of interview responses. The researcher then looked for areas where the survey data and the interview data could be merged to produce recommendations for research development professionals, based on the convergence of the data.

Interview data. Question 7 of the Research Development Interview Guide asked interviewees what advice they would give a research development professional on how to develop a model for establishing a research development office. Interviewees had a lot of advice to share, and the researcher carefully read and reread the interview transcripts to extract significant statements. The coding process allowed the researcher to identify four categories of advice: resources, stakeholders, metrics, and strategy. Table 12 shows the significant statements related to resources.

Table 12

Significant Statements Related to Resources

Category	Significant Statements
Resources	<ol style="list-style-type: none"> 1. Join NORDP 2. Join the NORDP listserv 3. Become a member of NORDP and reach out to similar institutions...it is a huge resource, and the greatest thing about NORDP is people are willing to share information 4. You do not have to do it all alone 5. Learn from other people and NORDP is a really good way to do that

Interviewees also shared comments on recognizing the stakeholders in the university research enterprise, and determining research development office strategy based on the needs and strengths of stakeholders. Table 13 shows the significant statements related to stakeholders.

Table 13

Significant Statements Related to Stakeholders

Category	Significant Statements
Stakeholders	<ol style="list-style-type: none"> 1. Identify what faculty really need. We are preparing a survey to see what things we do that are most helpful 2. Talk to [internal stakeholders] and find out what services they need 3. Research development professionals have to get to know their faculty, their deans, and the interests of all [stakeholders] 4. Looking at what opportunities there are, try to map your faculty or staff expertise to that opportunity 5. The optimal [research development professional] would be a writer who is also a good program or project manager 6. Find someone who is really quite good at working with faculty, helping to coach them, to distill their science 7. The research development team needs to make that personal contact with [stakeholders]. It takes time, effort, and networking.

Another category of advice from the interviewees regarding establishing a research development office had to do with metrics. Table 14 shows the significant statements related to metrics.

Table 14

Significant Statements Related to Metrics

Category	Significant Statement
Metrics	<ol style="list-style-type: none"> 1. We look at who attends our workshops to see who gets funded 2. I keep emails from faculty who thank us for what we've done 3. Need to get evidence of the value [of research development offices] 4. You can never take credit. I mean, I'm a researcher and I would be really upset if my grants person took credit for my getting my grant 5. Getting a successful track record for the office can add pretty quick credibility for other faculty who will consider use of the office as well. 6. It is difficult to isolate it and say without our office you cannot succeed, however, a lot of people on very large efforts clearly credit our office 7. Try to point to success stories or evidence that you've helped people and how much more you could do if you were a better organized group

Another final category of advice resulting from responses to Question 7 of the Research Development Interview Guide had to do with the use of strategy. Table 15 shows the significant statements related to strategy.

From the categories depicted in Tables 12-15, five themes were identified. First, learn from other research development professionals. Interviewees were unanimous in their recommendation to “join NORDP” and “learn from other people and NORDP is a really good way to do that.” The second theme is identifying stakeholder needs and strengths. Interviewees stated, “Identify what faculty really need” and “research development professionals have to get to know their faculty, their deans, and the interests

Table 15

Significant Statements Related to Strategy

Category	Significant Statement
Strategy	<ol style="list-style-type: none"> 1. The first year is a huge learning curve 2. Try not to be everything to everyone at the beginning. 3. Work to establish a culture of grant seeking. It is not something that is going to happen overnight 4. It is going to take some time to get [the research development office] off and running and integrated into the culture 5. You've got to take a look at where you think most of your grants are going to come from. They are probably going to come from the hard sciences, the medical side, and some from the social sciences 6. We did a systematic analysis of what are our strengths in different areas ...and we came up with a lot of strategies for building our [research] capacity 7. You have to take a strategic look at where your [research development] should focus 8. If your focus is on science, then you need a scientific writer 9. There is no money in the arts...you work ten times as hard to get \$20,000 10. Hire a director with the research development skill set and a writer or two 11 Of course you have to tailor it to what your institution wants 12. Do more with competitive intelligence like ASU [Arizona State University] 13. Get a research development professional with NIH expertise 14. Focus more on large projects and professional development 15. We have embedded people physically into the colleges and in some cases cost shared their salaries

of all [stakeholders].” The third theme is that changing university culture takes time.

Interviewees stated, “it is going to take some time to get [the research development

office] off and running and integrated into the culture.” The fourth theme is measuring impact. Interviewees commented on the common challenge of developing useful metrics, but noted that research development offices “Need to get evidence of the value [of the office].” The last theme is the need to channel research development efforts strategically. Interviewee comments had a common theme of the need for “systematic analysis of what [institutional] strengths are” to develop strategies for increasing research capacity.

Survey data. Once significant statements, categories, and themes related to Research Question 4 were identified, the researcher reviewed the survey data to determine if connections could be made between survey responses and the categories and themes identified in the interview responses. Significant statements from open-ended survey questions were reviewed and analyzed for their relevance to the categories and themes of the interview data. Significant statements from the survey fit into three interview data categories: stakeholders, metrics, and strategy. Table 16 shows significant statements from the Research Development Survey related to stakeholders.

Table 16

Significant Statements from Survey Related to Stakeholders

Category	Significant Statements
Stakeholders	<ol style="list-style-type: none"> 1. The faculty who choose our services tend to be the ones most in need: new faculty, multidisciplinary groups, those struggling to get funded. They are not a representative sample of the university's funding as a whole, and they are less likely to get funded with or without our help. 2. Research development has no control of behavior. Ultimately, faculty decide if they want to submit a proposal or not regardless of the help they may have received from research development 3. So much depends on the faculty - their research program and their willingness to participate fully in the research development process.

The significant statements from the Research Development Survey related to metrics are shown in Table 17.

Table 17

Significant Statements from Survey Related to Metrics

Category	Significant Statement
Metrics	<ol style="list-style-type: none"> 1. A standardize set of metrics (nationally/internationally) could advance the field 2. Many factors influence declines and increases in any university's annual sponsored funding, only a few of which an office of Research Development can influence, and none actually control. 3. If funding remains steady or improves over a long period [it] is a good measure of success in all areas. 4. The goal of RD is to increase external funding (or enhance chances of receiving external funding), so it seems reasonable to include external funding as one of the measures of success. 5. It shouldn't be the ONLY measure, but if the point of RD is to increase funding, then it should definitely be looked at. 6. Hard to measure impact in the short-run given there is some training and capacity building in research development. 7. if the purpose of research development is to enhance research activity & increase our success, then it's fair to measure [external funding] 8. we can only be measured on proposals that come through our office, not all proposals submitted from our institution.

The significant statements from the Research Development Survey related to strategy are shown in Table 18.

After the significant statements from the survey responses were sorted into the categories of stakeholders, metrics, and strategy, the researcher analyzed them to

Table 18

Significant Statements from Survey Related to Strategy

Category	Significant Statement
Strategy	<p>1.[Focus on] large multidisciplinary, institutional-level grant applications that very likely would never get done without RD management and facilitation.</p> <p>2. Changing a culture requires significant institutional support from a high level.</p> <p>3. Part of our value is also in easing faculty burden</p> <p>4. RDO's for a lot of universities do not have strong budget support. Most often these RDO's are treated as an afterthought with underfunding and understaffing being a measured expression of their support. For many universities, the RDO's staff and administrators are not comparably paid and most are partially, if not completely, funded by indirect cost which is neither consistent or sustainable over time</p> <p>5. Faculty and research staff should be putting their efforts to solving the problems of our times rather than having it taken up with all the critically essential groundwork that research development professionals can do on their behalf</p>

determine if any of the five themes applied to the significant statements. Four of the themes that emerged from interview responses also applied to survey responses. Survey respondents noted that the importance of identifying stakeholder needs and strengths. Responses included, “[the research development office] can support the interests of the faculty member and the university.”

The next theme is that changing university culture takes time. Survey participants stated, “The money lags (several years) behind the cultural shift toward more participation in proposal development.”

The next common theme is measuring impact. Survey participants shared many

comments on the need for metrics and the nature of fair measures of success. A particular focus of responses was whether an increase or decrease in sponsored funding was a fair measure. Responses included, “the goal of RD is to increase external funding (or enhance chances of receiving external funding), so it seems reasonable to include external funding as one of the measures of success” and “[funding] shouldn't be the ONLY measure, but if the point of RD is to increase funding, then it should definitely be looked at.” Survey participants also noted the need for metrics, “a standardize set of metrics (nationally/internationally) could advance the field.”

The final theme shared by survey participants and interviewees is the need to channel research development efforts strategically. Survey participants stated, “having an infrastructure of support and resources for faculty members is critical. The structure of such an office and the emphasis placed on certain services (writing, editing, finding funding, developing seminars and workshops, assistance with large/small proposals) should be tailored to meet the specific needs of faculty at each institution.”

The answer to Research Question 4 is also revealed through responses related to what research development activities a research development office should focus on. Both interviewees and survey participants provided insight on what research development activities were important, and which of those activities had the most impact. Table 10 shows significant statements from interviewees about research development activities. Of the 21 significant statements made by interviewees, 5 statements related to the research development activity of supporting large, multi-investigator project grants. This activity was chosen by 92.9% survey participants in the list of important or critically important activities and also ranked as the most impactful activity. The other activities identified as

important by interviewees were also ranked as important or critically important by survey participants: grant team project management (83.1%), funding opportunity identification (71.5%), workshops (78.6%), proposal development/editing (80.3%), facilitating collaboration (83%), limited submissions (75%), internal grant programs (83.9%), and research communications (45.5%).

After reviewing the survey results and the significant statements, categories, and themes of the interview responses, the researcher found that the participants in this study, university research administrators, agreed on some specific recommendations for establishing a successful research development office. First, it is recommended to utilize the resource found in knowledgeable research development colleagues, such as those who are members of NORDP. Next, when designing office functions and initiatives it is important to understand the needs and strengths of stakeholders, including faculty and university leadership. This recommendation coincided with a recommendation to channel research development efforts strategically to best utilize office resources while accomplishing the research goals of the institution. Study participants also cautioned that growing a university research enterprise can often involve a cultural shift, and this can take time to happen. The research development activities that support a research culture can also take years to show a return on investment. Establishing standardized metrics for research development is also a priority in the research development field; study participants had strong opinions on what appropriate and fair measures of success were, but also demonstrated that formal metrics, fair or otherwise, are still not always employed to evaluate research development activities and offices. Finally, study participants all agreed that the most important and impactful research development activity is providing

support for large, multi-investigator project grants. Other highly ranked activities include grant team project management, funding opportunity identification, internal grant programs, facilitating collaborations, limited submissions, research communications, proposal editing, and workshops.

Overall, the data collected in this study through the Research Development Survey and Research Development Interview Guide provided a wealth of information for learning about research development at universities and research development best practices currently being implemented on university campuses. The following chapter will synthesize and discuss the data to explore the recommendations for establishing a successful research development office.

Chapter 5: Discussion

Introduction

A sequential, explanatory mixed methods study was conducted on research development in universities. The purpose of this mixed methods design was threefold: to (a) determine administrators' perceptions of what research development activities and best practices have contributed to increasing a university's annual sponsored funding totals; (b) understand administrators' experiences with leading a research development office; and (c) determine research university administrators' recommendations for establishing a successful research development office. This topic is timely as many universities have goals of expanding their research capacity and are reevaluating the support structures for their research enterprise. This chapter will discuss how the results of this study inform this topic and build the knowledge base about research development as both a field and a profession. The results of this study will be used to answer to this study's four research questions, and this discussion will be followed by implications and limitations of the results, along with future directions.

Summary and Interpretation of the Findings

This section includes the results of the study. Results are summarized and discussed for each research question below.

Research Question 1. Research Question 1 asked *how do research university administrators perceive the value of research development activities and research development offices in universities?* This question was addressed through Research Development Survey questions that explored the value placed on research development offices and participants' perceptions of the importance of various research development

activities. Participants perceive value in a formal research development office, and many participants noted that the value of research development offices goes beyond increasing university sponsored funding goals. Survey participants commented that research development offices offer specialized services that are not duplicated in other units in the university research infrastructure, and researchers need this research development support to be successful. While each of the 21 research development activities on the survey received some votes for being important or critically important, the highest-ranking activity that participants chose is proposal development support for large, multi-investigator project grants. It is interesting to note that three activities most commonly chosen as either important or critically important (i.e., proposal development support for large, multi-investigator project grants; internal grant programs; and grant team project management) are somewhat different from the research development activities ranked as the top three most impactful. For example, while proposal development support for large, multi-investigator project grants was the clear favorite as most important and ranked as most impactful, grant writing workshops were in the top three most impactful research development activities, but seventh on the list of important activities. This difference may be due to a lack of standardized metrics for research development activities, which makes quantifying impact very subjective. The rankings of research development activities could also be reflective of differences in university goals and priorities. Keeping in mind the goals of their institution, leaders should consider the results of the present study in determining what services their research development office should value.

Research Question 2. Research Question 2 asked *how do research university administrators measure the success of the university's research development office?* This

question was addressed through Research Development Survey questions, and the data collected from survey responses is supplemented by comments made by the interviewees. Survey participants stated they are using multiple metrics to measure office success, and participants perceive that while the increase or decrease in sponsored funding is one measure of success, it should not be the only measure. Participants are typically using four or more different metrics of success, with the annual increase in sponsored funding being the only measure expressed in dollars. The other measures counted number of proposals awarded and submitted, as well as number of faculty who received various services. Participants also indicated they are using faculty satisfaction surveys to measure success. An interesting and revealing response about metrics came from a survey question regarding the impact of research development activities. Participants were asked how they knew that the activities they identified were the most impactful, and the most common response (88.5%) was “I base my selections of top 3 activities on my own observations.” This suggests that although participants indicated in another section of the survey that they are using multiple metrics, perhaps in practice metrics are not being collected or if they are, metrics subjective and not standardized.

A theme of the lack of metrics and the need for metrics was also extracted from interview responses. Interviewees shared various methods they employ for assessing the impact and success of their offices, and emphasized the importance of collecting this type of data to maximize the impact of activities and to justify the existence of the research development office. Interviewees noted that evidence of the value of research development offices is needed and, “getting a successful track record for the office can add pretty quick credibility.” Each of the interviewees stated that their university’s

increase in sponsored funding was one metric used to evaluate the success of their offices. The common theme from both interviews and the survey responses is that metrics for research development are an important tool for leaders of research development offices and establishing standardized metrics for the field of research development would be beneficial.

Research Question 3. Research Question 3 asked *what are research university administrators' experiences with leading a research development office?* To address this research question, one-on-one interviews were conducted with three research university administrators who have established and currently lead a university research development office. The themes of the interview responses revealed that leaders of research development offices view themselves as research development professionals, but that identity may be part of a larger role at their institution. Leaders of research development offices perceive the role of research development in universities as one that is critical and emerging. The idea of research development in academe has existed for decades, but it is only since the early 2000's when formal research development offices began appearing on many university campuses that research development as a profession has gained acknowledgement (Levin, 2011). An indicator of the emerging professional identity of university administrators who support research faculty and the university research enterprise is the establishment of the National Organization of Research Development Professionals (NORDP) in 2010. The interviewees in this study, each a member of NORDP and the head of a formal research development office, shared the emergence of their own identity as a professional working in the field of research development for the last 15-25 years to provide context for their subsequent responses on research

development activities and offices. The theme of research development as an emerging profession is significant because it illustrates that research university administrators who are establishing research development offices in universities will need to help university leadership and stakeholders understand research development as a profession and as a component of the university research enterprise.

Themes from interviewees' responses revealed that research development activities and offices are perceived as valuable and positively impact the success of grant proposals. In addition to the favorable impact research development activities and offices have on sponsored funding totals, favorable impact is also seen in increasing collaboration and institutional capacity building. Themes that were extracted from interviewee responses include the idea that there is both a lack of and need for standardized metrics for research development offices. Survey participants responded similarly, and frequently commented on the role that the research development office should play in the university research enterprise and whether a separate office was necessary. Of the 77.7% of survey participants who recommended establishing a separate research development office, some participant comments were, "A central RD office can effectively work across colleges and support important strategic research initiatives that transcend college boundaries" and "a separate Research Development Office allows the people in that office to focus on development and not get bogged down in the day-to-day activities that occur in the Office of Sponsored Programs...separate provides a clear identity and function to Research Development personnel." In a few cases (5.4%), survey participants did not recommend a separate office, "I don't think it needs to a 'separate' office. In smaller schools, like my present one, it can be part of a multiple function

office.”

The difference between the perceptions of the interviewees, each a leader of a research development office, and the survey participants who did not recommend establishing a research development office may be one of perspective. Although survey participants are anonymous, comments by those who did not support establishing a separate research development office indicate they may be affiliated with an office that serves a dual purpose, such as one survey participant who commented, “I wouldn't recommend a separate research development office ... I can easily serve in both roles as director of sponsored programs and director of faculty research.” However, the majority of respondents and all the interviewees stated that they perceived value in the establishment of a formal research development office.

Regarding the theme of development office structure and challenges, interviewees noted that the offices they led had a director/VP and one to three staff. For some established research development offices, staff has been reduced and creative and strategic use of resources is necessary to meeting university research goals that are increasing. A related theme is what research development activities are most important and impactful. Although research development as a field does not have formal metrics established to gauge the impact or importance of research development activities, the data collected in this study provides perceptions of both impact and importance. Interviewees recommend analyzing institutional strengths to develop strategies for supporting and increasing the institution's research capacity. Research development activities, or the services the office offers, must be determined based on the goals and strengths of the institution and its stakeholders, and based on what brings results. Survey responses

support this theme. Survey data collected on research development activities from a list of 21 activities provides evidence of what university research administrators perceive brings the biggest return on investment. The most important research development activity and the one where participants see the most impact is proposal development support for large, multi-investigator project grants. Other high ranking activities in terms of importance are internal grants and grant team project management. In terms of what participants feel has the most impact, after proposal development support for large, multi-investigator project grants is grant writing workshops and grant team project management.

Overall, university research administrators who are leading a research development office will need to recognize the emerging identity of research development professionals and research development in the university environment. Research development offices should focus on support for large, multi-investigator project grants and other highly ranked research development activities like internal grants, grant team project management, and grant writing workshops.

Research Question 4. Research Question 4 asked *what recommendations do research university administrators have for establishing a successful research development office?* This mixed methods question was addressed by integrating the survey data with the interview data. Five themes were extracted from the survey and interview data. First, both the interview data and the survey data revealed a theme of learning from other research development professionals when establishing and leading a research development office. This theme was present in all the interviews, with recommendations to join NORDP and use NORDP members as a resource. The robust

number of survey respondents, and the length and detail of responses to open-ended survey questions suggest that research development professionals have a lot of experience and opinions to share on the topic of research development. The interviewees' perceptions that experiences and opinions of other research development professionals have value supports the construct validity of the survey responses. This community of professionals, both within the formal organization of NORDP and at universities across the nation are an important resource for establishing knowledge about research development.

The next theme revealed from the interviews is that it is necessary to identify stakeholder needs and strengths to design the structure and activities of a research development office. One interviewee commented that her research development office is preparing a faculty survey to help identify needs and assess how well the research development office is meeting those needs. All three interviewees commented on the importance of knowing the faculty and their areas of research. Interviewees indicated they acquire this information through working with faculty on grant proposals, networking, involvement in faculty events, and through faculty surveys. Some survey participants also commented on the importance of being familiar with the faculty, their areas of research, institutional research strengths, and research goals. This knowledge is necessary for leaders who are designing the activities of a research development office and wanting to accomplish institutional goals.

Another theme discussed by both interviewees and survey participants is the idea that the establishment of a research development office indicates a cultural change which often happens when institutions prioritize enhancing research capacity. One interviewee

commented that the adoption of a new high-level priority often “requires a significant cultural shift, and in a university, that takes time.” Another interview comment was that, “it is going to take some time to get [the research development office] off and running and integrated into the culture.” Numerous survey participants also commented on the change in culture that must occur when institutions prioritize research and undertake research development activities. According to participants, “changing a culture requires significant institutional support from a high level” and “research administrators & development personnel can bang the drum all we want, cheerlead, and provide endless amounts of resources. Unless there is an administrative push to change culture at a particular institution, faculty won’t follow suit” and “faculty development from a culture of low grant submission to one of grant success is not necessarily a straight path.” Leaders creating research development offices must recognize that the creation of an office often happens in conjunction with a change in university culture to increase the emphasis on research, and this cultural change is a process that takes time.

Another important theme extracted from both interviews and survey responses is the need for metrics. Interviewees shared various methods they employ for assessing the impact and success of their offices, and emphasized the importance of collecting this type of data to maximize the impact of activities and to justify the existence of the research development office. Each of the interviewees stated that their university’s increase in sponsored funding was one metric used to evaluate the success of their offices.

Most survey participants indicated they used multiple metrics to measure the success of the research development office, with the mean number of measures chosen by participants being four and the most common number of measures chosen was five.

Survey participants provided many significant statements on the topic of measurement. Ninety-seven survey participants (86.6%) offered comments as to why they did or did not agree the increase or decrease of a university's annual sponsored funding is a fair measure of the impact of a university research development office. For those who indicated that the increase or decrease of a university's annual sponsored funding is a fair measure, some stated that this measure reflected the reality of the university environment, "the ultimate value of a research development office must result in moving the funding needle." Many participants suggested additional or preferred measures of success, such as measuring "proposals that come through our office, not all proposals submitted from our institution." The idea that annual sponsored funding "is one measure, but should not be the only measure" was one that was shared by participants regardless of the way they answered the question on fairness of the measure (*Yes, No, or Not Sure*). According to participants, "it shouldn't be the only measure, but if the point of RD is to increase funding then it should definitely be looked at" and "it is only a VERY small aspect of a complex measurement of success."

Survey participants also noted that many factors external to the research development office influence funding success, and that these factors cannot be controlled by the research development office. According to participants, "many factors influence declines and increases in any university's annual sponsored funding, only a few of which an office of Research Development can influence, and none actually control." Other participants commented, "many factors that affect the university's annual sponsored funding amount or funding rate, including federal government priorities" and "research development has no control of behavior. Ultimately, faculty decide if they want to submit

a proposal or not regardless of the help they may have received from research development,” and “if the research isn't convincing, no amount of RD help can fix this.”

All three interviewees stated their research development efforts were often focused on new or junior faculty and on large multi-investigator proposals. This focus must be considered when measuring office impact. As one survey participant commented, “the faculty who choose our services tend to be the ones most in need: new faculty, multidisciplinary groups, those struggling to get funded. They are not a representative sample of the university's funding as a whole, and they are less likely to get funded with or without our help.” Related to the typical clientele of research development offices is the idea, shared by interviewees and survey participants alike, that the research development office investment in a researcher and general impact on proposal success may take several proposals or several years to pay off. According to survey participants, “we may provide valuable services and technical assistance that don't translate directly into more research dollars in the same fiscal year. It can take longer for the impact to show up in increased research funding” and “assembling competitive proposal teams can take years. Therefore, looking only at the bottom line from year to year will not give a complete picture of the full impact a research development office is having on the research and funding.”

A final theme revealed from the interviews which is also supported by survey responses is that of channeling research development efforts strategically. Both interviewees and survey participants shared ideas on appropriate strategies for running a research development office within a university. The strategic approach to research development office services was also a common theme among survey participants and

interviewees. One survey participant commented, “the structure of such an office and the emphasis placed on certain services (writing, editing, finding funding, developing seminars and workshops, assistance with large/small proposals) should be tailored to meet the specific needs of faculty at each institution.” Interviewees devoted a lot of time to sharing thoughts on a strategic approach to research development office services. As leaders of offices, they are each tasked with getting the most impact from a finite number of staff and resources. Interviewees discussed focusing office efforts on large multi-investigator proposals, investing time in training and coaching in junior faculty, and focusing on institutional strengths, particularly in the hard sciences, when determining grant strategy. One interviewee commented that her office “did a systematic analysis of... our strengths in different areas ...and we came up with a lot of strategies for building our [research] capacity.” All the interviewees noted that they determine the proposal development projects their offices undertake based on institutional priorities and on likelihood of success. Comments included, “you've got to take a look at where you think most of your grants are going to come from” and “there is no money in the arts...you work ten times as hard to get \$20,000.” One interviewee stated her office is working to implement competitive intelligence methods similar to what has been done at the research development office at Arizona State University (Walker, 2016). Karen Walker, NORDP member presented a workshop at the 2016 NORDP annual conference on Arizona State University’s strategic collection and use of information to aid in decisions of what funding to pursue. Competitive intelligence includes benchmarking other institutions, anticipating future funding trends, and assessing competitor’s grant funding strategy.

Overall, the findings for Research Question 4 suggest that leaders establishing

research development offices must be strategic in determining how to deploy resources, select funding opportunities, and select which research development activities will be most impactful for their institution. Specific recommendations include learning from research development colleagues and identifying the needs and strengths of stakeholders, including faculty and university leadership. Channeling research development efforts strategically will maximize office impact and further the research goals of the institution. The process of change can be slow since it often involves the creation of a new research culture, and evaluation of outcomes should take this into account. Finally, establishing and using standardized metrics for research development is also a priority in the research development field.

Context of the Findings

The findings support several ideas discussed in the literature. There is substantial evidence in the literature of increased emphasis on and resources for the development of the university research enterprise (Baum et al., 2013; Birx et al., 2013; Lombardi, 2013; Lombardi et al., 2014; Petrova & Hadjianastasis, 2015). This sentiment is echoed by participants in this study. The trend of investing in research development is demonstrated by the increasing numbers of research development offices being established on university campuses. This investment provides evidence of the perception of the value of research development for helping a university achieve its research goals.

The theme of research development as an emerging profession is supported by Nguyen and Meek (2015) who note that most of the current positions that manage the research enterprise in universities have been created relatively recently. Connell's (2005) call for more investment in university research management positions is in sync with

study participants who perceive value in research development activities and would recommend establishing a research development office for research universities who do not have one.

The theme of the time needed to change university culture is supported by Mintrom (2008), who studied the issues related to managing the university research function and cautioned university administrators to be realistic about how fast change can be imposed on the university population. This theme was expressed by all the interviewees in this study, who have experienced establishing a research development office and who are current leaders of a research development office.

The themes of research development office structures/challenges, and research development activities are reflected in publications by Nguyen and Meek (2015). They, along with Connell (2005), Taylor (2006), and Kirkland (2008), recommend the establishment of a formal office to support the development of research. Nguyen and Meek's description of the role of such an office in the university setting, which includes coordinating initiatives and strategies for university research; disseminating funding opportunities; and advising on various aspects of research, aligns with the research development activities identified by study participants as important or critically important. More correlating data can be found in Bevil et al.'s (2012) study, which identified 33 research development services, with the highest ranking being grant development (100%), grant assembly (92.9%), budget development (90%), and research seminars (90%). There is a strong similarity between these top activities and the top three activities ranked as most impactful by survey participants.

The theme of measuring the impact of research development, and the need for

metrics is supported by Bevil et al. (2012), who examined research offices to find what methods of evaluation were used. The results showed that there are a wide variety of evaluation methods for research support offices, without much consistency among evaluation processes, making benchmarking with other college research offices difficult. Regardless of the method, Bevil et al. noted that in general the evaluation content focused on outcomes such as sponsored funding dollars, number of grant awards, percentage of grant proposals funded, and number of scholarly publications (Bevil et al., 2012), similar to the present study. In addition, study participants' concerns with measuring research development office success with the increase of research funding is also reflected in the literature. The literature review for this study included discussion about whether it is appropriate to measure the success of research development offices and the research university administrators who staff them by outcomes such as grant dollars since they are not conceiving of or conducting the research (Birx et al., 2013; Briar-Lawson et al., 2008; Cantwell & Mathies, 2012; Evans, 2011; Lintz, 2008; Rosenbloom et al., 2015). While there is no agreement on what fair measures of success should be for research development offices, Bevil et al.'s study (2012) shows that the research offices surveyed rely on similar outcomes to evaluate their performance: grant dollars and grant funding success. The data collected for this study suggests that these measures are being used along with others to quantify the success of research development offices.

Finally, the theme of channeling research development efforts strategically is supported by the literature published by organizational theorists like Morgan (2007). He points out that the optimal organization of an institution depends on the environment and that the structure of an institution must align with its capabilities and resources. Kezar

(2014) also discusses the idea that university environments are systems, and successfully managing this system requires consideration of internal and external forces. This idea was reflected in the comments of study participants, who noted that many forces, both within and outside the university exert influence over research success. Although study participants did not always agree on the best practices for research development in universities, this is understandable given the variety of environments that study participants come from. Taylor (2006) points out that there is no ideal university research organizational structure; a suitable organizational structure has to reflect the institutional culture, goals, and financial constraints.

Implications of the Findings

Results from this mixed methods study have many positive implications. University research administrators are finding success with research development activities and research development offices in achieving university research goals. The data collected provides insights into the nature of research development at universities, and best practices. The convergence of the data collected produced recommendations on best practices in research development and advice for establishing a successful research development office. These recommendations help to build the body of knowledge about the field of research development, and also provide some baseline data as the field evolves and progresses. The recommendations are as follows:

1. It is recommended to utilize the resource found in knowledgeable research development colleagues, such as those who are members of NORDP.
2. University research administrators should connect with university stakeholders, including faculty and institutional leadership. Familiarity with faculty, their needs,

strengths and their areas of research was identified by interviewees as an important role for leaders of research development offices. Having this familiarity with stakeholders makes leaders of research development offices important resources for university leadership. This knowledge, along with understanding institutional priorities is an important part of the role of the university research development office.

3. University research administrators should consider resources, capabilities, and goals when making decisions about research development initiatives. This theme was revealed through numerous statements by study participants who stated that a strategic approach must be taken to implement research development at universities. This advice was often related to the idea that research development is both an emerging field and profession. As a relative newcomer to the academe, research development and its value needs to be understood by the university community. In order to justify investment in an office and in personnel, one must conduct research development efforts strategically to best utilize office resources while accomplishing the research goals of the institution. Those who are establishing a new research development office, and those who perform research development functions must recognize that growing a university research enterprise can often involve a cultural shift. It can take years for such a shift in an institution's research culture to happen, and this must be recognized when assessing the return on investment for research development activities and offices.

4. One mechanism that would go a long way in validating the field of research development is the establishment of standardized metrics. This should be a priority for research development professionals as metrics affords a way to demonstrate value to institutional decision makers. In establishing metrics, it will be important to understand

the objection many research development professionals have to the idea of using the increase or decrease in sponsored funding as a fair measure of research development office success. Study participants had strong opinions on what appropriate and fair measures of success are, but also demonstrated that formal metrics, fair or otherwise, are still not always employed to evaluate research development activities and offices. Thus, leaders establishing research development offices need to create metrics to demonstrate impact, and while these metrics may include the level of annual sponsored funding, there are many other measures that can and should be used to assess the office fairly.

5. Finally, study participants all agreed that the most important and impactful research development activity is providing support for large, multi-investigator project grants. Other highly ranked activities include grant team project management, funding opportunity identification, internal grant programs, facilitating collaborations, limited submissions, research communications, proposal editing, and workshops.

The implications of these recommendations are significant for university leadership and university research administrators, as well as stakeholders in the research community. Bosch and Taylor (2011) note that there is a gap in existing literature about the developmental phases of an institution as it evolves from a non-active research environment to research active. They state that university research administrators need a knowledge base about developing a research active environment to effectively implement research development strategies that will grow a university's research capacity. This study helps to build that knowledge base. The researcher will report the results of this study to NORDP audiences at the May 2017 annual conference.

Limitations

One limitation of this study is the fact that research development is an emerging field and profession without a great body of literature or research data that supplies a foundation of knowledge. The list of research development activities included in the survey was developed based on information available in the literature and on the researcher's experience in the field of university research development. There may be important and impactful research development activities that were not reflected in the survey, and not suggested through the survey responses or the interview data. As more research is done on the field of research development and on the people who identify as university research development professionals, there will be more baseline data to define research development activities in universities. Another limitation identified by the researcher has to do with the use of number ranges as response options in the survey. Several survey questions offered number ranges in the response options (e.g., 1-2 for number of full time employees) and this limited the statistical analysis that could be performed on the data collected.

Another limitation has to do with who the survey respondents are. It is expected that the survey participants, all members of NORDP, are representative of the general population of research development professionals in the United States, however, it is unknown if this is true. Due to the anonymous nature of the survey, it is not possible to ascertain geographic distribution, or detailed demographics of the respondents or their universities, which limits the external validity of the study. Future studies will need to be undertaken to confirm that the results of this survey are generalizable to the nation-wide population of research university administrators.

Future Directions

This study skims the surface of knowledge about research development in universities, and many aspects of the investigation could be expanded upon. For example, one major theme in this study had to do with the need for research development metrics. The benefits of standardized metrics seem obvious, but among them are creating a common language to describe research development functions. Also, standardized metrics would facilitate comparative research and the communication of knowledge about research development. Ultimately, the creation of standardized metrics would depend on their acceptance by all research development stakeholders.

Another topic for future investigation is research development activities. For example, the activity identified in this study as the most important and most impactful is proposal development support for large, multi-investigator project grants. It would be interesting to know more about how this function is handled on college campuses, and what the best practices are related to getting this type of proposal funded. Another research development activity that could be examined more closely is the use of grant writers for technical and nontechnical sections of grant proposals. One of the interviewees indicated that the use of grant writers has enormous value for getting research funding, and several survey participants echoed this sentiment. Others, however, including other interviewees, disagreed with this strategy for supporting researchers. It would be interesting to have some data on what the success rates are with and without this type of support for researchers. A better understanding of how each of the 21 research development activities are implemented on college campuses would certainly be beneficial to all research development professionals.

Another topic of interest not sufficiently explored by this study is the structure of research development offices and their placement in the larger university infrastructure. Of the survey respondents with a research development office, a majority (85.3%) have a central office that serves the entire university. However, one of the interviewees noted that the future direction for her central research development office is to try and shift more of the research development functions to the individual academic units, including creating unit-level research development offices. It would be interesting to know if this is a trend and if there is evidence of better service given in a decentralized research development organization. Finally, the sample for this study was members of NORDP, and it would be beneficial to gather similar data from university research administrators across the nation including those who are not NORDP members so that the results could be compared.

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Appendix A

Research Development Survey

Research Development Survey

Thank you for participating in this survey on university research development!

The purpose of this study is to (a) determine research university administrators' perceptions of the importance of research development activities and offices for increasing a university's annual sponsored funding, (b) understand administrators' experiences with establishing a research development office, and (c) develop a model for establishing a research development office. Your responses to this survey will provide data on research development activities and research development offices.

University research development activities can be defined as those that support and enhance the university's research activity without being a part of the actual research.

This topic is timely, as many universities are reevaluating the support structures for their research enterprise, with the goal of maximizing their competitiveness for sponsored funding. Research development functions, often facilitated through a formal research development office at a university, have been identified as an essential element to achieving this goal.

This survey is divided into 4 sections: Demographics, Institution, Research Development Offices, and Research Development Activities. It should take approximately 15 minutes to complete.

* Required

Demographics

1. **Approximately how many years experience do you have in the area of university research development?**

Mark only one oval.

- 0
- less than 1
- 1-2
- 3-5
- 6-8
- 9-10
- more than 10

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2. Please choose the description that most closely represents your position at your university. *

Position titles replicate those included in 2015 NORDP Salary Survey
<https://nordp.memberclicks.net/salary-survey>.

Mark only one oval.

- Vice Provost/ Chancellor/ President (full, associate, or assistant)
- Dean (full, associate, or assistant)
- Director/ Manager (full, associate, or assistant)
- Associate Director/ Manager
- Assistant Director/ Manager
- Coordinator/ Officer/ Specialist/ Administrator
- Analyst/ Facilitator
- Grant Writer
- I don't work for a university *After the last question in this section, stop filling out this form.*
- Other: _____

3. Approximately what percentage of your job duties pertain specifically to research development?

Mark only one oval.

- 0%
- 1% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

4. Do you consider yourself a research development professional?

Mark only one oval.

- Yes
- No
- Not sure

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Institution

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5. Please indicate which basic Carnegie classification description best identifies your institution:

More information on Carnegie classifications can be found at this link:

<http://carnegieclassifications.iu.edu/>

Mark only one oval.

- Research university (very high research activity)
- Research university (high research activity)
- Doctoral/research university
- Master's college or university
- Baccalaureate college
- Special focus institution (medical school, school of engineering, school of business, etc.)
- Tribal college
- Other:

6. Is your institution public or private?

Mark only one oval.

- Public
- Private

7. Approximately how many students are enrolled in your institution?

Mark only one oval.

- Less than 1,000
- 1,000 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- more than 30,000

8. What is your university's approximate total annual sponsored funding?

Mark only one oval.

- <\$1M
- \$1M-\$10M
- \$11M-\$50M
- \$51M-\$100M
- \$101M-\$250M
- \$251M-\$500M
- \$501M-\$750M
- \$751M-\$1B
- >\$1B
- I don't have that information

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9. **What are your university's approximate total annual sponsored research funding expenditures?**

Mark only one oval.

- <\$1M
- \$1M-\$10M
- \$11M-\$50M
- \$51M-\$100M
- \$101M-\$250M
- \$251M-\$500M
- \$501M-\$750M
- \$751M-\$1B
- >\$1B
- I don't have that information

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Research Development Offices

University research development can be defined as activities that support and enhance the university's research activity and increase institutional competitiveness for funding, without being a part of the actual research. For some universities, these activities are implemented through offices which have another primary function in the university, such as a sponsored programs or grants and contracts office. But increasingly, universities are establishing a dedicated office for research development. Such an office may be a central institutional office, or housed in a college or other unit. These offices may have the words "research development" in the office title. As an example, a research development office might provide proposal development services, facilitate team science, develop research advancement initiatives, communicate funding opportunities, or provide other strategic research development services.

10. **Does your institution have an office dedicated to research development functions and processes that is separate from your sponsored programs or other research administration office? ***

Mark only one oval.

- Yes Skip to question 12.
- No Skip to question 11.

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11. **If there is no formal research development office in your institution (distinct from sponsored programs or other research administration offices) what impact would creating one at your institution have on increasing sponsored funding success?**

Mark only one oval.

- No impact Skip to question 17.
- Minimal impact Skip to question 17.
- Some impact Skip to question 17.
- Major impact Skip to question 17.
- Not sure Skip to question 17.

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12. **Is your research development office one that serves the entire institution (a central office) or does the office serve a particular college or other unit (such as a medical school) at your university?**

If "other" please describe
Mark only one oval.

- Central office
- College or other unit level office
- Other:

13. **When was your research development office established?**

Please provide year that office was established.

.....

14. **How many FTE's work in your institution's research development office?**

FTE's are full time employees. If the office has both full time and part time employees, please choose the number that best approximates the number of employees.
Mark only one oval.

- 0
- 1-2
- 3-4
- 5-6
- 7 or more

15. **Do you work in your institution's research development office?**

Mark only one oval.

- Yes
- No

16. **How does your institution's research development office measure the success of the office?**

Metrics could include any of the items listed below. Please check all that apply. If your institution's research development office uses a metric that is not listed, please share this in the "Other" box.
Check all that apply.

- Annual increase in sponsored funding
- Number of funding opportunities disseminated
- Number of proposals submitted
- Number of proposals awarded
- Number of faculty mentored
- Number of grant workshops or number of attendees at grant training presented
- Number of grant consultations provided to faculty for proposal development assistance
- Other:

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17. **There are conflicting opinions as to what are fair measures of success of university research development offices. In your opinion, is the increase or decrease of a university's annual sponsored funding a fair measure of the impact of a university research development office?**

Mark only one oval.

- Yes
 No
 Not sure

18. **Regarding the question above, why or why not?**

.....

19. **Some universities without a separate research development office are considering establishing such an office for the purpose of providing enhanced research development functions to increase the university's sponsored funding totals. Would you recommend this course of action?**

Mark only one oval.

- Yes
 No
 Not sure

20. **Regarding the question above, why or why not?**

.....

page 7**Research Development Activities**

University research development activities can be defined as those that support and enhance the university's research activity without being a part of the actual research.

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21. **Are the research development activities in your institution sufficient to meet your institution's research goals?**

Mark only one oval.

- No, they are not sufficient
- Yes, they are somewhat sufficient
- Yes, they are often sufficient
- Yes, they are extremely sufficient

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22. For each research development activity below, please choose either "No importance," "Little importance," "Somewhat important," "Important," or "Critically important." Please choose only one per item.

There are numerous factors that influence the success of a university's research enterprise. Some of these factors include research development activities that are created, managed, and implemented by research university administrators. This section seeks to identify your perceptions of the importance of research development activities to increasing sponsored funding success at universities.

Mark only one oval per row.

	No importance	Little importance	Somewhat important	Important	Critical importance
a) Internal grant programs to provide seed funding for research	<input type="radio"/>				
b) Coordinating the limited submission process	<input type="radio"/>				
c) Research faculty onboarding	<input type="radio"/>				
d) Mentorship program for investigators	<input type="radio"/>				
e) Recognition events/programs for investigators' success	<input type="radio"/>				
f) Research communications (newsletters, listservs, brochures, webpages, etc.)	<input type="radio"/>				
g) Research events such as faculty symposia	<input type="radio"/>				
h) Facilitating internal collaborations	<input type="radio"/>				
i) Facilitating external collaborations	<input type="radio"/>				
j) Disseminating funding opportunities	<input type="radio"/>				
k) Helping/training faculty to find funding opportunities	<input type="radio"/>				
l) Grant writing workshops	<input type="radio"/>				
m) Creating a library of successful proposals	<input type="radio"/>				
n) Helping faculty in navigating through internal pre- and post-award processes	<input type="radio"/>				
o) Grant team project management (coordination of meetings, proposal development deadlines, shared documents, etc.)	<input type="radio"/>				
p) Proposal development support for large, multi-investigator project grants	<input type="radio"/>				
q) Grant writing of non-technical sections of a proposal	<input type="radio"/>				
r) Grant writing of technical sections of a proposal	<input type="radio"/>				
s) Grant proposal editing	<input type="radio"/>				

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t) Assisting investigators in getting a peer review of their proposal	<input type="radio"/>				
u) Working with investigators on re-submissions	<input type="radio"/>				

23. What is the MOST impactful research development activity at your institution, in terms of increasing your university's sponsored funding?

Mark only one oval.

- a) Internal grant programs
- b) Coordination of limited submission
- c) Research faculty onboarding
- d) Mentorship program for investigators
- e) Recognition events/programs for investigators
- f) Research communications (newsletters, listservs, brochures, webpages, etc.)
- g) Research events such as faculty symposia
- h) Facilitating internal collaborations
- i) Facilitating external collaborations
- j) Disseminating funding opportunities
- k) Helping/training faculty to find funding opportunities
- l) Grant writing workshops
- m) Creating a library of successful proposals
- n) Helping faculty in navigating through internal pre- and post-award processes
- o) Grant team project management (coordination of meetings, proposal development deadlines, shared documents, etc.)
- p) Proposal development support for large, multi-investigator project grants
- q) Grant writing of non-technical sections of a proposal
- r) Grant writing of technical sections of a proposal
- s) Grant proposal editing
- t) Assisting investigators in getting a peer review of their proposal
- u) Working with investigators on re-submissions

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24. What is the **SECOND** most impactful research development activity at your institution, in terms of increasing your university's sponsored funding?

Mark only one oval.

- a) Internal grant programs
- b) Coordination of limited submission
- c) Research faculty onboarding
- d) Mentorship program for investigators
- e) Recognition events/programs for investigators
- f) Research communications (newsletters, listservs, brochures, webpages, etc.)
- g) Research events such as faculty symposia
- h) Facilitating internal collaborations
- i) Facilitating external collaborations
- j) Disseminating funding opportunities
- k) Helping/training faculty to find funding opportunities
- l) Grant writing workshops
- m) Creating a library of successful proposals
- n) Helping faculty in navigating through internal pre- and post-award processes
- o) Grant team project management (coordination of meetings, proposal development deadlines, shared documents, etc.)
- p) Proposal development support for large, multi-investigator project grants
- q) Grant writing of non-technical sections of a proposal
- r) Grant writing of technical sections of a proposal
- s) Grant proposal editing
- t) Assisting investigators in getting a peer review of their proposal
- u) Working with investigators on re-submissions

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25. **What is the THIRD most impactful research development activity at your institution, in terms of increasing your university's sponsored funding?**

Mark only one oval.

- a) Internal grant programs
- b) Coordination of limited submission
- c) Research faculty onboarding
- d) Mentorship program for investigators
- e) Recognition events/programs for investigators
- f) Research communications (newsletters, listservs, brochures, webpages, etc.)
- g) Research events such as faculty symposia
- h) Facilitating internal collaborations
- i) Facilitating external collaborations
- j) Disseminating funding opportunities
- k) Helping/training faculty to find funding opportunities
- l) Grant writing workshops
- m) Creating a library of successful proposals
- n) Helping faculty in navigating through internal pre- and post-award processes
- o) Grant team project management (coordination of meetings, proposal development deadlines, shared documents, etc.)
- p) Proposal development support for large, multi-investigator project grants
- q) Grant writing of non-technical sections of a proposal
- r) Grant writing of technical sections of a proposal
- s) Grant proposal editing
- t) Assisting investigators in getting a peer review of their proposal
- u) Working with investigators on re-submissions

26. **If there is a research development activity that is in your top 3 as far as most impactful in terms of increasing sponsored funding, but was not listed, please describe here.**

.....

.....

.....

.....

.....

27. **How do you know the activities you identified above were the most impactful?**

Check all that apply.

- I base my selections of top 3 activities on my own observations
- We track the outcomes of our research development activities
- Feedback from faculty
- Feedback from university administration
- Other:

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Appendix B

Research Development Interview Guide

Research Development Interview Guide

Prior to the interview, the interviewee will receive an informed consent form. This form will be sent in an email that describes the project, telling the interviewee about a) the study's purpose, b) the length of the interview, c) the intended use of the results from the interview, d) the confidentiality of their responses, and e) the availability of the study results after the study is completed. The interviewee will have at least 24 hours to review and complete the form.

Interview Script

Thank you for agreeing to participate in this study. My goal is to learn about your experiences with establishing a research development office.

Time of interview: _____

Date: _____

Place: _____

Questions

1. Why do you consider yourself a research development professional, versus another type of research administrator?
2. How many years' experience do you have in the area of university research development?
3. How long have you worked in this research development office? Have you worked in RD offices prior to this? How long?
4. What are your perceptions of the importance of research development activities and offices for increasing a university's annual sponsored funding, the potential for both intra- and inter-institutional collaboration, and institutional capacity

building?

5. What are the main activities of your research development office, and do you have plans for expanding offerings to better serve your institution's research goals?
6. Please describe your experiences with establishing a research development office.
7. If you were advising a research development professional on how to develop a model for establishing a research development office, what advice would you give him/her?

Thank you for your cooperation and participation in this interview.