

**INSTITUTIONAL AND LEADERSHIP FACTORS ASSOCIATED
WITH GENERATING FUNDING FOR RESEARCH**

by

Courtney A. Jarrell, MBA, CPA

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

May 2023

LOUISIANA TECH UNIVERSITY

GRADUATE SCHOOL

January 20, 2023

Date of dissertation defense

We hereby recommend that the dissertation prepared by

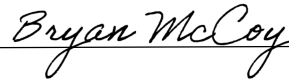
Courtney A. Jarrell, M.B.A., C.P.A.

entitled **Institutional and Leadership Factors Associated with Generating**

Funding for Research

be accepted in partial fulfillment of the requirements for the degree of

Doctor of Education, Educational Leadership Concentration



Bryan McCoy

Supervisor of Dissertation Research



Don Schillinger

Head of Curriculum, Instruction, and Leadership

Doctoral Committee Members:

Don Schillinger

Lindsey Vincent

Ramu Ramachandran

Approved:



Don Schillinger

Dean of Education

Approved:



Ramu Ramachandran

Dean of the Graduate School

ABSTRACT

The strategic goal of increasing funding for research at a university is a complex objective dependent on various institutional and leadership factors. The purpose of this study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. The research design included a modified Delphi panel to gain consensus on the comprehensive set of institutional and leadership factors and survey items associated with research productivity. The panel participants were experts in research administration from various institutions. Through a literature review and feedback from panel participants, the current researcher identified twelve institutional factors and four leadership factors to include in the instrument. The institutional factors include recruitment and selection, clear coordinating goals, research emphasis, culture, positive group climate, mentoring, communication with a professional network, resources, sufficient work time, rewards, promotion and tenure requirements, and diversity, equity, and inclusion initiatives. The leadership factors include scholar, research-oriented, inclusive leadership, and transformational leadership. The current researcher used the results of the modified Delphi panel to finalize the instrument. A pilot study was conducted at a research-intensive university to validate the instrument. Lastly, the researcher presented the outcomes to key leaders at the university and conducted interviews to assess the survey's usefulness.

APPROVAL FOR SCHOLARLY DISSEMINATION

The author grants to the Prescott Memorial Library of Louisiana Tech University the right to reproduce, by appropriate methods, upon request, any or all portions of this Dissertation. It was understood that “proper request” consists of the agreement, on the part of the requesting party, that said reproduction is for his personal use and that subsequent reproduction will not occur without written approval of the author of this Dissertation. Further, any portions of the Dissertation used in books, papers, and other works must be appropriately referenced to this Dissertation.

Finally, the author of this Dissertation reserves the right to publish freely, in the literature, at any time, any or all portions of this Dissertation.

Author _____

Date _____

DEDICATION

This has been an incredible journey with many ups and downs along the way. The completion of this doctoral program would not have been possible without the love and support of my family and friends. I love you all very much and cannot imagine going through this life without you.

To my husband, John, without your encouragement to keep moving forward, I would have stopped short of beginning my study. Thank you for always being there for me and giving me the confidence that I can accomplish anything.

To Mom and Dad, you raised me always to put God first place, believe in myself, work hard, and reach for my goals. I would not be where I am today without the foundation you gave me. You both have been there during this process, pulling for me and helping in any way you could.

To my siblings, your encouragement during this process has meant more to me than you'll ever know. Thank you for always listening to me talk about my research and for having a genuine interest in my work. You each inspire me to be the best version of myself.

To Tyson, buddy, one day you will understand why Aunt Courtney was always doing school work instead of playing Legos or baseball. I hope, in some way, it encourages you to reach for your dreams no matter how high they might seem. Just keep swimming!

To my colleagues in the Innovation Enterprise, I also dedicate this work to you. I appreciate your support and love growing personally and professionally with each of you. You challenge me to step out of my comfort zone and accomplish things I never thought possible. I could not ask for a better group of people to call my friends.

TABLE OF CONTENTS

ABSTRACT.....	iii
APPROVAL FOR SCHOLARLY DISSEMINATION	iv
DEDICATION	v
LIST OF TABLES	x
ACKNOWLEDGMENTS	xi
CHAPTER 1 INTRODUCTION	1
Purpose of the Study	2
Theoretical Framework	3
Definitions of Significant Terms	4
CHAPTER 2 LITERATURE REVIEW	5
Theoretical Framework.....	6
Institutional Factors	7
Institution’s Environment	8
Personnel Support	11
Resources and Rewards	13
Summary of Institutional Factors.....	15
Leadership Factors	17
Scholar and Research-Oriented.....	17
Capably Fulfills All Critical Leadership Roles.....	17
Participative Leader	18

Inclusive Leadership	18
Transformational Leadership	19
Summary of Leadership Factors	19
Conclusions	20
CHAPTER 3 METHODS	23
Design of the Study.....	24
Detailed Modified Delphi Methodology	25
Detailed Pilot Study Methodology.....	26
Sample Selection.....	26
Site Selection for Pilot Study	27
Data Collection	28
Data Analysis	28
Validity and Reliability.....	30
Researcher Positionality	30
Limitations and Delimitations	31
CHAPTER 4 RESULTS	33
Delphi Panel Phase One: Identify Institutional and Leadership Factors	33
Delphi Panel Phase Two: Modified Delphi Panel Surveys	34
Delphi Panel – Initial Survey	35
Delphi Panel – Round One	41
Delphi Panel – Round Two.....	72
Delphi Panel – Round Three.....	90
Delphi Panel Phase Three: Create Final Survey Instrument.....	100
Pilot Study.....	104
Presentation of Results to Leaders	107

CHAPTER 5 DISCUSSION.....	114
Examination of Research Questions	114
Research Question One.....	114
Research Question Two	115
Research Question Three	115
Recommendations for Professional Practice	116
Recommendations for Future Research	117
Conclusion	118
REFERENCES	120
APPENDIX A HUMAN USE APPROVAL LETTER	126
APPENDIX B INITIAL SURVEY INSTRUMENT.....	128
APPENDIX C ROUND ONE SURVEY INSTRUMENT.....	142
APPENDIX D ROUND TWO SURVEY INSTRUMENT.....	195
APPENDIX E ROUND THREE SURVEY INSTRUMENT	251
APPENDIX F PILOT STUDY SURVEY INSTRUMENT	289
APPENDIX G EXECUTIVE SUMMARY SAMPLE.....	332

LIST OF TABLES

Table 1 <i>Profiles of Key Leaders</i>	28
Table 2 <i>Initial Comprehensive Set of Institutional and Leadership Factors</i>	34
Table 3 <i>Modified Delphi Panel Initial Survey Alpha Testing</i>	35
Table 4 <i>Modified Delphi Panel Initial Survey Beta Testing</i>	35
Table 5 <i>Final Comprehensive Set of Institutional and Leadership Factors</i>	38
Table 6 <i>Keywords for Institutional and Leadership Factors</i>	40
Table 7 <i>Modified Delphi Panel Round One Alpha Testing</i>	42
Table 8 <i>Modified Delphi Panel Round One Beta Testing</i>	45
Table 9 <i>Modified Delphi Panel Round One Participant Feedback</i>	48
Table 10 <i>Modified Delphi Panel Round Two Alpha Testing</i>	72
Table 11 <i>Modified Delphi Panel Round Two Beta Testing</i>	73
Table 12 <i>Modified Delphi Panel Round Two Participant Feedback</i>	75
Table 13 <i>Modified Delphi Panel Round Three Alpha Testing</i>	90
Table 14 <i>Modified Delphi Panel Round Three Beta Testing</i>	91
Table 15 <i>Modified Delphi Panel Round Two Participant Feedback</i>	92
Table 16 <i>Final Survey Instrument Alpha Testing</i>	101
Table 17 <i>Final Survey Instrument Beta Testing</i>	103
Table 18 <i>Executive Summary Alpha Testing</i>	104
Table 19 <i>Executive Summary Beta Testing</i>	106

ACKNOWLEDGMENTS

I would first like to thank my committee members, Dr. Bryan McCoy, Dr. Don Schillinger, Dr. Lindsey Vincent, and Dr. Ramu Ramachandran, for their support during this process. I will always appreciate the time you set aside to share your expertise and encouragement. One of the reasons I started this program was to learn about research design and better understand the process faculty completes when conducting externally funded research. The knowledge you've shared with me, in addition to my doctoral courses, has put me well on the path to becoming a successful researcher myself.

A special thank you to my chair, Dr. Bryan McCoy, for the many hours spent each week ensuring I was on the right path, helping redirect me when I got off course, and instilling confidence in writing that I have never had before. Dr. Don Schillinger, thank you for your transformational leadership and thoughtful insights during this process. Dr. Lindsey Vincent, I appreciate the encouragement, positive perspective, and direction you gave me during this process that helped ensure I reached the finish line. Dr. Ramu Ramachandran, your vast experience in research and research administration is admirable, but your genuine concern for people and willingness to help others sets you apart. I feel very blessed to have had each of you serve on my committee.

I am grateful for the support given by Dr. Tilman Sheets in reviewing and suggesting improvements to my survey instruments. Thank you for taking the time to help me think through my survey design and suggesting key functions in Qualtrics that

made the data collection and analysis process more efficient. I am both appreciative of and amazed at the time each of the 26 panel participants spent completing the surveys and suggesting changes to refine each survey item. Thank you for caring about my research and taking the time out of your busy schedules to participate. I am happy to have met each of you and hope to one day be able to help you in return.

CHAPTER 1

INTRODUCTION

Research at a public university is essential for many reasons, including advancing science, supporting the university's mission, fulfilling the faculty member's role of conducting research, increasing the nation's competitiveness, and promoting economic development in the region (Angaiz et al., 2021; Bland et al., 2005; Iqbal & Mahmood, 2011). With a decline in state funding for public universities and increased competition for federal funding, university leaders must create a culture that supports the growth of research productivity to supplement funding received from the state and through tuition and fees (Chval & Nossaman, 2014; Paul et al., 2014; Santos, 2007). Expectations for faculty to generate research funding have increased (Bland et al., 2002; Iqbal & Mahmood, 2011; Sehlaoui et al., 2021). The challenge of decreased revenues and increased accountability for state and federal funding have created an environment of producing greater outcomes with fewer resources (Bland et al., 2005; Daniel et al., 2006; Edgar & Geare, 2013). Research funding also impacts university rankings and the perceived status and quality of the institution (Batool et al., 2021; Bay & Clerigo, 2013; Lase & Hartijasti, 2018). Rankings of universities such as the Carnegie Classification include research funding reported through the Higher Education Research and Development (HERD) Survey (n.d.) as a major component in determining the university's ranking (Basic Classification Description, n.d.).

Taylor (2006) describes a research-intensive university as one that has pure and applied research, provides research-led teaching, has a wide breadth of academic disciplines, places emphasis on postgraduate programs, is highly research funded, and has an international perspective. Factors that impact research productivity include individual, institutional, and leadership factors that should be considered by university leaders when improving the research culture (Bland et al., 2005). Creswell (1985), Dundar & Lewis (1998), Finkelstein (1984), and Teodorescu (2000) explored individual and institutional factors that impact research productivity. Bland et al. (2002) created a theoretical model of the individual, institutional, and leadership factors that support research productivity. Bland et al. (2005) examined this theoretical model and determined the factors that were predictors of success. Several studies have been conducted based on the Bland et al. (2005) model (Althiga, 2021; Angaiz et al., 2021; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). Lase and Hartijasti (2018) suggested further studies, including applying the Bland et al. (2005) model to institutions strong in research and examining fewer factors to provide a more specific analysis. According to Bland et al. (2005), institutional factors had the most predictors for success, making these factors a valuable set of characteristics to focus on in the current research study. Although fewer leadership factors predicted success, significant institutional factors are unlikely to exist without a leader that displays the factors in the Bland et al. (2005) theoretical model.

Purpose of the Study

The purpose of the study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. While previous studies reviewed individual factors (Bland

et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018), the current study narrowed the factors to include only institutional and leadership factors since these factors are most closely associated with leadership and are directly connected in the Bland et al. (2005) theoretical model. A supportive institutional environment results from an effective leader's activities (Bland et al., 2005).

This study focused on the institutional and leadership factors associated with research productivity. The research questions included:

1. What institutional factors are associated with generating funding for research at a research-intensive university?
2. What leadership factors are associated with generating funding for research at a research-intensive university?
3. How would leaders at research-intensive universities use the instrument of institutional and leadership factors associated with generating funding for research?

Theoretical Framework

The theoretical framework used in this study was the Bland et al. (2005) theoretical model. Bland et al. (2005) associated individual, institutional, and leadership factors with a productive research organization through the model. The model illustrates that a prepared individual in a supportive organization under an effective leader is more likely to be productive in research. The factors are hierarchical in that individual factors are needed to increase research productivity, but success depends on a supportive institution. Likewise, a supportive institution depends on a leader with specific qualities and leadership styles.

Definitions of Significant Terms

This section includes key concepts and terms used in the current study.

- Faculty Vitality – faculty and institutional efforts to increase productivity and motivation and achieve individual and institutional goals (Bland et al., 2002).
- Research Culture – individuals who share research values and practices and are free to participate in research activities (Bland et al., 2005).
- Research Funding – monetary funds received from external sources for conducting a scientific research project; the funding can be used for expenses such as salaries, graduate student support, travel expenses, supplies, and equipment (Chval & Nossaman, 2014).
- Research-Intensive University – A university that prioritizes research as central to its mission (Taylor, 2006) and has a high level of research funding (*Basic Classification Description*, n.d.).
- Research Productivity – output measures such as published articles, conference presentations, books, grants, awards, patents, highly motivated and satisfied faculty, and artistic accomplishments (Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011).

CHAPTER 2

LITERATURE REVIEW

The purpose of the study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. The strategic goal of increasing funding for research at a university is a complex objective dependent on various factors. Two research areas identified through the literature that affect generating funding for research include (1) institutional factors and (2) leadership factors.

Institutions with formal mentoring programs, a strong research culture, clear coordinating goals that are communicated, sufficient time to conduct research, equitable rewards, and opportunities for professional development support individuals prepared to conduct research (Bland et al., 2005). Leaders who fulfill their leadership roles of managing people, sharing goals, advocating for the group, having a research mission, and having an assertive-participative leadership style impact the institutional environment. When a prepared individual enters a supportive organization under an effective leader, the individual and organization are more likely to be research productive.

The comprehensive search strategy employed to review the literature on research productivity factors included the date parameters of the search of 2010 through 2022. Earlier studies connected to the search results were also reviewed if the references of the studies appeared in current literature. Key databases used were JSTOR, EBSCO, and

Google Scholar. Important search terms included research productivity, research metrics, research performance, and higher education. Through the search, 51 empirical studies were identified, including quantitative and qualitative studies, mixed-method approaches, and literature reviews.

The purpose of this literature review was to summarize the theoretical framework and research areas identified through the comprehensive search strategy. The primary theoretical frameworks identified are described with the selected theoretical lens selected. An in-depth discussion of the theoretical lens used in this study will follow. Research topics of institutional and leadership factors are summarized. Lastly, conclusions are drawn, and generalizations are presented.

Theoretical Framework

Theoretical frameworks were identified in several studies that addressed research productivity. Three of the theoretical frameworks were the Bland et al. (2005) theoretical model, the Performance Pyramid Model (Wedman, 2010), and the Resource Dependency Theory (Pfeffer & Salancik, 1978). Bland et al. (2005) developed a theoretical model that demonstrated the relationship between individual, institutional, and leadership factors and a productive research organization. Wedman (2010) introduced the Performance Pyramid Model, which addresses performance problems, including optimizing the vision, resources, and support system through continuous monitoring. The Resource Dependency Theory identifies the external environment's role in an organization acquiring needed resources (Pfeffer & Salancik, 1978).

The Bland et al. (2005) model and the Performance Pyramid model address improving the organization's performance through a needs assessment, while the

Resource Dependency Theory describes organizations as complex entities with competing resources (Bland et al., 2005; Pfeffer & Salancik, 1978; Wedman, 2010). The Bland et al. (2005) theoretical model best aligned with the current study research questions and was used as the lens for identifying the factors associated with generating funding for research because it explicitly identifies institutional and leadership factors associated with research productivity. In contrast, the Wedman (2010) Performance Pyramid and the Pfeffer and Salancik (1978) Resource Dependency Theory applied more generally to performance and organizational needs and not specifically to research productivity.

Bland et al. (2005) developed a theoretical model from the survey results of Bland et al. (2002). The authors associated individual, institutional, and leadership factors with a productive research organization through the model. The factors are hierarchical in that individual factors are needed to increase research productivity, but success depends on a supportive institution. Likewise, a supporting institution depends on a leader with specific qualities and leadership styles. The authors that used this theoretical model in their study included Athiga (2021), Angaiz et al. (2021), Hedjazi and Behravan (2011), and Lase and Hartijasti (2018).

Institutional Factors

Institutional factors associated with funding for research include factors related to the institution's environment, personnel support, and resources and rewards. The institutional factors described in this section are interdependent to create a supportive research environment (Bland & Ruffin, 1992). The findings of the studies reviewed during the comprehensive search included identifying the institutional factors associated

with research productivity, determining the relationship between the factors and research productivity, and evaluating the institution's strength in each factor (Bay & Clerigo, 2013; Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018).

Institution's Environment

The institution's environment includes factors such as organizational culture; positive group climate; clear coordinating goals; research emphasis; size, experience, and expertise of the group; communication; assertive participative governance; decentralized organization (Bland et al., 2005; Bland & Ruffin, 1992). Creswell (1985) described the importance of institutional factors and research culture on research productivity. Another environmental factor is diversity, equity, and inclusion, including cultural diversity, gender, age, skills, and occupation (Ozgen, 2021). The below studies were identified as related to the institution's environment.

Bland et al. (2005) utilized the survey data from Bland et al. (2002) to validate the Bland et al. (2002) model of factors associated with successful research productivity. The purpose of the study was to assess whether individual, institutional, or leadership factors predicted success in research productivity for both individual and department research, validate the Bland et al. (2002) model, and identify the practical applications that can be drawn from the findings. The authors identified institutional factors that predicted individual or department research productivity with a positive significance, including organizational culture, clear coordinating goals, research emphasis, appropriate department size, and internal communication. Findings of negative significance included assertive-participative governance. Assertive-participative governance refers to

leadership where there is an expectation for members to be active, feedback systems are in place, and goals are clear. Positive group climate was also identified as an institutional factor, although it was not a predictor of research productivity.

Hedjazi and Behravan (2011) surveyed academic staff in departments with a high volume of research productivity. The purpose of the study was to identify the university's strengths in individual and institutional research productivity factors, develop strategies to address the weak areas, and provide baseline data for further studies of the implemented initiatives' impact. The authors found significant positive relationships between research productivity and the institutional factors of clear research objectives and research opportunities. There were no significant associations for organizational culture or organizational structure. The factors of clear research objectives, research facilities, and a network of communication with colleagues were predictors of research productivity.

Lase and Hartijasti (2018) surveyed lecturers in departments underperforming in research productivity to identify the factors of research productivity that inhibited research and the factors that have the most impact on research activities. The purpose of the study was to determine if institutional factors mediated the leadership factors by using statistical mediation analysis. They wanted to determine if the independent variable of leadership factors influenced the mediator variable of institutional factors, which influences research productivity. The authors revealed that the institutional factors of assertive-participative governance had a significant positive impact on research productivity. However, the authors found that leadership factors have an insignificant negative impact on research productivity.

Carter et al. (2021) recognized diversity, equity, and inclusion (DEI) as an evolving aspect of scholarship. They recommended process changes to address implicit and explicit bias in the promotion and tenure review process. Bias could be found in the ethnicity, gender, sexual orientation, or research topic of the faculty. Ozgen (2021) addressed the economics of diversity as it relates to innovation, productivity, and the labor market. Foreign individuals are shown to increase patent applications and grants and facilitate knowledge diffusion and technology transfer in the host countries. Easterly and Ricard (2011) describe how despite efforts to reduce gender bias in the workplace, it still exists through gender schemas or unconscious bias. Research administrators need to recognize the DEI challenges faculty face regarding the obstacles to research productivity and provide the necessary support to promote equality.

The institution's environmental factors include organizational culture; positive group climate; clear coordinating goals; research emphasis; size, experience, and expertise of the group; communication; assertive participative governance; decentralized organization; and diversity, equity, and inclusion. Bland et al. (2005) identified organizational culture, clear coordinating goals, research emphasis, appropriate department size, and internal communication as institutional predictors of research productivity; whereas, Hedjazi and Behravan (2011) identified clear research objectives, research facilities, and a network of communication with colleagues as institutional predictors. Joseph and Waller (2018) identified having institutional vision awareness and the presence of a collegial network as factors associated with high faculty productivity. Conversely, Angaiz et al. (2021) did not find any statistically significant relationship between institutional factors and research productivity. Ozgen (2021) and Easterly and

Ricard (2011) addressed cultural and gender diversity respectfully and raised the importance of considering diversity, equity, and inclusion as an institutional factor.

Personnel Support

Personnel support includes factors such as recruitment and selection, mentoring, sufficient work time, communication with a professional network, brokered opportunities, and promotion and tenure requirements. The below studies were identified as related to personnel support.

Bland et al. (2002) surveyed the full-time faculty to determine the areas of faculty vitality that were strong and weak to improve faculty and institutional development. The purpose of the study was to identify the institution's strength in each research productivity factor, develop initiatives to address the weak areas, and provide baseline data for further studies of the implemented initiatives' impact. The survey results related to institutional factors indicated that the faculty had insufficient time to conduct scholarly work and did not have adequate support and appreciation for their work. The findings of this study related to institutional factors included positive associations in factors such as external network development, mentor assignment by the institution, and hours involved in research and administration. Negative associations included the hours engaged in teaching, a perception that a significant percentage of department faculty were awarded external funding, and an internal network of research colleagues.

Bland et al. (2005) identified institutional factors that predicted individual or departmental research productivity, including formal mentoring assignments, communication with external professional networks, and sufficient work time. Recruitment and selection and brokered opportunity structure were also included as

factors associated with research productivity. Hedjazi and Behravan (2011) also found a network of communication to be a predictor of research productivity. Edgar and Geare's (2013) findings included sufficient work time to conduct research as an important managerial practice that influenced performance outcomes.

The Lase and Hartijasti (2018) questionnaires revealed that the underperforming lecturers did not have external networks, had no formal mentoring, and lacked sufficient time to conduct research. Based on the questionnaire responses and literature review, the authors concluded that having these three factors would positively impact research productivity. The institutional factors of brokered opportunities for professional development had a significant positive impact on research productivity. Iqbal and Mahmood (2011) also found that faculty members should have less teaching load and more time to conduct research. Sehlaoui et al. (2021) surveyed faculty members in a College of Education, and 80% of the participants reported that the time to write a grant proposal was the most challenging obstacle to conducting externally funded research.

Carter et al. (2021) describe the value of expanding the promotion and tenure requirements to include a broader range of scholarly activity, including grants, publications, innovation, and entrepreneurship. Boyer et al. (2016) describe four scholarship types: the scholarship of discovery, the scholarship of integration or interpretation, the scholarship of application, and the scholarship of teaching. Boyer et al. (2016) encourage an inclusive view of what scholarship means, which connects to and is expanded by Carter et al. (2021) recommendation to reform the reward structure of promotion and tenure to include innovation and entrepreneurship (I&E). Promotion and

tenure reform to include I&E could result in increased research funding and should be intentionally addressed by leadership to improve equity in the process.

Personnel support factors include recruitment and selection, mentoring, sufficient work time, communication with a professional network, brokered opportunities, and promotion and tenure requirements. Bland et al. (2002) and Bland et al. (2005) identified mentoring, communication with external professional networks, sufficient work time, brokered opportunity structure, and recruitment and selection as associated with research productivity. Hedjazi and Behravan (2011) further supported a network of communication as an institutional factor. Lase and Hartijasti (2018) also supported external networks, mentoring, and sufficient work time as factors associated with research productivity.

Resources and Rewards

Resources and rewards are also institutional factors associated with generating funding for research. Resources include support personnel, training, grant writing, access to databases, and internal budgets. Rewards include monetary and non-monetary recognition, compensation, and encouragement. The below studies were identified as related to resources and rewards.

Bland et al. (2005) identified institutional factors that predicted department research productivity with a positive significance, including equitable rewards. Hedjazi and Behravan (2011) included significant positive relationships between research productivity and the factors of research facilities and a reward system. The factors that were considered predictors of research productivity included research facilities.

Bay and Clerigo (2013) surveyed faculty in a department that was underperforming in research productivity. The purpose was to identify relationships between research productivity and organizational support and confidence in research writing. No significant relationship was found between research productivity and organizational support. Organizational support included pay, budget, training, grant writing, statistical services, access to journals, recognition, encouragement, and collaboration.

Sehlaoui et al. (2021) surveyed faculty in the College of Education at a Texas university. The purpose was to determine the participants' motivation to conduct externally funded research and their perceived obstacles. The need for grant databases to identify grant opportunities and the need for additional administrative support were obstacles for faculty. Participants also reported a need for resources to support graduate student research assistants. Funding student workers and graduate students and receiving financial support for traveling and other materials were considered motivating factors.

Edgar and Geare (2013) interviewed university stakeholders and surveyed faculty in high-performing and low-performing research departments in three universities in New Zealand. The research productivity outcome measure used was an external assessment tool that considered the faculty's research output (published articles, books, conference papers, intellectual property such as a patent, etc.), peer esteem (supported by fellowships, awards, prizes, invitations, etc.), and contributions to the research culture (impacts of social, economic, cultural and environmental research with local, national, or international influence). The research questions included (1) What managerial practices are perceived to be important for research performance? (2) Do managerial practices

influence research performance outcomes? (3) Do cultural descriptors and characteristics within departments influence research performance outcomes? Edgar and Geare (2013) found that the managerial practices of equal rewards and recognition are related to research performance.

While Bland et al. (2005) and Hedjazi and Behravan (2011) found that resources and rewards were associated with research productivity, Bay and Clerigo (2013) did not find a significant relationship between research productivity and organizational support. Sehlaoui et al. (2021) identified obstacles and motivators related to resources which included support personnel, grant opportunity databases, graduate student support, and support needed for travel and other materials.

Summary of Institutional Factors

Institutional factors associated with research productivity were identified (Bay & Clerigo, 2013; Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). Each study included a methodological approach of surveying faculty to determine the relationship between institutional factors and research productivity. The outcomes of research productivity described were published material such as journal articles, books, conference papers, and research papers. Only one study included the number of grants proposed and grants approved in the research productivity measure (Lase & Hartijasti, 2018).

Bland et al. (2002) and Bland et al. (2005) developed a theoretical model that described how specific individual, institutional, and leadership factors support a conducive environment for research productivity (Bland et al., 2005; Bland et al., 2002).

Hedjazi and Behravan (2011) and Lase and Hartijasti (2018) used the Bland et al. (2005) theoretical model but found fewer significant relationships than Bland et al. (2005).

Three studies identified having sufficient work time for research, the importance of external networks, and a formalized mentoring program as significant factors positively associated with research productivity (Bland et al., 2005; Bland et al., 2002; Lase & Hartijasti, 2018). Hedjazi and Behravan (2011) also found a significant positive relationship between external networks and research productivity.

Bay and Clerigo (2013) surveyed an entity underperforming in research productivity and found no significance between organizational support and research productivity. Batool et al. (2021) and Angaiz et al. (2021) also surveyed underperforming research faculty and found a lack of significance in the relationship between institutional support and research productivity. Conversely, Bland et al. (2005) and Hedjazi and Behravan (2011), who studied higher-performing departments, found a significant relationship between research productivity and aspects of organizational support such as rewards, research facilities, and network of communication with external networks.

In addition to the institutional factors identified in the Bland et al. (2005) theoretical model, diversity, equity, and inclusion (DEI) and promotion and tenure (P&T) were also identified as factors associated with generating funding for research. Carter et al. (2021) addressed DEI and P&T when describing the need to reform P&T requirements to include innovation and entrepreneurship.

Leadership Factors

Leadership factors associated with funding for research include scholar, research-oriented, capably fulfills all critical leadership roles, participative leader, inclusive

leadership, and transformational leadership. The findings of the studies reviewed during the comprehensive search included identifying the leadership factors associated with research productivity, determining the relationship between the factors and research productivity, and evaluating the institution's strength in each factor (Bland et al., 2005; Edgar & Geare, 2013; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). The below studies were identified as related to leadership factors.

Scholar and Research-Oriented

The Bland et al. (2005) theoretical model identified scholar and research-oriented as leadership factors associated with generating funding for research. The definition of scholar is a leader that serves as a sponsor or mentor and is highly regarded for their scholarly activity. Research-oriented is defined as a leader that internalizes the research-centered mission and has an orientation toward research. While these factors were included in the theoretical model, there were no findings associated with them to highlight.

Capably Fulfills All Critical Leadership Roles

The Bland et al. (2005) theoretical model identified Capably Fulfills All Critical Leadership Roles as a leadership factor associated with generating funding for research. The definition of capably fulfills all critical leadership roles is a leader who manages people and resources, advocates for the group, promotes the mission and goals, and facilitates research productivity.

Lase and Hartijasti (2018) state that the “capably fulfills leadership roles” leadership factor significantly affects the institutional factor of assertive-participative governance. Assertive-participative governance has a significant positive effect on

research productivity. Therefore, the leadership factor of capably fulfills leadership roles is fully mediated by the institutional factor of assertive-participative governance.

Participative Leader

The Bland et al. (2005) theoretical model identified Participative Leader as a leadership factor associated with generating funding for research. A participative leader is a leader who has an assertive-participative leadership style or confident style of leadership, holds regular meetings with defined objectives, incorporates a formal structure to set and communicate expectations, disseminates quality information, and values the ideas of the team members. The findings identified a significant positive relationship between the leadership factor of the assertive-participative style and department research productivity.

Inclusive Leadership

An inclusive leadership style is defined as a leader that integrates heterogeneous members of a team and nurtures them so they fit together (Kuknor & Bhattacharya, 2020). Inclusive leaders encourage opportunities for open dialogue across differences and model an understanding of the inclusion of all members of the organization (Wasserman et al., 2008). Kuknor and Bhattacharya (2020) describe the practical implications of inclusive leadership, including those employees who feel valued and respected directly impact organizational outcomes. It also encourages individuals to fully engage in business objectives. The application can be made that inclusive leadership could be associated with research productivity.

Transformational Leadership

Efficient use of resources and increased productivity are necessary in today's world (Vatankhah et al., 2017). A transformational leadership style is defined as a leader that understands the organizational culture, values justice and equality, leads organizational change, inspires team members, and develops a common purpose based on organizational goals (Shields, 2010). Vatankhah et al. (2017) examined the effect of transformational leadership on employee productivity in a teaching hospital. The results included that transformational leadership is associated with employee productivity and should be prioritized at the organizational level to enhance individual and organizational productivity. This application could also be made to research productivity.

Summary of Leadership Factors

Leadership factors associated with research productivity were identified (Bland et al., 2005; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). Each study used a methodological approach of surveying faculty to determine the relationship between leadership factors and research productivity. All five studies considered published material such as journal articles, books, conference papers, and research papers as a component of the research productivity outcome measure. One study included the number of grants proposed and grants approved in the research productivity measure (Lase & Hartijasti, 2018). One study also included intellectual property such as patents, peer esteem, and research culture in the research productivity measure (Edgar & Geare, 2013).

There are fewer leadership factors positively associated with research productivity than institutional factors. Two studies found a significant relationship between leadership

styles and research productivity, including the assertive-participative style (Bland et al., 2005) and the corporate management style (Hedjazi & Behravan, 2011).

Lase and Hartijasti (2018) surveyed underperforming departments and found no significant relationship between research productivity and leadership factors. Angaiz et al. (2021) also surveyed underperforming research faculty and found a lack of significance in the relationship between leadership factors and research productivity.

Given the understanding provided by Bland et al. (2005) that an institutional research environment is directly impacted by leadership, even when a relationship is not identified, it is unlikely that there would be significant institutional factors without a leader that displays the leadership factors in the Bland et al. (2005) model. In addition to the leadership factors identified in the Bland et al. (2005) model, inclusive leadership and transformational leadership were also identified as factors associated with generating funding for research. Inclusive leadership encourages employees to engage in business objectives by ensuring they feel valued and respected (Kuknor & Bhattacharya, 2020). Transformational leadership improves employee productivity by inspiring change and focusing the team on a common purpose (Shields, 2010; Vatankhah et al., 2017).

Conclusions

Bland et al. (2005) identified institutional and leadership factors that predict success in research productivity. Identifying key factors to success and predictor factors would assist university leaders in creating a supportive environment to increase research productivity (Bland et al., 2005). Five generalizations regarding institutional and leadership factors include (1) similarities in definitions of outcome measures of research productivity, (2) institutional factors most frequently associated with research

productivity, (3) leadership factors associated with research productivity, (4) lack of significant relationship between organizational support and research productivity in under-performing organizations, and (5) similar methodological approaches and participants among seminal studies.

The outcome measures of research productivity were most frequently defined as published scholarly work (Bay & Clerigo, 2013; Bland et al., 2005; Bland et al., 2002; Edgar & Geare, 2013; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). However, there are instances of using other measures, such as grants (Lase & Hartijasti, 2018) and intellectual property, such as patents (Edgar & Geare, 2013).

The institutional factors most frequently associated with research productivity were sufficient time to conduct research, having external networks of communication, and a formalized mentoring program (Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018).

There are fewer leadership factors identified in the literature associated with research productivity than institutional factors (Angaiz et al., 2021; Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). However, significant institutional factors are unlikely to exist without a leader that displays the factors in the Bland et al. (2005) theoretical model.

Angaiz et al. (2021), Batool et al. (2021), and Bay and Clerigo (2013) studied underperforming departments and found no significant relationship between organizational support and research productivity. Conversely, Bland et al. (2005) and Hedjazi and Behravan (2011), who studied high-performing departments, found a significant relationship between research productivity and aspects of organizational

support such as rewards, research facilities, and network of communication with external networks.

The methodology and participants in all seminal studies utilized a survey instrument and faculty participants. Edgar and Geare (2013) also used semi-structured interviews for survey design. The authors in the Bland et al. (2002) study asked experts in faculty development to analyze the survey for content validity, and the survey was piloted to ensure clarity.

The purpose of this study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. The study included establishing a comprehensive set of institutional and leadership factors associated with research productivity, using a modified Delphi panel to obtain expert consensus on the set of factors, creating a survey instrument, conducting a pilot study to beta-test the instrument, and presenting results to key university leaders through data-informed interviews.

CHAPTER 3

METHODS

The purpose of the study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. The research questions included:

1. What institutional factors are associated with generating funding for research at a research-intensive university?
2. What leadership factors are associated with generating funding for research at a research-intensive university?
3. How would leaders at research-intensive universities use the instrument of institutional and leadership factors associated with generating funding for research?

The theoretical framework used was the Bland et al. (2005) theoretical model, which identifies the factors of a productive research organization, including individual, institutional, and leadership factors.

This chapter details the methodology, including creating an instrument through planning, construction, and validation. The sample selection criteria are outlined for the modified Delphi panel experts and the key leaders, as well as the site selection criteria for the university and participants for the pilot study. The data collection and analysis methods are described in detail.

Design of the Study

The researcher developed an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. The research design included a three-phase modified Delphi panel and a pilot study. Phase one of the modified Delphi panel included establishing a comprehensive set of institutional and leadership factors associated with research productivity. The Bland et al. (2005) model was used as a foundational set of factors. These factors were compared with other factors identified through the literature review (Bay & Clerigo, 2013; Edgar & Geare, 2013; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). The comprehensive set of factors was presented to the modified Delphi panel. Written approval was obtained from the authors to use survey items from the Bland et al. (2002) survey instrument.

In phase two, the modified Delphi panel was surveyed to gain consensus on the comprehensive set of institutional and leadership factors associated with research productivity. The current study was considered a modified Delphi study since an initial set of factors was gathered through a literature review without input from the expert panel (Avella, 2016). The purpose was to validate the set of factors identified in phase one and to add and validate additional variables identified by the panel. Rowe and Wright (1999) describe four characteristics of a Delphi study, including anonymity, iteration, controlled feedback, and the statistical aggregation of group responses that were implemented in the current study (p. 354).

Detailed Modified Delphi Methodology

The researcher contacted potential panel experts by email requesting their participation in the current study and compiled a list of experts that agreed to participate. An initial meeting was conducted through Zoom to explain the purpose of the research, the modified Delphi process, the anticipated timeline, and a demonstration of the Qualtrics survey. Following a Delphi methodology, as Vogel et al. (2019) presented, three rounds of surveys were completed using a 7-point Likert scale and open fields for additional feedback. An initial survey was conducted to obtain consensus on the institutional and leadership factors that should be included in the subsequent surveys. The Round One survey included specific survey items related to the factors that achieved consensus in the initial survey. The results of the Round One survey were collected, and responses were addressed. New questions were added for Round Two based on Round One.

In Round Two, the list of questions not receiving a consensus was sent to the same participants displaying the group's collective response using the Lawshe Content Validity Ratio (CVR) of 0.78. A higher CVR was used in the initial survey and rounds one and two than the required ratio of 0.42 to ensure the instrument was further refined. The participants were asked to reconsider their responses based on the collective responses, and revisions were made based on the open feedback. Round Three included questions from rounds one and two that had not achieved consensus with the group's collective response to allow one final opportunity for reflection on the response provided. Lawshe's Content Validity Ratio (CVR) was used to determine the validity of the expert's assessment of the factors.

In phase three, an instrument was developed using the survey items validated through the modified Delphi process. Survey items in Round Three with a minimum CVR of 0.42 were included in the instrument. Qualitative feedback from open-ended questions was analyzed and considered for inclusion. The created instrument was alpha-tested and beta-tested with a small sample of experts.

Detailed Pilot Study Methodology

Once the instrument was developed, a pilot study was conducted at a research-intensive university to validate the instrument further to determine its usefulness. An email was sent to all tenure and tenure track faculty within three colleges of the university, which requested that they complete the survey in Qualtrics. A presentation was made at two of the three colleges' Fall faculty meetings. The presentation at the third college was not possible due to a scheduling conflict. Printed informational material was provided for all three colleges' Fall faculty meetings. The results were collected and analyzed using measures of central tendency and standard deviation.

The final step in the pilot study was to present the results to key leaders at the university and conduct interviews to assess the survey's usefulness and value. The interview questions sought to determine if the results aligned with the leader's understanding of the faculty assessment of the institutional and leadership factors, how leaders might use the results and the survey instrument, and any concerns leaders might have with using the survey instrument.

Sample Selection

Purposive sampling was used in this design to gain the most understanding of the topic. Individuals selected to participate in the modified Delphi panel included experts in

research administration identified through (1) the University of Louisiana System Grants/Research Directors Group, (2) the Research Administration Listserv, (3) the pilot study university website, and (4) colleagues in the field of research administration. Criteria for expertise was an individual currently in a research administration position with at least three years of experience in the research administration field. Demographic survey items were included on the Delphi surveys to confirm that the minimum criteria for expertise were met. It was anticipated that results would be received from ten or more participants during each of the rounds of the Delphi study (Avella, 2016). Participants' names and universities were coded to ensure anonymity.

Site Selection for Pilot Study

To select the university for the pilot study, the current researcher identified a research-intensive university with research as a core part of its mission. This was measured by a Carnegie Classification of R2 or higher. Participants in the pilot student included tenure and tenure-track faculty within the colleges selected. The three colleges with the highest externally funded research were selected. Participants in the data-informed interviews comprised six key leaders, including the deans and associate deans of research for each college. A profile for each key leader selected is included in Table 1.

Table 1*Profiles of Key Leaders*

<u>Pseudonym</u>	<u>College</u>	<u>Position</u>
Leader A.1	College of Engineering & Science	Dean
Leader A.2	College of Engineering & Science	Associate Dean for Research
Leader B.1	College of Applied & Natural Sciences	Dean
Leader B.2	College of Applied & Natural Sciences	Associate Dean for Research
Leader C.1	College of Education	Dean
Leader C.2	College of Education	Associate Dean for Research

Data Collection

The data sources included the modified Delphi panel alpha and beta testing and participant responses, alpha and beta testing the final survey instrument, pilot study survey responses, and interviews of key leaders. The researcher collected the responses from the modified Delphi panel through Qualtrics, a software used to develop surveys. Google Sheets were used in tracking open feedback received and addressed. The pilot study survey data was collected through Qualtrics. Links to the survey data were emailed to participants. Interviews with key leaders were in person and were recorded and transcribed using the Otter.ai software.

Data Analysis

Data analysis was conducted for the modified Delphi panel responses and pilot study. Factors were categorized based on institutional and leadership categories, and the number of factors and percentage consensus for each round was recorded. The initial survey to address the factors that should be included in subsequent surveys was collected, and open feedback was coded using Atlas.ti software. Keywords were coded for each factor from the definitions in the initial survey, the Bland et al. (2002) survey, and the

open feedback from the Delphi panel Initial Survey. The coding allowed me to address each open response by documenting that some responses referred to existing factors and some supported new factors.

The responses to round one of the modified Delphi Method were analyzed, and a CVR was determined. Survey items achieving a consensus of 0.78 CVR were not addressed in the following round. Survey items were added after round one based on the open feedback. Responses in round two were analyzed to assess consensus, and revisions were made based on open feedback. Based on the responses after round three, factors that reached a consensus with a CVR of 0.42 were included in the final survey instrument.

Lawshe's Content Validity Ratio (CVR) was used to evaluate the validity of the expert's assessment of the metrics. The formula for calculating Lawshe's CVR is:

$$CVR = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

where n_e is the number of participants indicating essential, and N is the total number of participants (Lawshe, 1975). A negative CVR indicates that less than half of the experts agree. When the CVR is zero, half of the experts agree. A CVR result of one indicates that all the experts agree. Factors with a minimum CVR of 0.78 were included in the instrument for the initial survey and rounds one and two to ensure further refinement of the survey items (Gilbert & Prion, 2016). A CVR of 0.42 was used in round three to determine consensus (Lawshe, 1975).

The current researcher analyzed the quantitative data generated through the pilot survey using measures of central tendency and standard deviation. This data was used when generating the Executive Summaries to present to the leaders of each college. Data

collected through interviews with key leaders were analyzed and reported. The interview results helped inform the researcher of the usefulness of the instrument and the Executive Summary.

Validity and Reliability

The Delphi technique was originally designed in the 1950s by the RAND Corporation and is widely used for forecasting and decision-making (Rowe & Wright, 1999). The method was developed to obtain consensus from experts on selecting an optimal U.S. Air Force target system. Key features include anonymity, iteration, controlled feedback, and the statistical aggregation of group responses (Rowe & Wright, 1999, p. 354). Allowing experts to respond individually reduces social pressures. Multiple rounds allow experts to revisit their opinions and change their minds without the pressure of others in the group. Between the rounds, controlled feedback on the overall group response is provided to the experts, which generally includes a statistical representation of mean or median values. Each round typically results in greater accuracy of information. The Delphi technique has become a proven, reliable method of identifying consensus of new concepts and improving information through iterations. Lawshe's Content Validity Ratio will also evaluate the content validity of the expert's assessment of the individual metrics (Lawshe, 1975).

Researcher Positionality

Based on my experience as a research administrator, I believe that faculty are motivated to participate in externally funded research by several internal and external factors, including recognition in their field of study, the opportunity to research a topic of

interest, providing research experiences to students, and the ability to meet promotion and tenure expectations. I believe factors that reduce motivation include a lack of personnel and financial support to conduct research, a lack of understanding of the proposal writing process, an inability to locate funding opportunities, and the absence of returning indirect costs to the college, department, and faculty to support further research. However, I put multiple collection and analysis methods in place to mitigate the impact of my experience and beliefs on the research results.

Limitations and Delimitations

The limitations of this study include context and access limitations. A context limitation is that permission was needed to conduct research at the sample university. Without this permission, another university would need to be selected. An access limitation was that confidential information would not be available.

There were also limitations to using the modified Delphi technique, including researcher bias, researcher shortcomings, and the risk of panel members not completing all the rounds (Avella, 2016). Researcher bias could enter if the researcher slanted the initial questionnaire toward a particular result, which was addressed by having an expert outside the panel review the questionnaire before disseminating it to the panel and allowing the panel members to provide feedback on the initial set of factors. Researcher shortcomings could have included preconceptions in the initial questionnaire and poor analysis and presentation of panel responses between rounds. This was addressed by allowing open feedback by the panel and the researcher to acknowledge the role of facilitator and not a contributor. The risk of panel members failing to complete all the rounds was addressed by simplifying the process through electronic dissemination

methods and reducing the turnaround time between rounds. The panel members were aware of each survey's anticipated timeline and deadlines. Reminder emails were sent to ensure a minimum number of participants completed the surveys.

The pilot study included delimitations in the institutional context by limiting the university selected for the pilot study to a research-intensive university with research as a core part of its mission. This delimitation aimed to exclude universities that do not have research as a major focus. The colleges selected at the research-intensive university were also limited to the top three colleges in terms of externally funded research. This delimitation aimed to exclude colleges that were not actively involved in externally funded research.

CHAPTER 4

RESULTS

The purpose of the study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. This chapter will present the results of the three phases of the modified Delphi panel, including identifying institutional and leadership factors, the modified Delphi panel surveys, and the creation of the final survey instrument. Lastly, the results of the pilot study will be presented, including the presentation of results to leaders.

Delphi Panel Phase One: Identify Institutional and Leadership Factors

Through a review of current literature, a comprehensive set of institutional and leadership factors associated with generating funding for research were identified. Bland et al. (2002) identified a foundational set of factors. Tenure and promotion requirements were not a factor in Bland et al. (2002). However, they were discussed in the literature as an area that needs review to ensure all areas of scholarship are considered and rewarded (Carter et al., 2021). The comprehensive set of factors is outlined in Table 2.

Table 2*Initial Comprehensive Set of Institutional and Leadership Factors*

<u>Institutional Factors</u>	<u>Leadership Factors</u>
Recruitment and Selection	Scholar
Clear Coordinating Goals	Research-Oriented
Research Emphasis	Capably Fulfills All Critical
	Leadership Roles
Culture	Participative Leader
Positive Group Climate	
Mentoring	
Communication with a Professional Network	
Resources	
Sufficient Work Time	
Size/Experience/Expertise	
Communication	
Rewards	
Brokered Opportunities	
Assertive Participative Governance	
Decentralized Organization	
Tenure and Promotion Requirements	

Delphi Panel Phase Two: Modified Delphi Panel Surveys

The purpose of the modified Delphi panel was to gain consensus on the comprehensive set of institutional and leadership factors and survey items associated with generating funding for research. For the selection of participants in the panel, 37 individuals were contacted with a request to participate. Of these individuals, 14 were from the university system of the pilot study university, one was from the Research Administration Listserv, four were from the pilot study university, one was from a land grant institution in the same state as the pilot study university, and 17 were referred from the individuals initially contacted. There were 26 individuals who agreed to participate in the modified Delphi panel.

Delphi Panel – Initial Survey

The purpose of the initial survey was to obtain feedback on the comprehensive set of factors identified in current literature and ask the experts to provide any additional factors they believe are important based on their experience. The factors from Table 2 were presented in the initial survey, including a definition of each factor and a reference from the literature. The survey was alpha-tested prior to entering into the Qualtrics survey software. Feedback from the alpha testing is included in Table 3.

Table 3

Modified Delphi Panel Initial Survey Alpha Testing

<u>Feedback</u>	<u>Revisions</u>
For each reference, add full citation through a hyperlink or at the bottom of the page. For current role, remove administration.	Hyperlinks were added to references to provide the full citation. Did not remove the research administration role because that is the field of the panel experts.
Remove the demographics question related to education.	Removed the demographics question related to highest level of education.

Table 4 outlines the feedback from beta testing the initial survey and the changes made.

Table 4

Modified Delphi Panel Initial Survey Beta Testing

<u>Feedback</u>	<u>Revisions</u>
Rename your questions with a label that you can easily interpret/understand when you're looking at the dataset in Excel. For example, change Q2 to "IRB" or "IRB_approval". Change Q1 to "Label_IRB", Q4 to "Label_Demographics", etc.	Labels were renamed for easier analysis.

<u>Feedback</u>	<u>Revisions</u>
Make Q2 require an answer.	Added requirement to answer Q2.
Most responses appear to have reverse code turned on to change strongly agree to a 1 and strongly disagree to a 5. Just make certain you want this.	Changed the coding where strongly disagree was 1 and strongly agree was 7.
Q30 : “manager of peoples”	Did not revise as this language was from Bland et al. (2005).
How are you using your beta testers? If you simply want to make sure everything is working properly, just do a slow rollout for your data collection: send it to no more than three people and check to see what your data look like. If it looks okay, send to 7 more and make another check, then send out to the main group. Unless there is a revision, you keep all of the data together.	Implemented the slow rollout to beta testers as suggested.
In Procedures of Study, recommended text: In this research, you will be provided a series of electronically-delivered surveys to provide your responses (voluntarily) to assist in the creation of an instrument to identify institutional factors and leadership factors associated with generating funding for research.	Revised text to “In this research, you will be provided a series of electronically-delivered surveys to assist in the creation of an instrument to identify institutional factors and leadership factors associated with generating funding for research.”
In Procedures of Study, recommended text: Initially, a brief survey will be completed to verify a comprehensive set of institutional and leadership factors.	Revisions made as suggested.
In Procedures of Study, recommended text: The participants’ names will remain confidential as per HIPPA? (or other applicable you are aware of) guidelines.	No revisions made; HIPPA does not apply.
In Time Expectations, recommended text: Please return the survey within one week of receipt.	Revisions made as suggested.

<u>Feedback</u>	<u>Revisions</u>
In Benefits/Compensation, recommended text: ...but they may potentially benefit from the identified factors of the study.	Revision was not made as it did not align with the intended meaning of the statement.
In Risks, Discomforts, Alternative Treatments, recommended text: however, the investigator will follow the practices described above to maintain confidentiality and anonymity to mitigate these risks.	Revision was not made as it did not align with the intended meaning of the statement.
In Risks, Discomforts, Alternative Treatments, recommended text: The investigators listed below may be reached to answer questions about the research, subjects' rights, or related matters.	Revision was not made as it did not align with the intended meaning of the statement.
Should there be a Post-Award option or would that be the Financial Research?	A specific role of post-award was not added at this time as I thought the other more detailed post-award roles were sufficient.
You may want to reverse the order of responses (e.g. Strongly agree to Strongly disagree). The majority of surveys I completed have the options in the order shown in the parenthesis.	Did not make this revision because I wanted Strongly disagree to equal a value of 1 and Strongly Agree to equal a value of 7.
I didn't see an administrative role I fit in under in the demographics section so I wasn't really sure what to put.	Added a role for Grants Manager of a Specific Unit.

Of the 26 individuals who received the initial survey, 23 participants completed the survey. Table 5 displays the results of the Initial Survey and the final comprehensive set of institutional and leadership factors.

Table 5*Final Comprehensive Set of Institutional and Leadership Factors*

<u>Institutional and Leadership Factors</u>	<u>Lawshe's CVR</u>	<u>Results</u>
Institutional Factors		
Recruitment and Selection	0.91	Met CVR minimum of 0.78
Clear Coordinating Goals	0.82	Met CVR minimum of 0.78
Research Emphasis	0.82	Met CVR minimum of 0.78
Culture	0.82	Met CVR minimum of 0.78
Positive Group Culture	0.82	Met CVR minimum of 0.78
Mentoring	0.73	Strongly supported by the literature (Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018)
Communication with a Professional Network	0.73	Strongly supported by the literature (Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018)
Resources	0.91	Met CVR minimum of 0.78
Sufficient Work Time	0.73	Strongly supported by the literature (Bland et al., 2005; Bland et al., 2002; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018)
Size/Experience/Expertise	0.36	Did not meet CVR; Removed
Communication	0.45	Did not meet CVR; Removed
Rewards	0.82	Met CVR minimum of 0.78
Brokered	0.55	Did not meet CVR; Removed
Opportunities		
Assertive Participative Governance	0.36	Did not meet CVR; Removed
Decentralized	-0.09	Did not meet CVR; Removed
Organization		
Tenure and Promotion Requirements	0.91	Met CVR minimum of 0.78
Diversity, Equity, and Inclusion Initiatives		New factor that emerged from qualitative coding of Initial Survey open feedback
Leadership Factors		
Scholar	1	Met CVR minimum of 0.78
Research-Oriented	0.82	Met CVR minimum of 0.78

<u>Institutional and Leadership Factors</u>	<u>Lawshe's CVR</u>	<u>Results</u>
Capably Fulfills All Critical Leadership Roles	0.55	Did not meet CVR; Removed
Participative Leader	0.45	Did not meet CVR; Removed
Inclusive Leadership		New factor that emerged from qualitative coding of Initial Survey open feedback
Transformational Leadership		New factor that emerged from qualitative coding of Initial Survey open feedback

Based on Lawshe's Content Validity Ratio (CVR) of 0.78, eight institutional factors and two leadership factors met consensus. Three additional institutional factors were strongly supported by the literature and had a CVR score of 0.73, so these factors were also included in future surveys. Factors with a minimum CVR of 0.78 were included in the instrument for the initial survey and rounds one and two to ensure further refinement of the survey items. A CVR of 0.42 was used in Round Three to determine consensus (Lawshe, 1975).

Three factors had low CVR values that seemed unusual, which included Communication, Decentralization, and Participative Leaders. Having clear forms of communication received a CVR value of 0.45. A decentralized organization was characterized by a flat structure where participation is encouraged. This factor received a CVR value of -0.09, which means less than half of the participants agreed that this factor was associated with funding for research. Participative leader was characterized by setting clear goals and expectations for participation, holding frequent meetings, and sharing quality information. This factor received a CVR value of 0.45. Even though these factors were found in the literature, they were not included in the future rounds of surveys since they did not meet the minimum CVR value of 0.78.

Open feedback from the participants was analyzed and coded using ATLAS.ti software. The coding allowed addressing each open response by documenting how some responses referred to existing factors and some supported new factors. Three new factors emerged from the open feedback, one institutional factor (Diversity, Equity, and Inclusion Initiatives) and two leadership factors (Inclusive Leadership and Transformational Leadership).

The results of the initial survey finalized the comprehensive set of institutional and leadership factors to be used for future rounds of the modified Delphi panel process. Coding from the open feedback identified keywords for each factor included in Table 6.

Table 6

Keywords for Institutional and Leadership Factors

<u>Institutional and Leadership Factors</u>	<u>Keywords</u>
Institutional Factors	
Recruitment and Selection	Recruit and Hire Research Faculty, Recruitment Strategies, Best Talent
Clear Coordinating Goals	Shared research goals, Vision, Priorities, Direction
Research Emphasis	Priorities, Research Expectations, Research Incentives
Culture	Opportunities, Research Values, Research Practice, Risk Tolerance, Community Engagement
Positive Group Climate	High morale, Spirit of Innovation, Dedication, Open to New Ideas, Collaboration, Frequent Communication, Low Turnover, Positive Relationships
Mentoring	Formal Advisor, Informal Advisor, Guidance, Research Expectations, Career Goals, Collaboration
Communication with a Professional Network	Network of Colleagues, Frequent Communication
Resources	Sufficient Internal Funding, Appropriately Equipped Space, Adequate Support Personnel and Processes, Adequate Technical Personnel, Training Opportunities
Sufficient Work Time	Time to Devote to Scholarly Activities, Input on Schedule, Release Time for Research

<u>Institutional and Leadership Factors</u>	<u>Keywords</u>
Rewards	Equitable Rewards, Defined Benchmarks, Monetary Recognition, Non-Monetary Recognition, Flexible Work Environment
Tenure and Promotion Requirements	Tenure Requirements Encourage Research, Research Expectations
Diversity, Equity, and Inclusion Initiatives	Respect for Others, Diverse Personnel, Privilege, Inclusive Climate
Leadership Factors	
Scholar	Highly Regarded for Research, Serves as a Mentor
Research-Oriented	Supportive of Research, Internalized Research Mission
Inclusive Leadership	Respect for Others, Equity, Collaboration, Cultural Diversity, Safe Environment
Transformational Leadership	Visionary, Leads Transformative Change, New Thinking, Inspires Participation

These keywords were used in the three remaining rounds of panel surveys to address whether the survey items adequately addressed the institutional and leadership factors.

Delphi Panel – Round One

The purpose of the Round One survey was to obtain consensus and feedback on the survey items associated with the institutional and leadership factors. The initial survey items were obtained from the Bland et al. (2002) survey and through articles related to the factors. The initial draft survey included 99 survey items related to the institutional and leadership factors. Through alpha testing, the number of survey items was reduced to 73. Table 7 outlines the feedback from Round One alpha testing.

Table 7*Modified Delphi Panel Round One Alpha Testing*

<u>Feedback</u>	<u>Revisions</u>
There is one item that I think could be beneficial to expand on - statement #1 under 'Inclusive Leadership', in addition to being valued also being treated respectfully and fairly, have a sense of belonging, and are confident and inspired through inclusive leadership.	My department head displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging regardless of their social identities. My dean/division leader displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging regardless of their social identities
There are too many survey items (99). Look for overlapping items and discuss with another individual or committee member which items they would keep and which ones to reduce.	Discussed survey items with committee members to remove overlapping items.
Where you have multiple items for department, then college, then institution, you should consider using area instead, so it is applicable to more individuals.	Changed department to unit
For Recruitment and Selection, remove survey items b and c.	Removed items b) Effective recruitment strategies are in place for attracting the best talent in priority areas in my school or college and c) Effective recruitment strategies are in place for attracting the best talent in priority areas in my institution.
For Clear Coordinating Goals, remove survey items b, c, and f.	Removed items b) The priorities of my college include strategies to facilitate research productivity, c) The priorities of my institution include strategies to facilitate research productivity, and f) The reward system in my department matches the departmental vision and goals.
For Research Emphasis, remove survey items c and f.	Removed items c) There is a high expectation in my department for faculty to generate as much revenue as possible via non-teaching or research activities and f) My institution's

<u>Feedback</u>	<u>Revisions</u>
For Positive Group Climate, remove survey items b, c, and d.	financial budget model supports and incentivizes research. Removed items b) If I were to select a faculty career again, I would choose to be in my current department, c) If I were to select a faculty career again, I would choose to be in my current institution, and d) If I were to select a faculty career again, I would not choose a faculty career.
For Mentoring, consolidate survey item b with a, remove item d and g, and remove departmental from item f.	Changed survey item a) I have been (or when I was a junior faculty member) formally assigned an advisor or mentor within my academic department who provided valuable guidance in research. Removed survey item b) The formally assigned advisor or mentor provided valuable guidance in research, d) I have a clear picture of where I want to be in my academic career in five to seven years, and g) I get constructive feedback, guidance, and suggestions that help my efforts to perform my best from colleagues outside my department. Revised item f) I get constructive feedback, guidance, and suggestions that help my efforts to perform my best from my colleagues.
For Communication with a Professional Network, remove survey items e and f.	Removed items e) At least weekly, I have substantive, uninterrupted conversations with colleagues about research in my college and f) At least weekly, I have substantive, uninterrupted conversations with colleagues about research in my institution.
For Resources, remove survey items f and g.	Removed survey items f) The skills, expertise, and experience of the faculty in my department are appropriate to accomplish our goals in research and g) My department or institution provides internal funding opportunities to support research projects.
For Tenure and Promotion Requirements, remove survey items d and e.	Removed survey items d) My institution's Tenure and Promotion requirements and evaluations address societal or economic impact priorities including licensing (e.g. licensed intellectual property, royalty generated, use of product or service) and e)

<u>Feedback</u>	<u>Revisions</u>
For Diversity, Equity, and Inclusion Initiatives, revise survey item a and remove survey item f.	My institution's Tenure and Promotion requirements and evaluations address societal or economic impact priorities including entity creation (e.g. spinout or startup entities founded on the institution's intellectual property). Revised survey item a) Diversity, equity, and inclusion are explicitly addressed in my institution's mission statements or strategic plans and are a part of the institution's culture. Removed survey item f) My institution has wellness initiatives to address unique burdens to under-represented faculty.
For Leadership Factors, change department head to supervisor.	Revisions were made.
For Scholar, remove survey item b.	Removed survey item b) My dean/division leader is highly regarded for his/her research.
For Inclusive Leadership, remove survey items b, d, e, f, and h.	Removed survey items b) My dean/division leader displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging regardless of their social identities, d) My dean/division leader displays inclusive leadership qualities by encouraging open dialogue across lines of differences and assists in leveraging the benefits of cultural diversity, e) My department head acknowledges the work of others to achieve a diverse point of view, f) My dean/division leader acknowledges the work of others to achieve a diverse point of view, and h) My dean/division leader encourages a creative work environment promoting cooperation and collaboration.

After revisions were made from alpha testing, the revised Round One instrument was entered into Qualtrics and beta tested. The feedback from beta testing is included in Table 8.

Table 8*Modified Delphi Panel Round One Beta Testing*

<u>Feedback</u>	<u>Revisions</u>
Section titled Procedures of study: The phrase “This data will be used to refine the new instrument further to be created.” Reads awkwardly to me. Should it say: . . . used to refine the new instrument further. Or maybe. . . used to refine the new instrument to be created?	This data will be used to refine the new instrument to be created.
Section titled If you agree to participate in this study, you are agreeing to the following: This sentence is a bit confusing to me: “I understand that the results of the material will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative.” The sentence before says that results will be freely available to me, upon request. I recognize this says “results of the material” will be confidential but I am not clear on how that is different from the results. I would expect my individual response to be confidential but for the study results to be shared.	I understand that the responses to the survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative.
Overall, the survey format was easy to navigate, all responses seemed to submit correctly, and statements were clearly worded. For people like me, who overthink things, it was troublesome that I could not go back and adjust responses in relation to how well other questions addressed similar subjects, when new topics were introduced which may be better connected to the primary factor being discussed. I cannot recall each specific example but early on I had commented about mentoring as a potentially important factor and a page or so later that specific subject was introduced but I had already downgraded another subject which I thought might be better served through mentoring. I also realize that if I went back and forth, things could get too intertwined/confusing and it would take too long to complete.	Created a previous button so the panel members could navigate back and address previous responses if needed.
This one was a bit confusing in how it was worded. Maybe something like “within units	Q33a_ProfNet-2. 2. I have a well-developed network of colleagues with whom I discuss

<u>Feedback</u>	<u>Revisions</u>
outside of my own at my institution” would smooth it out.	research projects and education within units outside of my own at my institution.
Just to note- This (T&P) will vary by College. I am not sure that will make a difference to you, but it could create some variations in responses.	Change all the T&P questions to “My college’s Tenure and Promotion requirements...”
I would consider making this 2 separate questions (biases and then structural racism).	Q60a_DEI-5. 5. Institution-wide training is provided to faculty and staff to address implicit and explicit bias. (Removed structural racism instead of splitting to two questions)
This one seems hard for me to think everyone would be able to answer in an accurate way.	Q71a_ResOr-2. 2. My supervisor has internalized the institution’s research-centered mission.
Maybe add a #3. My unit provides an accurate depiction of the expectations of the researchers.	I think this addresses retention instead of recruitment. Did not add this suggested question.
Recommended wording: “A large portion of my unit’s faculty can be considered to be significant external grant “getters”.	Q19a_Cult-3. 3. A large portion of my unit’s faculty can be considered to be significant external grant “getters.”
Should this be stated more specific to research? “impactful community engagement” is too generic.	Q21a_Cult-5 . 5. I have opportunities at my institution to participate in impactful community engagement including activities that foster external research collaborations.
Maybe want to exclude this one as it pertains to “academic” career goals.	Q29a_Ment-3. 3. I have a well-defined plan for achieving my academic and research career goals.
Should there be a timeframe “At least weekly” applied to this question? There are going to be times when researchers have more time to have conversations w/colleagues than other times.	Q35a_ProfNet-4. 4. I regularly have substantive, uninterrupted conversations with colleagues about research.
Might want to add an additional question before question #5. “I have adequate space to conduct my research”. As some researchers may be	Added a separate survey item to address feedback. (My space to conduct research is well equipped.)

<u>Feedback</u>	<u>Revisions</u>
given adequate space, but may not be well equipped.	
Maybe edit to be: "My supervisor is regarded as an SME for his/her research."	Q67a_Schol-1. 1. My supervisor is a highly regarded Subject Matter Expert for his/her research.
Above questions may be duplicative of other prior questions.	This section is related to Inclusive Leadership which is separate from institutional DEI Initiatives
Does this mean community engagement, like outreach/public service or like meaningful engagement with campus peers or other academic community groups?	Q21a_Cult-5 . 5. I have opportunities at my institution to participate in impactful community engagement including activities that foster external research collaborations.
Are or can mentoring programs be relevant for developing research? what about support services?	This is addressed at a later point in the survey in the Mentoring and Resources sections
Seems more important to demonstrate, rather than state	Later questions address demonstrating DEI.
Again, more important to demonstrate that talk or make motions	Questions 2-4 address actions taken
May want super to lead collaborative goal setting/visioning, rather than set goals/vision	Q64a_Transf-3. 3. My supervisor leads collaborative goal-setting/visioning for my unit related to research goals.
Does this mean super is fully bought in to faculty research priorities/interests or faculty's dedication to the research activity or something else?	Q71a_ResOr-2. 2. My supervisor has internalized the institution's research-centered mission.
Could it be meaningful to understand how super creates and delegates/assigns leadership opportunities?	Added new survey item: My supervisor fosters empowerment and trust through delegating leadership responsibilities.
Time Expectations – previously 15-30 minutes	Changed to 60 minutes based on beta testing average time to complete survey.

After revisions were made from beta testing, the revised Round One instrument was sent to the panel participants for completion. Two additional survey items were added based on beta testing feedback, which includes the following:

- Q79_Resources: My space to conduct research is well equipped.
- Q78_Inclusive Leadership: My supervisor fosters empowerment and trust through delegating leadership responsibilities.

The total number of institutional and leadership survey items for Round One was 75. A total of 24 participants completed the survey. The 188 pieces of open feedback from Round One are included in Table 9.

Table 9

Modified Delphi Panel Round One Participant Feedback

<u>Feedback</u>	<u>Revisions</u>
Q5: should you say - research priority items ...	Q5a_Recruit-1. 1. Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.
Q5: Effective strategies and implementation of the strategies, including resources to implement strategies, might be considered as unique items by the respondent.	Q5a_Recruit-1. 1. Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.
Q5: Effective recruitment strategies are in place for attracting the best talent in priority research areas in my unit.	Q5a_Recruit-1. 1. Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.
Q5: Not every college has this as a hiring requirement	No changes are needed, surveys will be implemented in research-intensive institutions
Q6: You may want to add “tenure-track” in front of “faculty.” Many units hire teaching	Q6a_Recruit-2. 2. My unit places an emphasis on hiring tenure-track

<u>Feedback</u>	<u>Revisions</u>
faculty with no research expectations who are typically not tenure-track.	faculty with experience conducting research.
Q6: Not every college has this as a hiring requirement	No changes are needed, surveys will be implemented in research-intensive institutions
Q7: I wonder if a list of “effective recruiting strategies” should be provided for the respondents to choose from. The list could include things like distributing position announcement to professional networks, recruiting/interviewing at professional conferences, reaching out to specific research group leaders for recommendations, reaching out to specific prospects, etc.	While this is a great suggestion, I would prefer to keep the survey items in the format of a Likert Scale for analysis purposes.
Q7: What about student research?	While student research is important, I would consider it outside the scope of my dissertation research focus
Q7: See feedback from above. Emphasis by the unit and effective execution by the unit might be consider to be unique factors by the respondent. Both instances could be restrained by a lack of resources. Perhaps, that factor is represented in the next section.	The question was reworded to place emphasis on implementation. Resources are covered in another section
Q7: Although question 1 hints at it, it would be interesting to ask something that looks at strategic recruiting/hiring from an organizational level, rather than simply departmental-level. For example, my university has engaged in strategic cluster hires. It may also be interesting to ask whether the unit/organization has a defined strategy to recruit faculty from minoritized populations (which advances the concept of diverse forms of knowledge generation)	New Survey Items Added: Q83a_Recruit-3. 3. My institution hires faculty in strategic clusters in research priority areas. Q84a_Recruit-4 4. My institution recruits faculty from minoritized populations to increase diversity in research perspectives.
Q7: This leads me to think about incentives attached to recruitment like start-up packages. Would information on this be beneficial?	New Survey Item Added Q86a_Recruit-5. 5. My institution provides hiring incentives such as start-up packages.
Q8: I would put this question as #2 - start with the big picture	I re-ordered this to Question 3 of this section

<u>Feedback</u>	<u>Revisions</u>
Q8: add and funding is available to implement those priorities.	Q8a_Goals-3. 3. The priorities of my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) include strategies to encourage research productivity.
Q8: the word facilitate may be best replaced with something like foster, encourage, or promote.	Q8a_Goals-3. 3. The priorities of my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) include strategies to encourage research productivity.
Q9: I would put this question first (start with the larger picture)	I re-ordered this to Question 1 of this section
Q9: The use of the terms - unit, division, college - could be confusing. Perhaps, limit the terminology to unit and institution. Just a thought.	Q9a_Goals-1. 1. It is clear to me how my unit's vision and goals are related to the institution's vision and goals.
Q9: This one technically describes two options, which may skew the data. I may want to respond, "Yes, I can see how my unit's goals CAN be related..." but at the same time, "No, it's not clear to me that they ARE related."	Q9a_Goals-1. 1. It is clear to me how my unit's vision and goals are related to the institution's vision and goals.
Q10: By "my work and goals" do you mean the individual's professional goals are related to the unit's vision? Or, is this about the person's position description aligning with the vision/mission/purpose/goals of the unit?	Q10a_Goals-4. 4. It is clear to me how my individual goals are related to the unit's vision and goals.
Q10: Same comment as before: This one technically describes two options, which may skew the data. I'm also not sure if one's work and goals must be related to the unit's vision in order to generate research funding	Q10a_Goals-4. 4. It is clear to me how my individual goals are related to the unit's vision and goals.
Q10: Just double checking - some questions in this section just say vision but one says vision and goals. Should you include either/both in all instances?	Q10a_Goals-4. 4. It is clear to me how my individual goals are related to the unit's vision and goals.
Q11: Be clear about the stated vision, who's stated mission? The institution, the department, the College?	Q11a_Goals-2. 2. The priorities in my unit (as evidenced by such things as money allocations, new hires,

<u>Feedback</u>	<u>Revisions</u>
	budget cuts, etc.) match the unit's stated vision and goals.
Q11: This is a good question.	No changes needed
Q11: match the stated vision of the unit?	Q11a_Goals-2. 2. The priorities in my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) match the unit's stated vision and goals.
Q11: can you clarify whose vision? Is it the unit's vision or the university's overall vision?	Q11a_Goals-2. 2. The priorities in my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) match the unit's stated vision and goals.
Q11: I'm not sure what "cuts" refers to -- budget cuts?	Q11a_Goals-2. 2. The priorities in my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) match the unit's stated vision and goals.
Q11: Is unit being used to describe the university or the actual research administration unit within the university	I have updated language throughout to use the term unit as an academic department, center, division, etc. that the faculty member reports to.
Q12: Consider using the term, "aligned" instead of coordinating. While Vision and Goals are included, the unit's mission is not mentioned. These terms, "mission, purpose, vision, and goals" are often misunderstood and used synonymously in error. Consider providing a definition of important terms.	I would prefer to use the word coordinating as it suggests bringing complex items into harmony as opposed to forming a line. Definitions will be added for clarity.
Q12: I would move the question about the college alignment to the end of this section to help it progress more logically (from unit to college)	I reordered the questions to progress from high level to more detail
Q13: I feel that peer reviewed articles and developing innovations should be two separate factors, given that most institutions expect peer reviewed institutions, but many smaller institutions do not expect patents or innovations. It appears to be double barreled.	Q13a_Emph-1. 1. There is a high expectation in my unit for faculty to be productive in scholarly activity (e.g. producing peer-reviewed articles).

<u>Feedback</u>	<u>Revisions</u>
Q13: As long as you are focused on “research” (i.e., hypothesis validation/falsification or applied research/innovation) as opposed to “scholarly activity” in the general sense, this is a good question.	No changes needed
Q13: Consider including the terminology - scholarly activity. You may decide to add another item - Scholarly Activity, Sponsored Projects, Business/Innovation Incubation	Q13a_Emph-1. 1. There is a high expectation in my unit for faculty to be productive in scholarly activity (e.g. producing peer-reviewed articles).
Q13: Should a distinction be made between research and scholarship? Alternately, should it be “productive in research and scholarship” -- and maybe “write grant proposals” should also be added as an example	The definition of scholarship appears to broadly cover discovery, research, and teaching. I am clarifying scholarly activity as creating new creative products and actively participating in the faculty’s field as compared to research which is intentionally meant to describe externally funded research. To include research and scholarship might be a double barreled question. Grant writers is addressed in the Culture section.
Q14: See above.	Q14a_Emph-2. 2. There is a high expectation in my unit for faculty to conduct research that is externally funded (e.g. sponsored projects).
Q15: I’m not sure if “model” is needed.	Q15a_Emph-3. 3. My unit’s financial budget supports and incentivizes research through ways such as bridge funding, seed funding, or buy-out of courses.
Q15: Perhaps this might be clarified to include examples? For instance, bridge funding, seed funding, buy-out of courses, etc. I would think this would NOT include start-up funding (which is standard practice for tenure line faculty)	Q15a_Emph-3. 3. My unit’s financial budget supports and incentivizes research through ways such as bridge funding, seed funding, or buy-out of courses.
Q15: switch order with #4?	Question 4 was removed to reduce confusion between unit, college, and division.

<u>Feedback</u>	<u>Revisions</u>
Q15: Not everyone may know how the unit's budget works, so might be hard for some to answer.	Q15a_Emph-3. 3. My unit's financial budget supports and incentivizes research through ways such as bridge funding, seed funding, or buy-out of courses.
Q15: Model or actual budget lines?	Q15a_Emph-3. 3. My unit's financial budget supports and incentivizes research through ways such as bridge funding, seed funding, or buy-out of courses.
Q77: switch order with #3?	Removed this question as unit, college, and division could be confusing. Will focus on Unit and Institution.
Q77: See above.	Removed this question as unit, college, and division could be confusing. Will focus on Unit and Institution.
Q77: Again, I'm not sure of the "model" wording here.	Removed this question as unit, college, and division could be confusing. Will focus on Unit and Institution.
Q77: I like the question but if I'm a research administrator, how would I have an opinion about this?	This survey instrument will be administered to faculty.
Q16: What about an emphasis on undergraduate research?	While student research is important, I would consider it outside the scope of my research focus
Q16: Will there be a question about "university's" model of support? I know at our university, we have very restrictive policies at the top level that impede the ability for colleges, divisions, or units to appropriately incentivize research	I do not believe that the faculty would know the institution budget model. Since this survey is geared toward faculty and not administrators, I am not going to add this as an additional survey item
Q16: Do university promotion and tenure policies include research funding	This would likely vary by institution. The question is, should the promotion and tenure policy include research funding if that is an expectation of the position.

<u>Feedback</u>	<u>Revisions</u>
Q16: Should support/incentivization of research from the institutional (or central) level also be added?	I do not believe that the faculty would know the institution budget model. Since this survey is geared toward faculty and not administrators, I am not going to add this as an additional survey item
Q17: I don't disagree, per se, but I am ambivalent about how best to ask this question. In some cases, the response may depend on resources. So it may not be just a matter of "culture" or "values." On the other hand, if an institution does not provide adequate resources for research, that is a reflection of its "values" and "priorities." That is my ambivalence. How about "At my institution, I am able to pursue my interests in research"?	Q17a_Cult-1. 1. At my institution, I am supported in pursuing my interests in externally funded research.
Q17: The word "excellent" could be too strong of a word and be too subjective. The question addresses culture though.	Q17a_Cult-1. 1. At my institution, I am supported in pursuing my interests in externally funded research.
Q17: "Research" has many "definitions" depending on the unit and institution. It may need to be defined or broken out to the areas mentioned on the previous page.	A definition of research will be provided for clarity
Q17: I am not too sure what this means. Does this mean "excellent support to help me find opportunities"? or "excellent internal opportunities"? or "excellent collaborative potential at my institution"? Think it just needs a little clarity	Q17a_Cult-1. 1. At my institution, I am supported in pursuing my interests in externally funded research.
Q17: How would you define "excellent opportunities" in this statement? Any at all? Beneficial to this faculty member answering? Beneficial to all faculty?	Q17a_Cult-1. 1. At my institution, I am supported in pursuing my interests in externally funded research.
Q17: Not sure how this will be interpreted by others. Is opportunity time? support? collaboration?	Q17a_Cult-1. 1. At my institution, I am supported in pursuing my interests in externally funded research.
Q17: Does it have to say "in research" at the end? If this question is directed to an RA person rather than faculty it would see	This survey instrument will be administered to faculty.

<u>Feedback</u>	<u>Revisions</u>
professional development would be more important.	
Q18: For the same reason as stated earlier, for some institution types there may be more emphasis on one of the examples but not the other and it isn't clear the examples are distinct items or if both examples must hold true.	Q18a_Cult-2. 2. A high percentage of my unit's faculty are productive in scholarly activity (e.g. producing peer-reviewed articles).
Q18: Instead of "large portion" would a "high percentage" be a phrase?	Q18a_Cult-2. 2. A high percentage of my unit's faculty are productive in scholarly activity (e.g. producing peer-reviewed articles).
Q18: "can be considered" - why not "are productive"?	Q18a_Cult-2. 2. A high percentage of my unit's faculty are productive in scholarly activity (e.g. producing peer-reviewed articles).
Q18: same comment I made in the last section regarding including scholarship and grants in the wording	Q18a_Cult-2. 2. A high percentage of my unit's faculty are productive in scholarly activity (e.g. producing peer-reviewed articles).
Q18: A research culture can exist in a unit even though research is not a component of every faculty member's position. Teaching is also an important faculty role.	This survey is intended for research-intensive institutions.
Q19: Grant getters or grant seekers-if the focus is on output, then I think grant getters is correct. If it is about a culture of scholarship, seeking and applying may be better.	New Survey Item Added: Q81a_Cult-3. 3. Add a question for grant seekers (A high percentage of my unit's faculty apply for external research funding on a regular basis.) Without individuals applying for external funding, institutions will not generate higher amounts of funding for research.
Q19: how do you define significant? similar to excellent - too subjective? also high percentage instead of large portion	Q19a_Cult-4. 4. A high percentage of my unit's faculty receive external research funding on a regular basis.
Q19: Maybe apply for external funding on a regular basis?	New Survey Item Added: Q81a_Cult-3. 3. Add a question for grant seekers (A high percentage of my unit's faculty apply for external research funding on a regular basis.)

<u>Feedback</u>	<u>Revisions</u>
Q19: See comment in previous item.	Without individuals applying for external funding, institutions will not generate higher amounts of funding for research.
Q19: I would consider both the pursuit of grants/external funding and the receipt of grants/external funding for their research. Should you also consider all methods of research productivity and not only grants here?	Q19a_Cult-4. 4. A high percentage of my unit's faculty receive external research funding on a regular basis.
Q19: You may want to qualify/change the word significant. Does this refer to number of awards? Dollar size? Or do you mean a majority is making a significant effort seeking research grant funding?	New Survey Item Added: Q81a_Cult-3. 3. Add a question for grant seekers (A high percentage of my unit's faculty apply for external research funding on a regular basis.) Without individuals applying for external funding, institutions will not generate higher amounts of funding for research.
Q19: Not a large number about 25%	Q19a_Cult-4. 4. A high percentage of my unit's faculty receive external research funding on a regular basis.
Q19: The word "getters" is not what I would use here. I would recommend a different phrase. Perhaps "significantly external grant recipients."	This panel member answered for their institution rather than if the survey item addressed the factor
Q19: Same comment as above item.	Q19a_Cult-4. 4. A high percentage of my unit's faculty receive external research funding on a regular basis.
Q20: These types of questions lend themselves to ranges -On a scale from 1-10, rate your institution's tolerance for risk in the area of... - Just a thought:) However, there is an advantage to using the same scale throughout the survey.	This survey is intended for research-intensive institutions.
Q20: Great statement, but I think an example may need to be included here.	Consider this suggestion in the final instrument. The Delphi Panel surveys should remain Likert scale for CVR calculations
	Q20a_Cult-4. 4. My institution has a tolerance for strategic risks when pursuing research activities (e.g. resource allocation risk).

<u>Feedback</u>	<u>Revisions</u>
Q20: Like this question, but can't decide if it fits better under "Culture" or "Positive Climate" (which already includes spirit of innovation)	Removed innovation activities from the survey item to focus on research
Q20: A little vague	Added an example. Q20a_Cult-4. 4. My institution has a tolerance for strategic risks when pursuing research activities (e.g. resource allocation risk).
Q21: instead of "community engagement," could this instead be "external engagement"? For some researchers, community engagement is useless to their research topics. Also, this may be better under "Research Emphasis" than culture?	Q21a_Cult-5 . 5. I have opportunities at my institution to participate in impactful external engagements including activities that foster external research collaborations. <This fits with the key word for community engagement under Culture rather than changing to research emphasis>
Q23: terminology is different here (unit/college/inst. vs dept/school/univ)	Q23a_Clim-1. 1. I feel appreciated and valued by my colleagues in my unit for my work in research.
Q23: "Appreciated and valued" are very subjective terms.	Unsure how to make this less subjective when climate is based on an individual's perceptions and feelings
Q24: this also could be related to culture	Changed this survey item to more of a climate question than a culture or research emphasis. Q24a_Clim-2. 2. I feel comfortable collaborating with colleagues internal to my institution on research projects.
Q25: this also could be related to culture	Changed this survey item to more of a climate question than a culture or research emphasis. Q25a_Clim-3. 3. I feel comfortable collaborating with colleagues external to my institution on research projects.
Q26: These items are reminiscent of the 12 item Gallup Engagement survey. Explore that tool if you get an opportunity. It is well researched with an abundance of data collected.	Reviewed 12 item Gallup engagement survey tool.

<u>Feedback</u>	<u>Revisions</u>
Q26: Should you capture this information for the college level too?	New Survey Item Added: Q82a_Clim-2. 2. I feel appreciated and valued by my colleagues at my institution for my work in research.
Q27: I don't think the parenthetical note is needed. Instead: At one time, I was formally assigned...	Q27a_Ment-1. 1. At one time, I was formally assigned an advisor or mentor within my unit.
Q27: I'm not faculty but would say that if I was, this would be a solid question	No changes needed
Q27: See my comments below about mentoring and collaboration	No changes needed
Q27: A little bit tricky to answer as it has two components - assigned a mentor and mentor provided valuable guidance.	I addressed the "provided valuable guidance" in the following questions
Q27: I'd reword the first part of the sentence to this: "In the past, I was formally assigned to an advisor..."	Q27a_Ment-1. 1. At one time, I was formally assigned an advisor or mentor within my unit.
Q28: While I believe this to be very important survey item, I am not certain it fits under the institutional factor of mentoring. This could be as a result of a culture and/or other institutional factors.	Q28a_Ment-2. 2. I had a formal or informal mentor who helped me to fully understand the research expectations in the appointment I hold.
Q28: I fully understand or it is fully documented - maybe they are the same - but perhaps not.	Q28a_Ment-2. 2. I had a formal or informal mentor who helped me to fully understand the research expectations in the appointment I hold.
Q28: This COULD address mentoring, or it may not. I may fully understand the expectations on my own accord. You may need to specify, "A mentor helped me fully understand..." or similar	Q28a_Ment-2. 2. I had a formal or informal mentor who helped me to fully understand the research expectations in the appointment I hold.
Q28: I'm not sure an example is needed here.	Q28a_Ment-2. 2. I had a formal or informal mentor who helped me to fully understand the research expectations in the appointment I hold.
Q29: Same comment as above. My well-defined plan could come from places besides a formally appointed mentor in my	Q29a_Ment-3. 3. I had a formal or informal mentor who helped me

<u>Feedback</u>	<u>Revisions</u>
unit. Unless the question will ask about the role of mentoring in forming these goals?	develop a well-defined plan for achieving my research career goals.
Q30: This is a good question.	No changes needed
Q30: I get constructive feedback, guidance, and suggestions from my colleagues that help my efforts to perform my best.	Q30a_Ment-4. 4. I have colleagues or leaders that provide helpful feedback and guidance that assist my efforts to perform my best.
Q30: be weary of 'constructive' as it may be defined differently by different respondents	Q30a_Ment-4. 4. I have colleagues or leaders that provide helpful feedback and guidance that assist my efforts to perform my best.
Q30: I'd reword to: "I have colleagues that provide constructive feedback and guidance that help my efforts to perform my best."	Q30a_Ment-4. 4. I have colleagues or leaders that provide helpful feedback and guidance that assist my efforts to perform my best.
Q30: Only from colleagues or also supervisor/leadership?	Q30a_Ment-4. 4. I have colleagues or leaders that provide helpful feedback and guidance that assist my efforts to perform my best.
Q31: I think two more departmental factors may be worth exploring: (a) availability of similar or complementary expertise, and (b) culture of collaboration vs competition. You may consider adding a survey item on each of these: (1) "There is at least one other colleague within my unit whose research interests match or complement my own" and if the answer is "yes," (2) "I feel comfortable discussing my research plans or problems with this colleague."	New Survey Item Added: Q87a_ProfNet-5. 5. I have at least one other colleague within my unit whose research interests match or complement my own.
Q31: Did you want to add a question about incentives, expectations, or trainings to researchers to serve as mentors?	While this is an important question, it is outside of the focus of this section. I am more focused on whether the faculty had a formal or informal mentor
Q32: This overlaps with the suggestion I made in the previous factor, but now you are asking about research AND education. Should you focus on education in this survey? It is important but that is not your focus, right? I leave it up to you.	Q32a_ProfNet-1. 1. I have a well-developed network of colleagues within my unit with whom I discuss research.

<u>Feedback</u>	<u>Revisions</u>
Q32: What is meant by “education”? Professional development? Curriculum? Teaching?	Q32a_ProfNet-1. 1. I have a well-developed network of colleagues within my unit with whom I discuss research.
Q32: I’d reword to: “I have a well-developed network of colleagues within my unit with whom I discuss research projects and education.”	Q32a_ProfNet-1. 1. I have a well-developed network of colleagues within my unit with whom I discuss research.
Q33: “within units outside of my own at my institution” maybe instead, “within other units at my institution”	Q33a_ProfNet-2. 2. I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.
Q33: Same comment as above, under #1. I think dropping “and education” will give you more useful results.	Q33a_ProfNet-2. 2. I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.
Q33: See response above.	Q33a_ProfNet-2. 2. I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.
Q33: 2 and 3 seem like the same question. 3 is worded better.	#2 and #3 are asking different questions (one within an institution and one outside of). Will reword for clarity.
Q33: I’d reword to: “I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research projects and education.”	Q33a_ProfNet-2. 2. I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.
Q34: Same comment as above, under #1. I think dropping “and education” will give you more useful results.	Q34a_ProfNet-3. 3. I have a well-developed network of colleagues outside my institution with whom I discuss research.
Q34: I have a well-developed network of colleagues outside my institution with whom I discuss research projects and education.	Q34a_ProfNet-3. 3. I have a well-developed network of colleagues outside my institution with whom I discuss research.

<u>Feedback</u>	<u>Revisions</u>
Q34: 2 and 3 seem like the same question. 3 is worded better.	#2 and #3 are asking different questions (one within an institution and one outside of). Will reword for clarity.
Q34: I'd reword to: "I have a well-developed network of colleagues outside my institution with whom I discuss research projects and education."	Q34a_ProfNet-3. 3. I have a well-developed network of colleagues outside my institution with whom I discuss research.
Q35: Unsure if "uninterrupted" needs to be in there. I think the more important qualifier is substantive.	Q35a_ProfNet-4. 4. I regularly have substantive conversations with colleagues about research.
Q35: Curious as to why "substantive and interrupted" are included? I may think 5 minutes is uninterrupted :)	Q35a_ProfNet-4. 4. I regularly have substantive conversations with colleagues about research.
Q35: Why the use of "uninterrupted" as a qualifier? It may read as a two-part item - 1. Substantive, 2. Uninterrupted.	Q35a_ProfNet-4. 4. I regularly have substantive conversations with colleagues about research.
Q35: Now you are asking only about research. That is good. In my experience, faculty are often more willing to talk about teaching (how I cover topic X, or what online resources may be available to teach topic Y) than about research.	No changes needed
Q36: What about my institution encourages networking?	New Survey Item Added: Q88a_ProfNet-6. 6. My institution promotes activities that foster networking across the institution (e.g. events that spotlight research activity).
Q36: Did you want to add a question about institutional efforts to fostering networking across the institution?	New Survey Item Added: Q88a_ProfNet-6. 6. My institution promotes activities that foster networking across the institution (e.g. events that spotlight research activity).
Q36: Anything about support for conference attendance to enhance professional network?	Travel to conferences is addressed in the Resources section
Q37: may want to tease out support staff from processes. Double barreled?	Q37a_Resr-1. 1. I have access to adequate resources such as support staff to conduct my research.

<u>Feedback</u>	<u>Revisions</u>
Q37: not sure if “access to processes” is the right way to phrase. “accessible information about processes” maybe? But again, these may be two very different answers depending on the institutional context	Q37a_Resr-1. 1. I have access to adequate resources such as support staff to conduct my research.
Q37: May need to better define “research projects.” Are these only funded projects? Externally funded projects? All research productivity?	Q37a_Resr-1. 1. I have access to adequate resources such as support staff to conduct my research.
Q37: I think support staff and processes (I am not quite sure what you mean by that) should come later. See my comments at the bottom of this section.	Questions were re-ordered as suggested
Q38: same comment as above-maybe just focus on “research assistance”	Q38a_Resr-2. 2. I have access to adequate resources such as technical research assistance to conduct my research.
Q40: To attend or present or both?	Q40a_Resr-4. 4. I have access to adequate resources to travel to research-based conferences to attend or present research results.
Q79: Well-equipped is very subjective and may vary based on institutional context and discipline. “well equipped to advance my research agenda”? or similar?	Removed this question as I added a separate question related to equipment
Q79: well-equipped	Removed this question as I added a separate question related to equipment
Q42: I think people who conduct externally funded research will list their priorities as: equipment, researchers (group members), space, support staff, library resources, and institutional policies/procedures. I recommend asking the questions in that order. Business and social science faculty may need access to databases (perhaps that may be viewed as a library resource) and a subset of researchers need access to powerful computers (that may be viewed as equipment).	New Survey Item Added: Q85a_Resr-1. 1. I have access to adequate resources such as equipment to conduct my research.; Re-order questions as suggested

<u>Feedback</u>	<u>Revisions</u>
Q42: one of the keywords notes internal funding. Is this a place to include internal grant programs (e.g., for pilot data)?	New Survey Item Added: Q89a_Resr-7. 7. I have access to adequate support through internal grant programs to conduct preliminary research (e.g. pilot data).
Q43: Consider removing - “within each of my faculty roles”	Q43a_Work-1. 1. I have a high degree of input into how I wish to spend my time at work.
Q43: This portion is a bit confusing. “within each of my faculty roles.”	Q43a_Work-1. 1. I have a high degree of input into how I wish to spend my time at work.
Q43: the part “as a faculty member” can probably be cut	Q43a_Work-1. 1. I have a high degree of input into how I wish to spend my time at work.
Q44: For consistency, consider using “time” instead of “hours”.	Q44a_Work-2. 2. I have adequate time to devote to my research goals.
Q44: Recommend changing “hours” to time.	Q44a_Work-2. 2. I have adequate time to devote to my research goals.
Q44: Are you wanting to specify work hours (allocated time) or just overall time in general to work (not too busy)?	Q44a_Work-2. 2. I have adequate time to devote to my research goals.
Q45: Release time is tricky depending on the institution type. If someone has a 2:1 teaching load, they don’t need release time. This is all relative to the workload they have.	Q45a_Work-3. 3. I am able to negotiate my workload distribution to conduct externally funded research.
Q45: maybe reword this beginning “My unit supports me through release time” to something like “I have access to available support via release time”	Q45a_Work-3. 3. I am able to negotiate my workload distribution to conduct externally funded research.
Q45: I think “release time” is perhaps not the best term for this. How about “I am able to negotiate my workload distribution to conduct externally funded research or to acquire new research skills.”	Q45a_Work-3. 3. I am able to negotiate my workload distribution to conduct externally funded research.
Q46: I am 12mon employee and not eligible for release time	No changes needed
Q47: I would use “featuring” or “publicizing” instead of “putting”.	Q47a_Rewd-1. 1. My unit has systematic mechanisms for non-monetarily recognizing and

<u>Feedback</u>	<u>Revisions</u>
Q47: Two part question - “Fair” and Systematic”	celebrating achievements in research (e.g. featuring in unit newsletter, “toasting” at faculty meetings).
Q47: I am not sure that is why PIs do research	Q47a_Rewd-1. 1. My unit has systematic mechanisms for non-monetarily recognizing and celebrating achievements in research (e.g. featuring in unit newsletter, “toasting” at faculty meetings).
Q48: I would say “...monetarily (not salary) recognizing and rewarding ...” You might also provide examples as in the previous case: Cash awards, funds for travel and/or supplies, etc.	No changes needed
Q48: See comment above.	Q48a_Rewd-2. 2. My unit has systematic mechanisms for monetarily recognizing and rewarding achievements in research (e.g. cash awards, funds for travel or supplies).
Q48: How well are faculty kept abreast of available internal funding? Sometimes assumptions are made about funding one way or another, so I wonder if it is worthwhile to ask a question about how well-informed they are about funding at the departmental, college, and/or university level for research.	Q48a_Rewd-2. 2. My unit has systematic mechanisms for monetarily recognizing and rewarding achievements in research (e.g. cash awards, funds for travel or supplies).
Q48: I am not sure that is why PIs do research	Q48a_Rewd-2. 2. My unit has systematic mechanisms for monetarily recognizing and rewarding achievements in research (e.g. cash awards, funds for travel or supplies).
Q49: I suppose this is only perceptual, but at private institutions most wouldn’t know what others compensation was.	No changes needed
Q49: Fringe benefits is generally not personalized based on achievements. So you might drop that. Also, you may consider rephrasing: “... is fair for the work I do and my history of accomplishments.”	No changes needed
	Q49a_Rewd-3. 3. As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.

<u>Feedback</u>	<u>Revisions</u>
Q49: Good question but seems out of place	Q49a_Rewd-3. 3. As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.
Q49: Just checking, you want this at the institutional level rather than unit or college, right?	Q49a_Rewd-3. 3. As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.
Q50: Considering rewording -My institution promotes a positive work/life balance and supportive work environment. For example, offers opportunities for flexible work time and/or remote work. Otherwise, the item is limiting.	Q50a_Rewd-4. 4. My institution promotes a positive work/life balance and supportive work environment (e.g. offers opportunities for flexible work time and/or remote work).
Q50: does “remote work” apply? Most of our faculty work where-ever they want to, not necessarily in the office	This depends on the institution. I would prefer to leave remote work but will review other responses as well.
Q51: Is the keyword “benchmarks” in this section’s context addressed in the salary question?	Combined Defined Benchmarks with Equitable Rewards since one supports the other
Q51: Some state schools have different tiers that impact pay bands for same positions across the state	No changes to items in this section
Q52: See earlier responses - consider being consistent in using terms related to strategic/organizational planning, e.g., mission, values, purpose, vision, goals, objectives, etc.	Q52a_TP-1. 1. My unit’s Promotion and Tenure requirements and evaluations are aligned with its values and goals as it relates to research.
Q52: I think the “Tenure and Promotion” should be “Promotion and Tenure” (that’s how I’ve encountered that phrase)	Changed all instances to Promotion and Tenure
Q53: Can this be clarified? I’m not sure what it is being asked re: societal or economic impacts	Q53a_TP-2. 2. My unit’s Tenure and Promotion requirements and evaluations address sponsored research activities (e.g. grants, contracts, awards, services and testing).
Q53: same comment regarding Promotion and Tenure as the 1st question	Changed all instances to Promotion and Tenure

<u>Feedback</u>	<u>Revisions</u>
Q54: Only applicable at larger institutions- small institutions may not have this same emphasis.	No changes needed
Q54: same comment regarding Promotion and Tenure as the 1st question	Changed all instances to Promotion and Tenure
Q54: same as above: Can this be clarified? I'm not sure what it is being asked re: societal or economic impacts	Q54a_TP-3. 3. My unit's Tenure and Promotion requirements and evaluations address intellectual property (e.g. invention disclosures, patent applications, patents awarded, copyrights, trademarks).
Q55: Ask about clarity in expectations for tenure and promotion	This is outside the scope of my research focus
Q55: Question 2. - On a scale of 1-10, my college's T&P requirements are aligned to annual evaluations of faculty.	This is outside the scope of my research focus
Q56: Tie into how this is related to generating funding for research?	Q56a_DEI-1. 1. Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are addressed in my institution's mission statements or strategic plans.
Q57: Some institutions may invest in some of these items not all of these items which will impact the responses given-but perhaps that is ok.	Q57a_DEI-3. 3. Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.
Q57: I recommend "... are supported at the institutional level by actions through ..."	Q57a_DEI-3. 3. Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.
Q57: This question addresses my feedback on the first pages re: DEI hiring strategies! however, should this say, "Commitments to	Q57a_DEI-3. 3. Institutional commitments to diversity, equity, and inclusion initiatives to support a

<u>Feedback</u>	<u>Revisions</u>
DEI RESEARCH are supported...” The connection of this question to generating funding for research is unclear	diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.
Q57: You may want to reword this one in case people may agree that is important but also disagree that their institution supports it by their actions	Q57a_DEI-3. 3. Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.
Q58: The connection of this question to generating funding for research is unclear. Is it that the resulting research is interdisciplinary, or has inter-cultural impact, or is improved by diverse perspectives?	Q58a_DEI-2. 2. My institution has a culture of inclusivity and respect for others that promotes diverse perspectives in research.
Q59: should this be under culture?	Move this to Climate (feelings/attitudes) instead of Culture. Q59a_Clim-5. 5. As a faculty researcher, I believe that my opinions are heard and my research interests are supported by my institution.
Q60: The connection of this question to generating funding for research is unclear	Q60a_DEI-4. 4. Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers include institution-wide training for faculty and staff to address implicit and explicit bias.
Q62: inspires participation in what? research initiatives?	Q62a_Transf-1. 1. My supervisor communicates expectations and goals in a way that inspires me to participate in research.
Q63: Just checking, should it be clarified to be more specific? “challenge [me/faculty in my unit] to new ways of thinking”	Q63a_Transf-2. 2. My supervisor serves coaching and mentoring roles that challenge me to new ways of thinking.
Q63: My leader is the provost and there is little time for coaching from him	No changes needed

<u>Feedback</u>	<u>Revisions</u>
Q65: “culture of research expectations”?	Q65a_Transf-4. 4. My supervisor influences positive change in the institution’s culture of research expectations.
Q67: perhaps change the pronoun to “their” rather than “his/her”	Q67a_Schol-1. 1. My supervisor is a highly regarded Subject Matter Expert for their research.
Q67: This is a great question. I am hoping that the results will tell us something useful.	No changes needed
Q68: He lacks the time	No changes needed
Q69: Did you want to ask if the mentor has a strong record of sponsored research activities? Maybe here or in the next section.	This is outside of the scope of my research focus
Q71: May want to define internalized (psychological term that I am not sure all PIs will have a shared understanding). Internalize is something that may not be visible to someone else.	Q71a_ResOr-2. 2. My supervisor demonstrates support of the institution’s research-centered mission.
Q71: How does one know if someone has “internalized” something?	Q71a_ResOr-2. 2. My supervisor demonstrates support of the institution’s research-centered mission.
Q71: (assuming the institution has a research-centered mission)	This would be the assumption as the survey is intended for tenure-track faculty and research intensive institutions
Q72: This would be the assumption as the survey is intended for tenure-track faculty and research intensive institutions	New Survey Item Added: Q90a_ResOr-3. 3. My supervisor encourages taking the time to write proposals for externally funded research.
Q73: Tie this to generating funding for research	Q73a_Incl-1. 1. My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging which supports diverse research perspectives.

<u>Feedback</u>	<u>Revisions</u>
Q73: Is this part needed? “regardless of their social identities” - I feel like it reads better without it.	Q73a_Incl-1. 1. My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging which supports diverse research perspectives.
Q74: Tie this to generating funding for research	Q74a_Incl-2. 2. My supervisor displays inclusive leadership qualities by encouraging open dialogue across lines of differences and assists in leveraging the benefits of cultural diversity which supports diverse research perspectives.
Q75: “that promotes cooperation and collaboration in research endeavors”?	Q75a_Incl-3. 3. My supervisor encourages a creative work environment promoting cooperation and collaboration in research endeavors.
Q78: Tie this to generating funding for research	Q78a_Incl-4. 4. My supervisor fosters empowerment and trust through creating opportunities for growing leadership experience including leadership in externally funded research projects.
Q78: I wonder if another word would also be good to add alongside delegating. Something like creates opportunities for growing leadership experience/responsibilities.	Q78a_Incl-4. 4. My supervisor fosters empowerment and trust through creating opportunities for growing leadership experience including leadership in externally funded research projects.
Q80: Thank you for an opportunity to participate. I am enjoying this process and appreciate seeing the refinement and thinking about these issues.	No changes needed
Q80: Many of the questions could have been included in more than one section	Several survey items were reorganized between sections and definitions will be provided for clarity
Q80: Thank you for the opportunity to provide feedback. I am looking forward to seeing and reading about the results. :)	No changes needed

<u>Feedback</u>	<u>Revisions</u>
Q80: As an administrator, I do not fit the role of “researcher.” Where the question is clearly directed to faculty, I responded “Neither agree or Disagree.”	The expert panel members should have answered based on whether the survey item addressed the factor and not answered from the role of a faculty member. I will clarify in the Round 2 survey.

Revisions to survey items were made from Round One open feedback to create the Round Two survey instrument. Participants were asked to describe any additional survey items needed to address each factor. Based on the feedback received, ten new survey items were created, which are included below:

- Q83_Recruitment and Selection: My institution hires faculty in strategic clusters in research priority areas to promote interdisciplinary research.
- Q84_Recruitment and Selection: My institution recruits faculty from minoritized populations to increase diversity in research perspectives.
- Q86_Recruitment and Selection: My institution provides hiring incentives such as start-up funding.
- Q81_Culture: A high percentage of my unit’s faculty apply for external research funding on a regular basis.
- Q82_Positive Group Climate: I feel appreciated and valued by my colleagues at my institution for my work in research.
- Q87_Mentoring: I have at least one other colleague within my unit whose research interests match or complement my own.
- Q88_Communication with a Professional Network: My institution promotes activities that foster networking across the institution

- Q85_Resources: I have access to adequate resources such as equipment to conduct my research.
- Q89_Resources: I have access to adequate support through internal grant programs to conduct preliminary research (e.g. pilot data). (NEW Survey Item)
- Q90_Research-Oriented: My supervisor encourages taking the time to write proposals for externally funded research.

Based on the feedback received, two survey items were removed, which are included below:

- Q77_Research Emphasis: My college/division's financial budget model supports and incentivizes research.
- Q79_Resources: My space to conduct research is well equipped.

Lawshe's Content Validity Ratio was applied to each survey item related to institutional and leadership factors. Based on Lawshe's Content Validity Ratio (CVR) of 0.78, two institutional survey items and three leadership survey items met consensus with no suggested changes. These survey items are included below:

- Q39_Resources: I have access to adequate resources such as supplies, computers, library materials, data analyses, etc., to conduct my research projects.
- Q41_Resources: I have adequate space to conduct my research.
- Q64_Transformational Leadership: My supervisor leads collaborative goal-setting/visioning for my unit related to research goals.

- Q68_Scholar: My supervisor serves as a mentor and peer model for faculty.
- Q70_Research-Oriented: My supervisor is very supportive of my efforts in research.

Delphi Panel – Round Two

The purpose of the Round Two survey was to obtain consensus and feedback on the revised and new survey items from Round One feedback. After the Round One survey feedback was incorporated, there were 83 survey items related to the institutional and leadership factors. For Round Two, the participants were not allowed to describe additional survey items, which reduced the total number of survey items by 16 leaving 67 remaining. Table 10 outlines the feedback from Round Two Alpha Testing.

Table 10

Modified Delphi Panel Round Two Alpha Testing

<u>Feedback</u>	<u>Revisions</u>
Reviewed the process of creating the Round 2 Survey with committee member. Round 1 open feedback was analyzed. Round 1 in Qualtrics was copied to create Round 2 and changes/new survey items were added. Round 2 survey finalized and ready for beta testing. No changes were suggested.	No revisions were required.

The draft Round Two instrument was entered into Qualtrics and beta tested. The feedback from beta testing is included in Table 11.

Table 11*Modified Delphi Panel Round Two Beta Testing*

<u>Feedback</u>	<u>Revisions</u>
Q54: Should “if applicable” be included? As some survey participants may not have had any IP in relation to their work.	Consider this in the factors for the final instrument creation (Not Applicable)
Q68: Answer options are omitted.	No changes needed, Survey item was validated with no revisions in Round 1.
Q83: It is not clear what is meant by a strategic cluster. Is this looking for interdisciplinary types of clusters? etc.	Q83a_Recruit-3. 3. My institution hires faculty in strategic clusters in research priority areas to promote interdisciplinary research.
Q86: What is a start-up package? Technology, moving expenses, information packets, coupons and coffee?	Q86a_Recruit-5. 5. My institution provides hiring incentives such as start-up funding.
Q81: Will they be able to indicate that they don’t know? Some faculty don’t know what others are doing, so it would be hard for them to answer.	Consider this in the variables for the final instrument creation (Don’t Know)
Q87: Be sure it is clear how matching interests between faculty shows communication.	Q87a_Ment-5. 5. I have at least one other colleague within my unit whose research interests match or complement my own. (Moved to Mentoring Section as it seemed to be a better fit there)
Q49: Some faculty will not know this info.	Consider this in the factors for the final instrument creation (Don’t Know)
Procedures say: After each round, you will receive an email outlining previous survey results and another survey seeking further feedback. Did they? Or is this it with the previous results being the validation, revision and score for individual factors?	Then a minimum of three surveys will be emailed to you addressing specific survey instrument items. Each will include quantitative questions and the opportunity to give open feedback. This data will be used to refine the new instrument to be created. After each round, you will receive an email with notes on the previous survey results and another survey seeking further feedback. At the

<u>Feedback</u>	<u>Revisions</u>
<p>NOTE says respond as to whether the survey item adequately addresses the factor. Not sure I understand what it means for a survey item to adequately address the factor. Does adequately addressing mean that the numbered statement, along with the other numbered statements, is relevant to the factor heading such as “Recruitment and Selection?” Does it mean that the numbered statement, standing alone, is sufficiently comprehensive to Recognize? Resolve? Achieve? Cover? Handle? Define? Explain? Describe? the factor heading such as “Recruitment and Selection?” For purposes of moving forward with the survey I assumed adequately addressing meant the numbered statements(s) were relevant or meaningful to the factor heading such as “Recruitment and Selection,” along with the other statements.</p>	<p>conclusion of the panel surveys, the instrument will be finalized.</p> <p>NOTE: Please do not respond to survey items as a faculty would for your institution, but rather respond as to whether the survey item is relevant to the factor.</p>
<p>When assessing the “adequacy/relevance” of the specific institutional factors on each page (such as recruitment and selection, clear and coordinating goals, research emphasis, etc.) in a manner that is independent of a reminder or recognition that the specific factors are intended to be associated with “generating funding,” my assessment of how well they adequately address the specific institutional factor may not be the same as it would be when the specific institutional factors is considered in conjunction with the overarching factor/motive of “generating funding.”</p>	<p>I think this feedback is reminding me that the survey items need to be tied to generating research funding. I will continue to review the items and make connections to generating funding for research.</p>
<p>Q91: good, clear, easily understood and appropriate</p>	<p>No changes needed</p>
<p>Q5: effective is less specific than other statements</p>	<p>Unsure how to reword this to make it more specific. Will wait for panel feedback before revising.</p>
<p>Q8: seems more specifically connected as an institutional factor related to both clear goals and generating funding</p>	<p>No changes needed</p>

<u>Feedback</u>	<u>Revisions</u>
Q13: less strongly connected to research and generating funding	It's okay that this doesn't tie strongly to generating funding for research. I'd like to see if faculty are encouraged to conduct funded or non-funded research.

After revisions were made from beta testing, the revised Round Two instrument was sent to the panel participants for completion. A total of 20 participants completed the survey. The 80 pieces of open feedback from Round Two are included in Table 12.

Table 12

Modified Delphi Panel Round Two Participant Feedback

<u>Feedback</u>	<u>Revisions</u>
Q8: I was confused by the inclusion of budget cuts in the examples, as this might be due to external factors.	Q8a_Goals-3. 3. The priorities of my unit (as evidenced by such things as money allocations, new hires, etc.) include strategies to encourage research productivity. (Round 1 Results: Survey item validated but revised)
Q11: I was confused by the inclusion of budget cuts in the examples, as this might be due to external factors.	Q11a_Goals-2. 2. The priorities in my unit (as evidenced by such things as money allocations, new hires, etc.) match the unit's stated vision. (Round 1 Results: Survey item validated but revised)
Q13: include other examples - published works (could be books or reviews or pieces of art)	Q13a_Emph-1. 1. There is a high expectation in my unit for faculty to be productive in scholarly activity (e.g., producing peer-reviewed articles, books, pieces of art). (Round 1 Results: Survey item validated but revised)
Q13: I think a comma goes after e.g.	Q13a_Emph-1. 1. There is a high expectation in my unit for faculty to be productive in scholarly activity (e.g., producing peer-

<u>Feedback</u>	<u>Revisions</u>
Q15: Does this consider and/or include time allocated to complete research activities that are institutionally funded as part of a faculty member's salary? For example, a professor who is hired with the expectation that they will dedicate X% to research and only teach one or two classes. This isn't truly a course buy-out but may still be something to consider as a financial contribution towards ensuring productivity.	reviewed articles). (Round 1 Results: Survey item validated but revised)
Q15: It might be spelled buyout rather than buy-out more often.	Q15a_Emph-3. 3. My unit's financial budget supports and incentivizes research through ways such as bridge funding, seed funding, institutionally funded research salary, or buyout of courses. (Round 1 Results: Survey item validated but revised)
Q17: in pursuing my interests of acquiring external funding for research? wording is a bit awkward; not sure my suggestion is any better.	Q15a_Emph-3. 3. My unit's financial budget supports and incentivizes research through ways such as bridge funding, seed funding, institutionally funded research salary, or buyout of courses. (Round 1 Results: Survey item validated but revised)
Q17: Maybe change to: "The university supports my interests to pursue externally funded research," that way it makes it clear that you are looking at institutional factors (as opposed to maybe an informal mentor or something)	Q17a_Cult-1. 1. My institution supports my interest to pursue externally funded research. (Round 1 Results: Survey item not validated (CVR - 0.58), revised)
Q18: more information/examples of what that could mean	Q17a_Cult-1. 1. My institution supports my interest to pursue externally funded research. (Round 1 Results: Survey item not validated (CVR - 0.58), revised)
	Q18a_Cult-2. 2. A high percentage of my unit's faculty are productive in internally funded research (e.g. producing peer-reviewed articles, books, pieces of art). (Round 1 Results: Survey item not validated (CVR - 0.67), revised)

<u>Feedback</u>	<u>Revisions</u>
Q18: I remain lukewarm on this one because we are asking faculty to report on perceptions of other people's scholarship.	No changes needed
Q18: should there be a qualifier here that the productivity is neither funded or not?	Q18a_Cult-2. 2. A high percentage of my unit's faculty are productive in internally funded research (e.g. producing peer-reviewed articles, books, pieces of art). (Round 1 Results: Survey item not validated (CVR - 0.67), revised)
Q19: As above	Q19a_Cult-4. 4. A high percentage of my unit's active research faculty receive external research funding each year. (Round 1 Results: Survey item not validated (CVR - 0.67), revised)
Q19: What is a regular basis? Someone could be funded on 1 large 5 year award and then not again for 5 years, is that regular?	Q19a_Cult-4. 4. A high percentage of my unit's active research faculty receive external research funding each year. (Round 1 Results: Survey item not validated (CVR - 0.67), revised)
Q19: I believe "applying" for funding is a factor of institutional culture, but actually being awarded funding is rather an individual factor	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q19: I think this speaks more to success of the faculty in the unit and less to culture or the culture of pursuing or achieving. Consider rephrasing to a question that might instead look at how the success of others in the unit encourages faculty to pursue funding.	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q20: Hard for faculty to speak on institutional tolerance-however if we are only talking about their perception of tolerance, it is ok.	I would think we could only ask about their perspective of tolerance. No changes needed.
Q20: I would be clear about what strategic risks might include at an institutional level.	Q20a_Cult-4. 4. My institution has a tolerance for strategic risks when pursuing research activities (e.g. resource allocation risk).
Q20: Not sure if a faculty member will fully understand "tolerance for strategic risk"?	No changes needed. The statistical analysis will determine if this

<u>Feedback</u>	<u>Revisions</u>
	survey item is included in the final instrument.
Q23: Be sure to bold “in my unit” and “at my institution” when they go out to faculty so they see the contextual differences.	Q23a_Clim-1. 1. I feel appreciated and valued by my colleagues in my unit for my work in research. (Round 1 Results: Survey item validated but revised)
Q25: I’m not sure I agree anymore. Comfort with external relationships is an institutional factor, but it refers to another institution	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q27: do you want to know when? early or mid-career?	I am not interested in asking when they had a mentor. No changes needed.
Q27: I don’t really like it starting with “At one time”. Should it be “When I was hired or promoted”? More generic may be needed in case this is not done at the initial hire.	Q27a_Ment-1. 1. I have been formally assigned an advisor or mentor within my unit. (Round 1 Results: Survey item not validated (CVR - 0.50), revised)
Q28: By formal / informal... would that role still be selected by a department chair or someone who was “voluntold” to do it? Why differentiate between formal and informal?	Formal or informal acknowledges that a mentor could be assigned or unassigned. I am trying to learn if having a mentor is associated with generating funding for research. No changes needed.
Q29: at home institution or elsewhere?	Q29a_Ment-3. 3. I had a formal or informal mentor at my institution who helped me develop a well-defined plan for achieving my research career goals. (Round 1 Results: Survey item not validated (CVR - 0.75), revised)
Q30: at home institution or elsewhere?	Q30a_Ment-4. 4. I have colleagues or leaders at my institution that provide helpful feedback and guidance that assist my efforts to perform my best. (Round 1 Results: Survey item validated but revised)
Q32: Discuss only research or all scholarly activities?	I am specifically interested in factors associated with generating

<u>Feedback</u>	<u>Revisions</u>
	funding for research. No changes needed.
Q33: Discuss research or all scholarly activities?	I am specifically interested in factors associated with generating funding for research. No changes needed.
Q34: Discuss research or all scholarly activities?	I am specifically interested in factors associated with generating funding for research. No changes needed.
Q35: Discuss research or all scholarly activities?	I am specifically interested in factors associated with generating funding for research. No changes needed.
Q37: since there are several like this with different resources could you say adequate research equipment? then the next one is adequate technical support resources. As it is worded it isn't clear that this is meant to just be about equipment. Rephrasing may make it clear there will be other opportunities to discuss other types of resources later	Q37a_Resr-4. 4. I have access to adequate support staff to conduct my research. (Round 1 Results: Survey item validated but revised)
Q38: since there are several like this with different resources could you say adequate research equipment? then the next one is adequate technical support resources. As it is worded it isn't clear that this is meant to just be about equipment. Rephrasing may make it clear there will be other opportunities to discuss other types of resources later	Q38a_Resr-2. 2. I have access to adequate research assistance to conduct my research. (Round 1 Results: Survey item validated but revised)
Q38: What is technical support? It may be ambiguous term.	Q38a_Resr-2. 2. I have access to adequate research assistance to conduct my research. (Round 1 Results: Survey item validated but revised)
Q39: since there are several like this with different resources could you say adequate research equipment? then the next one is adequate technical support resources. As it is worded it isn't clear that this is meant to just be about equipment. Rephrasing may make it clear there will be other opportunities to discuss other types of resources later	Q39a_Resr-5. 5. I have access to adequate supplies, computers, library materials, data analyses, etc., to conduct my research projects. (Round 1 Results: Survey item validated, no response needed)

<u>Feedback</u>	<u>Revisions</u>
Q40: I go back and forth on this since many PIs receive their funding for conference travel from the grants instead of from institutional sources (at least at my institutions).	No changes needed
Q40: Recommend removing “research” from the 2nd line of text.	Q40a_Resr-6. 6. I have access to adequate resources to travel to research-based conferences to attend or present results. (Round 1 Results: Survey item validated but revised)
Q44: Perhaps add: (when factoring in other job duties” (or similar)	Q44a_Work-2. 2. I have adequate time to devote to my research goals when factoring in other job duties. (Round 1 Results: Survey item not validated (CVR - 0.75), revised)
Q47: May want to rephrase “systematic mechanisms.” That seems a bit complex for what you’re asking. The reader may get lost in the beginning of the statement and have to read a few times to fully grasp what is being said (I did).	Q47a_Rewd-1. 1. My unit has mechanisms for non-monetarily recognizing and celebrating achievements in research (e.g., featuring in unit’s newsletter, “toasting” at faculty meetings). (Round 1 Results: Survey item validated but revised)
Q47: Same comment re: comma after e.g.	Q47a_Rewd-1. 1. My unit has mechanisms for non-monetarily recognizing and celebrating achievements in research (e.g., featuring in unit’s newsletter, “toasting” at faculty meetings). (Round 1 Results: Survey item validated but revised)
Q48: Same here. I had to go back and read the first question to determine the difference between these two statements. “Monetary” and “non-monetary” didn’t stand out enough. Consider italicizing when there are simple differences between some statements to easily show the reader what’s being asked. This technique could also be used in other sections of the survey.	Q48a_Rewd-2. 2. My unit has mechanisms for monetarily recognizing and rewarding achievements in research (e.g., cash awards, funds for travel or supplies). (Round 1 Results: Survey item validated but revised)
Q48: Same comment re: comma after e.g.	Q48a_Rewd-2. 2. My unit has mechanisms for monetarily

<u>Feedback</u>	<u>Revisions</u>
	recognizing and rewarding achievements in research (e.g., cash awards, funds for travel or supplies). (Round 1 Results: Survey item validated but revised)
Q49: I'm not sure how others will know other salaries at private institutions-this info is often treated confidential. Again, if you only care about perceptions, than ok.	I would think we could only ask about their perspective fairness. No changes needed.
Q49: Double checking - Is this something they will know?	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q49: I understand the point of the question, but I wonder if most faculty always feel underpaid and now, in high inflation, I wonder if the question is skewed because of external perceptions?	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q50: I'm not sure a "positive work/life balance" should be considered a reward	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q50: Same comment re: comma after e.g.	Q50a_Rewd-4. 4. My institution promotes a positive work/life balance and supportive work environment (e.g., offers opportunities for flexible work time or remote work). (Round 1 Results: Survey item not validated (CVR - 0.67), revised)
Q52: Research specifically or all scholarly activity?	I am specifically interested in factors associated with generating funding for research. No changes needed.
Q52: Should "and scholarship" be added to the end of this sentence?	Changed definitions for external/internal research, removed scholarly activity. No change needed
Q53: These examples of research activities differ some from initial definitions.	Q53a_TP-2. 2. My unit's Promotion and Tenure requirements and evaluations address sponsored research activities (e.g., grants,

<u>Feedback</u>	<u>Revisions</u>
Q53: Same comment re: comma after e.g.	awards, contracts). (Round 1 Results: Survey item not validated (CVR - 0.75), revised) Q53a_TP-2. 2. My unit's Promotion and Tenure requirements and evaluations address sponsored research activities (e.g., grants, awards, contracts). (Round 1 Results: Survey item not validated (CVR - 0.75), revised)
Q54: Same comment re: comma after e.g.	Q54a_TP-3. 3. My unit's Promotion and Tenure requirements and evaluations address intellectual property (e.g., invention disclosures, patent applications, patents awarded, copyrights, trademarks). (Round 1 Results: Survey item not validated (CVR - 0.50), revised)
Q57: Should something like “, such as” be added ahead of the word initiatives?	“Diversity, equity, and inclusion initiatives” is the institutional factor. No changes needed.
Q59: This appears to be double-barreled. You can believe that opinions are heard but maybe not supported.	Q59a_Clim-5. 5. As a faculty researcher, I believe that my research interests are supported by my institution. (Round 1 Results: Survey item not validated (CVR - 0.74), revised)
Q60: If the training can be more related to research, this question may work. Is it to train internal competition reviews to be aware of implicit bias when scoring applications (for example)?	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q62: Not sure who faculty will consider a supervisor, but that is ok. It may be a Chair, provost. President.	I am attempting to keep the terminology general. No changes needed.
Q62: Only research or all scholarly activities?	I am specifically interested in factors associated with generating funding for research. No changes needed.

<u>Feedback</u>	<u>Revisions</u>
Q63: My supervisor provides? Serves sounds odd. Or My supervisor coaches and mentors in ways that challenge...	Q63a_Transf-2. 2. My supervisor coaches and mentors in ways that challenge me to new ways of thinking. (Round 1 Results: Survey item validated but revised)
Q67: I oscillate on this question because some of the best administrators are not the most prolific researchers and vice versa.	No changes needed
Q67: Some universities have elected department heads, so they are chosen to be a supervisor due to their administrative and political skills (rather than subject matter research expertise)	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q71: Some institutions may not have a research centered mission at all.	This survey will be administered to research intensive institutions where research would be central to their mission. No changes needed.
Q73: this just sounds wordy... too many this, and this and this in the statement makes it hard to answer because I may disagree with sense of belonging but think being treated respectfully happens.	73a_Incl-1. 1. My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty are treated respectfully and have a sense of belonging which supports diverse research perspectives. (Round 1 Results: Survey item validated but revised)
Q74: I'd change "which supports" to "to support"	Q74a_Incl-2. 2. My supervisor displays inclusive leadership qualities by encouraging open dialogue and leveraging the benefits of cultural diversity to supports diverse research perspectives. (Round 1 Results: Survey item validated but revised)
Q74: again, too many things going on here.	Q74a_Incl-2. 2. My supervisor displays inclusive leadership qualities by encouraging open dialogue and leveraging the benefits of cultural diversity to supports diverse research perspectives. (Round 1 Results: Survey item validated but revised)

<u>Feedback</u>	<u>Revisions</u>
Q81: Suggestion: revise wording to include “active or aspirant faculty researchers (or PIs)...” Rationale: Many departments include teaching-only faculty, and some may get hung up on the specifics.	Q81a_Cult-3. 3. A high percentage of my unit’s active research faculty apply for external research funding on a regular basis. (NEW Survey Item)
Q82: Be sure to bold “in my unit” and “at my institution” when they go out to faculty so they see the contextual differences.	Q82a_Clim-2. 2. I feel appreciated and valued by my colleagues in other units at my institution for my work in research. (NEW Survey Item)
Q82: Possible reword to consider: I feel appreciated and valued by my colleagues in other units at my institution for my work in research	Q82a_Clim-2. 2. I feel appreciated and valued by my colleagues in other units at my institution for my work in research. (NEW Survey Item)
Q83: Possible reword to consider: My institution hires faculty in strategic clusters related to priority areas in order to promote interdisciplinary research.	Q83a_Recruit-3. 3. My institution hires faculty in strategic clusters related to priority areas in order to promote interdisciplinary research. (NEW Survey Item)
Q84: I think this ties to Climate as well since it promotes inclusion and belonging.	Although it does tie to climate, I am leaving in the Recruiting section since it is specifically asking about recruiting faculty.
Q84: recruits or seeks to hire? recruits suggest actively seeking out but may not to everyone; word choice may be confusing. Maybe word like question 1 but with focus on minority representation	Q84a_Recruit-4. 4. My institution places an emphasis on hiring faculty from minority populations to increase diversity in research perspectives. (NEW Survey Item)
Q84: “minoritized” may need a definition- The spirit of this is perfect, but I am not sure minoritized is the word. Perhaps as parentheticals and give a description).	Q84a_Recruit-4. 4. My institution places an emphasis on hiring faculty from minority populations to increase diversity in research perspectives. (NEW Survey Item)
Q85: since there are several like this with different resources could you say adequate research equipment? then the next one is adequate technical support resources. As it is worded it isn’t clear that this is meant to just be about equipment. Rephrasing may make it clear there will be other opportunities to discuss other types of resources later	Q85a_Resr-1. 1. I have access to adequate equipment to conduct my research. (NEW Survey Item)

<u>Feedback</u>	<u>Revisions</u>
Q85: I wonder if these questions need the terms “such as” - they are all asking something specific: equipment, technical staff, support staff..	Q85a_Resr-1. 1. I have access to adequate equipment to conduct my research. (NEW Survey Item)
Q86: would it help to list additional examples - lab space, access to facilities, etc.?	Q86a_Recruit-5. 5. My institution provides hiring incentives such as start-up funding, lab space, or access to facilities. (NEW Survey Item)
Q87: I think this could work, as long as “mentoring” goes both ways. If someone’s research interest complements my own, I could be their mentor or they could be mine. It all depends on skill level, age, experience, etc.	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q87: I wasn’t sure if “other” was needed here. That seems to assume they have another colleague who gives them feedback (asked in #4 above).	Q87a_Ment-5. 5. I have at least one colleague within my unit whose research interests match or complement my own. (NEW Survey Item)
Q88: Discuss research or all scholarly activities?	I am specifically interested in factors associated with generating funding for research. No changes needed.
Q88: may need a comma after e.g.	Q88a_ProfNet-6. 6. My institution promotes activities that foster networking across the institution (e.g., events that spotlight research activity). (NEW Survey Item)
Q89: Based on the given definitions at the beginning, this wouldn’t fit the description of “research” because it is institutionally funded, not externally funded.	Revised definitions of research
Q89: May need a comma after e.g.	Q89a_Resr-7. 7. I have access to adequate support through internal grant programs to conduct preliminary research (e.g., pilot data). (NEW Survey Item)
Q91: Your definition of Culture should be for “Workplace Culture” rather than just culture. Workplace culture is the shared values, belief	Culture - the shared values, belief systems, attitudes, and set of assumptions that people in a

<u>Feedback</u>	<u>Revisions</u>
systems, attitudes and the set of assumptions that people in a workplace share. This is shaped by individual upbringing, social and cultural context.	workplace share Climate - the perception of the workplace environment, how people feel about the institution or unit
Q91: I think the definitions for scholarly activity and research may need some tweaking. Research in most cases is understood as internally funded, externally funded, and unfunded. This definition doesn't portray what a typical person might perceive is meant, potentially throwing off your results. Scholarly activity would typically encompass publications, research (all funding), etc. I think this definition might also cause confusion. Research is always funded in some way - by "unfunded" are you actually meaning institutionally funded? Time and effort might not be budgeted externally; however, that is an actual cost, possibly to their university. Consider also adding a definition for "research productivity" since that is used in some questions over some of these other terms.	Externally Funded Research - obtaining new knowledge in a subject area that is funded by external agencies (e.g., grants, awards, contracts) Internally Funded Research - obtaining new knowledge or maintaining knowledge in a subject area that is funded by the institution (e.g., producing peer-reviewed articles, seed funding, pilot studies, books, pieces of art) Research Productivity – output measures such as published articles, conference presentations, books, grants, awards, patents, and artistic accomplishments

Revisions to survey items were made from Round Two open feedback to create the Round Three survey instrument. The Lawshe's Content Validity Ratio was applied to each survey item related to institutional and leadership factors. Based on Lawshe's Content Validity Ratio (CVR) of 0.78, 22 institutional and six leadership survey items met consensus with no suggested changes. These survey items are included below:

- Q5_Recruitment and Selection: Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.
- Q6_Recruitment and Selection: My unit places an emphasis on hiring tenure-track faculty with experience conducting research.

- Q9_Clear Coordinating Goals: It is clear to me how my unit's vision and goals are related to the institution's vision and goals.
- Q11_Clear Coordinating Goals: The priorities in my unit (as evidenced by such things as money allocations, new hires, etc.) match the unit's stated vision and goals.
- Q8_Clear Coordinating Goals: The priorities of my unit (as evidenced by such things as money allocations, new hires, etc.) include strategies to encourage research productivity.
- Q10_Clear Coordinating Goals: It is clear to me how my individual goals are related to the unit's vision and goals.
- Q21_Culture: I have opportunities at my institution to participate in impactful external engagements including activities that foster external research collaborations.
- Q24_Positive Group Climate: I feel comfortable collaborating with colleagues internal to my institution on research projects.
- Q32_Communication with a Professional Network: I have a well-developed network of colleagues within my unit with whom I discuss research.
- Q33_Communication with a Professional Network: I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.

- Q34_Communication with a Professional Network: I have a well-developed network of colleagues outside my institution with whom I discuss research.
- Q35_Communication with a Professional Network: I regularly have substantive conversations with colleagues about research.
- Q88_Communication with a Professional Network: My institution promotes activities that foster networking across the institution (e.g., events that spotlight research activity).
- Q85_Resources: I have access to adequate equipment to conduct my research.
- Q37_Resources: I have access to adequate support staff to conduct my research.
- Q40_Resources: I have access to adequate resources to travel to research-based conferences to attend or present results.
- Q89_Resources: I have access to adequate support through internal grant programs to conduct preliminary research (e.g., pilot data).
- Q43_Sufficient Work Time: I have a high degree of input into how I wish to spend my time at work.
- Q45_Sufficient Work Time: I am able to negotiate my workload distribution to conduct externally funded research.
- Q52_Promotion and Tenure Requirements: My unit's Promotion and Tenure requirements and evaluations are aligned with its values and goals as it relates to research.

- Q56_Diversity, Equity, and Inclusion Initiatives: Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are addressed in my institution's mission statements or strategic plans.
- Q57_Diversity, Equity, and Inclusion Initiatives: Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.
- Q62_Transformational Leadership: My supervisor communicates expectations and goals in a way that inspires me to participate in research.
- Q65_Transformational Leadership: My supervisor influences positive change in the institution's culture of research expectations.
- Q71_Research-Oriented: My supervisor demonstrates support for the institution's research-centered mission.
- Q90_Research-Oriented: My supervisor encourages taking the time to write proposals for externally funded research.
- Q75_Inclusive Leadership: My supervisor encourages a creative work environment promoting cooperation and collaboration in research endeavors.
- Q78_Inclusive Leadership: My supervisor fosters empowerment and trust through creating opportunities for growing leadership experience including leadership in externally funded research projects.

Delphi Panel – Round Three

The purpose of the Round Three survey was to obtain consensus and feedback on the revised survey items from Round Two feedback. The Round Three survey remained at 67 survey items related to the institutional and leadership factors. Table 13 outlines the feedback from Round Three Alpha Testing.

Table 13

Modified Delphi Panel Round Three Alpha Testing

<u>Feedback</u>	<u>Revisions</u>
Agreed with logic of implementing changes from Round 2 survey to create Round 3. Discussed reorganization of institutional factors based on topics. Gave me two options to consider. Option 1: Reorganize based on topics for the Round 3 survey allowing participants to suggest new survey items. If new items were suggested, this would result in needing a Round 4 survey. Option 2: Reorganize based on topics for the final survey instrument. Suggested I gather input from others before deciding.	No additional changes needed to Round 3 Survey
Discussed options for the reorganization of institutional factors. Suggested that I go with Option 2.	No additional changes needed to Round 3 Survey
Discussed options for the reorganization of institutional factors. Suggested that I go with Option 2.	No additional changes needed to Round 3 Survey

The draft Round Three instrument was entered into Qualtrics and beta tested. The feedback from beta testing is included in Table 14.

Table 14*Modified Delphi Panel Round Three Beta Testing*

<u>Feedback</u>	<u>Revisions</u>
Q83: This may just be attributed to my limited knowledge of higher education, but I wonder if “strategic clusters” would need more clarity or specificity.	Strategic Research Cluster - an informal group of researchers focusing on an interdisciplinary research area of excellence for the institution to solve key societal problems; the goal of a cluster is to prioritize resources and facilitate collaboration
Q74: This may be considered a double-barreled question since the question, essentially, touches on two different concepts?	Q74a_Incl-2. 2. My supervisor displays inclusive leadership qualities by encouraging open dialogue and leveraging the benefits of cultural diversity to support diverse research perspectives. (Round 2 Results: Survey item validated but revised)
Q83: Q1-2 refers to “my unit” but this refers to “my institution.” Is that intentional?	Yes, strategic clusters would be multi-disciplinary, so it would be at the institution level
Q86: Possibly revised to “...access to facilities, or other incentive” for those who may think those are the only 3 incentives.	Q86a_Recruit-5. 5. My institution provides hiring incentives such as start-up funding, lab space, access to facilities, or other incentives. (Round 2 Results: Survey item validated but revised)
Q38: what is research assistance if it’s not equipment, space, support staff, supplies, resources provided in the other questions for this section?	Q38a_Resr-2. 2. I have access to adequate research assistants to conduct my research. (Round 2 Results: Survey item validated but revised)
Q49: Do people always know what others’ salaries are? If not, there is no way to compare. If so, do people ever feel their compensation is enough?	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q50: Reword - my institution supports a positive work/life balance (e.g., offers opportunities...). Supportive work environment is another question about work not about life being balanced. (IMO)	Q50a_Rewd-4. 4. My institution promotes a positive work/life balance and supportive work environment (e.g., offers opportunities for flexible work time or remote work). (Round 2 Results: Survey item not validated (CVR - 0.50))

<u>Feedback</u>	<u>Revisions</u>
Q63: reword ending to: "...challenge my thinking."	Q63a_Transf-2. 2. My supervisor coaches and mentors in ways that challenge my thinking. (Round 2 Results: Survey item validated but revised)
Q80: Well done! I noticed under "Positive Group Climate: Keywords: High morale" that you need to capitalize Morale to match other keywords' capitalization.	Changed to High Morale

After revisions were made from beta testing, the revised Round Three instrument was sent to the panel participants for completion. A total of 20 participants completed the survey. The 31 pieces of open feedback from Round Three are included in Table 15.

Table 15

Modified Delphi Panel Round Two Participant Feedback

<u>Feedback</u>	<u>Revisions</u>
Q13: would you also want internally funded to lead to externally funded research?	Yes, but I do not think their needs to be a change in the survey item
Q13: "in" doesn't feel like the right word. Productive in research supported by internal funding?	Q13a_Emph-1. 1. There is a high expectation in my unit for tenure-track faculty to be productive in research supported by internal funding (e.g., producing peer-reviewed articles, books, pieces of art).
Q13: I think the word "funded" is confusing here because you also note internal funding programs below. Would something like "productive in their research output" work as well?	I disagree with this suggestion as I am trying to distinguish between internally and externally funded research emphasis. No changes needed.
Q14: would you also want the research to lead to articles, etc.?	Yes, but I do not think their needs to be a change in the survey item
Q15: I would underline "internal" for consistency with the underlining in the previous question.	Q15a_Emph-3. 3. My unit supports and incentivizes research through internal funding such as bridge funding, seed funding,

<u>Feedback</u>	<u>Revisions</u>
Q18: not sure why articles is associated with “internally” funded	institutionally funded research salary, or buyout of courses. A portion of the faculty salary is for research and there is an expectation to publish articles. No changes needed.
Q18: If you change the question from the previous set about removing “funded” in this context, then I think “productive in their research output” could work here. Also, the question above and below relates to external funding. I think this question should be moved up one spot so the related questions are together.	Re-ordered question 1 below questions related to external funding.
Q25: If we’re talking about positive group climate, the “I” statement in this one doesn’t seem to fit because it only involves the researcher (“I”) and another university. Instead maybe: my university supports collaboration with colleagues external to my institution on research projects.	This is a substantial change in the type of question after validation from the panel. I disagree with changing at this time.
Q25: This question and the one above it both have a space underlined right after “institution” that can be un-underlined.	Q25a_Clim-4. 4. I feel comfortable collaborating with colleagues external to my institution on research projects.
Q28: Suggested reword at start: “I have had a formal...”	Q28a_Ment-2. 2. I have had a formal or informal mentor at my institution who helped me to understand the research expectations in the appointment I hold.
Q29: Suggested reword at start: “I have had a formal...”	Q29a_Ment-3. 3. I have had a formal or informal mentor at my institution who helped me develop a well-defined plan for achieving my research career goals.
Q30: to perform my best but... in what? Research? I suspect that is what you mean, but would be more helpful to understand the efforts are toward something	Q30a_Ment-4. 4. I have colleagues or leaders at my institution that provide helpful feedback and guidance that assist my efforts to perform my best in research.

<u>Feedback</u>	<u>Revisions</u>
Q38: Should it be “to help conduct” here and in the previous question?	Q38a_Resr-2. 2. I have access to adequate research assistants to help conduct my research.
Q47: Suggested reword: “rewards to recognize and celebrate achievements”	Q47a_Rewd-1. 1. My unit has non-monetary rewards to recognize and celebrate achievements in research (e.g., featuring in unit’s newsletter, “toasting” at faculty meetings).
Q48: Suggested reword: “rewards to recognize achievements”	Q48a_Rewd-2. 2. My unit has monetary rewards to recognize achievements in research (e.g., cash awards, funds for travel or supplies).
Q49: At Private institutions, salaries are not widely known or shared so the comparison is only perceptual	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q50: I still need more information about why a flexible work schedule (which faculty already have) would be considered a reward, especially in today’s COVID climate.	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q60: There is still no explicit tie to research/research productivity in this question. Is it due to hiring biases that therefore affect attracting research superstars? In grant application review? Unclear.	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q60: Suggested reword: “There are diversity, equity, and inclusion initiatives at my institution to support a diverse population of faculty researchers, such as institution-wide training for faculty and staff to address implicit and explicit bias.”	Q60a_DEI-4. 4. There are diversity, equity, and inclusion initiatives at my institution to support a diverse population of faculty researchers, such as institution-wide training for faculty and staff to address implicit and explicit bias.
Q67: Unclear as to why the supervisor needs to be a subject matter expert. Department heads are often picked for their administrative skills or desire to move out of the grind of researching and publishing in their subject matter.	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument. (Not validated in Round 3)
Q67: maybe a highly regarded subject matter expert in their area of research	This is a great suggestion, but this item was not validated for Round 3

<u>Feedback</u>	<u>Revisions</u>
	and will not be in the final instrument
Q67: Suggested edit: “Subject Matter Expert in their area of research”	Question was not validated in Round 3 and will not be included in the final instrument
Q73: Suggested edit, adding commas: “work environment, where faculty are treated respectfully and have a sense of belonging, to support”	Q73a_Incl-1. 1. My supervisor displays inclusive leadership qualities by creating a safe work environment, where faculty are treated respectfully and have a sense of belonging, to support diverse research perspectives.
Q80: Looking really good! What a great instrument you are developing!	No changes needed.
Q80: great work - thank you	No changes needed.
Q80: Super strong questions to ask! Looking forward to this being an instrument RA’s and Institutions can use	No changes needed.
Q83: Why say “related to priority areas”... makes the statement run on and I think the gist of what you are asking is if the institution hires strategically for interdisciplinary research (not sure whose priority areas are here -- the institution? Societal priorities? Funding priorities?)	Q83a_Recruit-3. 3. My institution hires faculty in strategic research clusters related to priority areas in order to promote interdisciplinary research.
Q87: At smaller institutions the depth of the bench is so shallow, many will not have colleagues in their specific area of expertise at the same institution.	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument.
Q87: I’m still not sure about this one. Maybe it fits better under institutional climate instead? Someone’s research could complement my own but we could really not get along. This type of relationship could be worse than lack of mentorship; it could actually get into fights and backstabbing	No changes needed. The statistical analysis will determine if this survey item is included in the final instrument. (Not validated in Round 3)
Q91: GREAT REVISIONS TO THIS SECTION!	No changes needed.
Q91: In going back to the roles page before this (as there was no place to indicate), one of the choices was Research Director but I think you need clarity that this role is a	The Research Administration roles will not be used in the final survey instrument since it will be

<u>Feedback</u>	<u>Revisions</u>
Director over a discipline/interdisciplinary unit and NOT within a Research Administration specific function.	administered to tenure-track faculty. No changes needed.

Revisions to survey items were made from Round Three open feedback to create the Round Three survey instrument. Lawshe's Content Validity Ratio was applied to each survey item related to institutional and leadership factors. Based on Lawshe's Content Validity Ratio (CVR) of 0.42, 29 institutional survey items and three leadership survey items met consensus with no suggested changes. These survey items are included below:

- Q83_Recruitment and Selection: My institution hires faculty in strategic research clusters related to priority areas in order to promote interdisciplinary research.
- Q84_Recruitment and Selection: My institution places an emphasis on hiring faculty from minority populations to increase diversity in research perspectives.
- Q86_Recruitment and Selection: My institution provides hiring incentives such as start-up funding, lab space, access to facilities, or other incentives.
- Q13_Research Emphasis: There is a high expectation in my unit for tenure-track faculty to be productive in internally funded research (e.g., producing peer-reviewed articles, books, pieces of art).
- Q14_Research Emphasis: There is a high expectation in my unit for tenure-track faculty to conduct research that is externally funded (e.g., grants, awards, contracts).

- Q15_Research Emphasis: My unit supports and incentivizes research through internal funding such as bridge funding, seed funding, institutionally funded research salary, or buyout of courses.
- Q17_Culture: My institution supports my interest to pursue externally funded research.
- Q18_Culture: A high percentage of my unit's faculty are productive in internally funded research (e.g., producing peer-reviewed articles, books, pieces of art).
- Q81_Culture: A high percentage of my unit's active research faculty apply for external research funding on a regular basis.
- Q19_Culture: A high percentage of my unit's active research faculty receive external research funding each year.
- Q20_Culture: My institution has a tolerance for strategic risks when pursuing research activities (e.g., resource allocation risk).
- Q23_Positive Group Climate: I feel appreciated and valued by my colleagues in my unit for my work in research.
- Q82_Positive Group Climate: I feel appreciated and valued by my colleagues in other units at my institution for my work in research.
- Q25_Positive Group Climate: I feel comfortable collaborating with colleagues external to my institution on research projects.
- Q59_Positive Group Climate: As a faculty researcher, I believe that my research interests are supported by my institution.

- Q27_Mentoring: I have been formally assigned an advisor or mentor within my unit.
- Q28_Mentoring: I had a formal or informal mentor at my institution who helped me to understand the research expectations in the appointment I hold.
- Q29_Mentoring: I had a formal or informal mentor at my institution who helped me develop a well-defined plan for achieving my research career goals.
- Q30_Mentoring: I have colleagues or leaders at my institution that provide helpful feedback and guidance that assist my efforts to perform my best.
- Q38_Resources: I have access to adequate research assistants to conduct my research.
- Q44_Sufficient Work Time: I have adequate time to devote to my research goals when factoring in other job duties.
- Q47_Rewards: My unit has non-monetary rewards for recognizing and celebrating achievements in research (e.g., featuring in unit's newsletter, "toasting" at faculty meetings).
- Q48_Rewards: My unit has monetary rewards for recognizing achievements in research (e.g., cash awards, funds for travel or supplies).
- Q49_Rewards: As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.
- Q50_Rewards: My institution promotes a positive work/life balance (e.g., offers opportunities for flexible work time or remote work).

- Q53_Promotion and Tenure Requirements: My unit's Promotion and Tenure requirements and evaluations address externally funded research (e.g., grants, awards, contracts).
- Q54_Promotion and Tenure Requirements: My unit's Promotion and Tenure requirements and evaluations address intellectual property (e.g., invention disclosures, patent applications, patents awarded, copyrights, trademarks).
- Q58_Diversity, Equity, and Inclusion Initiatives: My institution has a culture of inclusivity and respect for others that promotes diverse perspectives in research.
- Q60_Diversity, Equity, and Inclusion Initiatives: Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers include institution-wide training for faculty and staff to address implicit and explicit bias.
- Q63_Transformational Leadership: My supervisor coaches and mentors in ways that challenge my thinking.
- Q73_Inclusive Leadership: My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty are treated respectfully and have a sense of belonging to support diverse research perspectives.
- Q74_Inclusive Leadership: My supervisor displays inclusive leadership qualities by encouraging open dialogue to support diverse research perspectives.

Two survey items did not achieve consensus since their Lawshe CVR value was less than 0.42. The following survey items were not validated and excluded from the final survey instrument:

- Q87_Mentoring: I have at least one colleague within my unit whose research interests match or complement my own.
- Q67_Scholar: My supervisor is a highly regarded Subject Matter Expert for their research.

Delphi Panel Phase Three: Create Final Survey Instrument

The purpose of the Modified Delphi Panel surveys was to gain a consensus on the items that should be included in the final survey instrument. Based on these panel responses, the final survey instrument created included 53 institutional and 12 leadership survey items for a total of 65 survey items related to factors. Three demographic questions were added, including questions about current academic rank, college of primary academic appointment, and unit of primary academic appointment. Five research productivity questions were added, including the number of peer-reviewed articles submitted for publication, the number of peer-reviewed articles published, the number of proposals submitted for externally funded research, the number of externally funded projects awarded, and the dollar amount of externally funded projects awarded. The timeframe used for the research productivity questions was the 2020-2021 and 2021-2022 academic years. Table 16 outlines the feedback from the final survey instrument alpha testing.

Table 16*Final Survey Instrument Alpha Testing*

<u>Feedback</u>	<u>Revisions</u>
Add keywords to survey instrument, Shift the one validated survey item under the Scholar Leadership Factor to another factor (Research Emphasis); the feedback within the climate section to change from “I” to “My institution” would significantly change the survey item after validation and should not be completed at this time; suggested adding # of articles submitted to research productivity section	Implemented all the suggestions. Since there was only one item validated for Scholar, this item was shifted to Research Emphasis, and the Scholar factor was removed.
Additional feedback Section -- Will be hard to quantify but may generate some useful insights and help you with your narrative.	Removed additional feedback section.
Research Productivity Section -- I agree with measuring published articles, proposals submitted, and also grants received. Do you think a two-year window is sufficient? In some fields (e.g., “Pure” mathematics), it may take two years for a paper to get through peer-review. On the other hand, asking for a five-year window may generate inaccurate results (people may not want to take the trouble to check, memory is mostly short-term, etc.). I am just raising the question for you to consider.	Left the two-year window for research productivity data. This aligned with Bland et al. (2002)
Keywords -- Keywords may be helpful to the respondents to understand the context in which you are asking the questions. They may also influence the response but I don’t think that is a bad thing. I think your survey will be more accurate if the respondents had some understanding of the context.	Given the change in format of the final instrument, the keywords were not included.
Definitions -- I think at least some faculty may not consider all aspects of “Internally Funded Research.” Internal funding need not be cash. Release from teaching or other obligations also count. Also, you are only surveying ANS, CoE, and COES who have a certain level of understanding what “Research” is. “e.g., cash, funding of students, release from teaching and other obligations.”	Changes were implemented.

<u>Feedback</u>	<u>Revisions</u>
7. Externally Funded Research - Research primarily funded by external agencies (e.g., grants, awards, contracts) and, in some cases, institutional match.	Removed “obtaining new knowledge in a subject area that is” but did not add the text about institutional match (considered internal funding)
8. Internally Funded Research - Research funded by the institution (e.g., cash, funding of students, release from teaching and other obligations.)-- see Policy 2106, https://www.latech.edu/administration/policies/p-2106/)	Removed “obtaining new knowledge or maintaining knowledge in a subject area that is” and added “e.g., cash, funding of students, release from teaching and other obligations.”
Added 7-point Likert Scale to instructions;	Was ultimately removed for the final survey in Qualtrics
Culture - “high percentage” - I think this may cause some between subject’s error in determining what is a high percentage. You could either nail it down (e.g., over 80%) or change your response options to indicate the percentage or list of percentage ranges.	Rephrased questions 1-3 in the Organizational Culture factor to “I estimate that the following percentage” instead of “A high percentage.”
Research Emphasis - “high expectation” - Again, a bit of a concern with the term ‘high’ here and the next item.	Removed “high” and changed to “there is an expectation” in questions 1-2 of the Research Emphasis factor.
Prof Network - “well-developed” - Another qualitative concern here. More information is available if you ask the number or categories of number ranges. If you want to know their level of satisfaction with their network, ask directly ‘How satisfied are you...’.	Removed “well-developed” from question 1 of the Communication with Professional Network factor.
Research-Oriented - “mentor and peer model” - Must be both?	Removed “and peer model” from question 4 of Research-Oriented factor.
Inclusive Leadership - removed “displays inclusive leadership qualities by creating”, three questions addressed; “have a sense of belonging” - This seems a bit out of place because it may be controlled by something outside of the safe work environment.	Implemented suggested changes. Removed “and have a sense of belonging” from question 1 of the Inclusive Leadership factor
Inclusive Leadership #4 - This sounds like it was written by the marketing department. Unpack it if	Removed “fosters empowerment and trust

<u>Feedback</u>	<u>Revisions</u>
needed. 1) empowerment, 2) trust, 3) creates opportunities for leadership in...	through creating” and replaced with “creates” for question 4 of the Inclusive Leadership factor.
Research Productivity section - #1-3 - deleted “total”	Implemented suggested change.
Mentoring #1 - change question to fit the Likert scale	Implemented suggested change. Survey item now reads “Mentoring was available to me within my unit.”

The draft final survey instrument was entered into Qualtrics and beta tested. The feedback from beta testing is included in Table 17.

Table 17

Final Survey Instrument Beta Testing

<u>Feedback</u>	<u>Revisions</u>
One question per page - this is a general rule of thumb that I learned doing some research at a cell phone company many years ago. It is particularly better if people will take the survey on their cell phones.	Implemented suggested change.
I use JavaScript to forward the page once they make the selection but there is now an Autoadvance option in the Look & Feel: Motion menu.	Implemented suggested change.
Don't worry about the section headers unless you think they are in need of clarification, directions, etc. (for instance, your terms page may be a necessity).	Implemented suggested change.
Add a progress bar so they can see the pain.	Implemented suggested change.
Q1_Dem_Rank. If non-faculty complete this, this field could help catch it	No changes needed

Revisions were implemented from the alpha and beta testing to create the final survey instrument in Qualtrics. This survey was administered to tenure and tenure track faculty in the Pilot Study.

Pilot Study

The purpose of the pilot study was to validate the instrument further to determine its usefulness. There were 81 individuals who completed the survey from the three colleges surveyed. The response rates for each college ranged from 36% to 54%, with an overall response rate of 45%. An Executive Summary was developed for each college, including a section for Initial Key Findings, Participants' Research Productivity, Likert Scale Responses by Institutional and Leadership Factors, College Results Comparisons, and Conclusions. An initial draft of the Executive Summary was reviewed with my committee members, and their feedback is included in Table 18 below.

Table 18

Executive Summary Alpha Testing

<u>Feedback</u>	<u>Revisions</u>
COE does not include SciTEC staff; may be other ways to address research not captured by this survey	Added a note after the college comparison that the participants were tenure and tenure track faculty only. Staff and non-tenure track faculty were not included.
Consider Mann Whitney U Test to understand if the difference between colleges is real after college comparison is constructed	Consulted with advisor, the Mann Whitney u-test is not needed for presentation of college comparisons.
Should I analyze results in light of a certain factor (i.e. results for funding >=\$250K, Results for >= Three proposals submitted)? No, do not complete this analysis	No updates needed.

<u>Feedback</u>	<u>Revisions</u>
Interview Deans and Associate Deans of Research >> Could also consider interviewing other individuals in grants and innovation.	One of these individuals was interviewed as beta testing.
Add watermark for Confidential Pilot Study	Implemented suggested change
Change the purpose on page 2 to validate instead of create	Implemented suggested change
Provide the Executive Summary ahead of interviews	Provided ahead of interviews.
Change Interview question #1 to “Do the results of the pilot study support your understanding of the faculty perspectives of factors associated with generating funding for research?”	Implemented suggested change
Interview questions, Delete #2 Do the data align with your professional expectations? and #3 Are you able to identify weak variables that need improvement?	Implemented suggested change
Interview questions #5 and 6, Indent these questions and make them prompts	Implemented suggested change
Interview questions, Delete #8 Are there any shortcomings you identified in this survey instrument?	Implemented suggested change
Change Interview question #9 to “Do you have any additional feedback about the survey instrument?”	Implemented suggested change

Changes were made to the draft Executive Summary and beta tested through an interview with a key leader and a committee member. The feedback from beta testing is included in Table 19.

Table 19*Executive Summary Beta Testing*

<u>Feedback</u>	<u>Revisions</u>
Be sure to explain what the results mean in the table presenting the results by factor (i.e. The Promotion & Tenure Mean of 5.45 reflects that faculty perceive this factor as contributing positively to research activity.)	Implemented suggested change.
Explain the factors associated with external research funding were identified through the Literature Review and validated through the Delphi Panel process	Implemented suggested change.
Interested in discussing the factors with the highest mean and lowest mean for each college. Recommended that I rank order the means for each college and present the factors with the highest and lowest means.	Implemented suggested change.
Page 3 - Reword the participant paragraph to make it clear that there are 81/181 total faculty in College A (45%) and 31/75 College A faculty responded (41%). Also recommended that I put the college percentages next to the n in the college comparison chart.	Implemented suggested change.
Page 2 College Factor Results Table - add a bar chart showing the % responses in each of the 7 factors.	Implemented suggested change.
If we change the table on Page 2, the information on Page 3 becomes less important or unnecessary (remove individual survey item pie charts)	Implemented suggested change.
Tell the story of Graduate Students/Programs.	Key finding was added related to Graduate Students
Add a section at the beginning and conclusion for Initial Key Findings to present the most interesting findings	Key findings were added to Page 2
Add context by including results from the Research productivity questions, will let leaders know whether active or inactive faculty responded	Added a chart for Research Productivity
Conclusion Questions - Change second question to how might you use the results of the survey instrument in strategic planning or assessment activities? Change third question to What concerns	Implemented suggested changes.

<u>Feedback</u>	<u>Revisions</u>
would you have with utilizing this survey data or implementing the survey in the future?	
Change “the current literature” to “current literature” and change “the modified Delphi panel” to “a modified Delphi panel”	Implemented suggested change.

Changes were implemented from the beta testing, and the Executive Summaries for each college were finalized and sent to seven key leaders within the three colleges in preparation for interviews. A final Executive Summary has been included in Appendix G.

Presentation of Results to Leaders

The purpose of the presentation of results to leaders was to determine how leaders at research-intensive universities would use the instrument of institutional and leadership factors associated with generating funding for research. Six individuals were interviewed, which included the presentation of results in the Executive Summary for their respective colleges and discussing interview questions. Feedback from leaders on each interview question is included below.

Q# 1: Do the results of the pilot study support your understanding of the faculty perspectives on factors associated with generating funding for research?

- Leader A.1. – Yes, I would expect them to say that we don’t have enough resources. When you define transformational leadership as being more at the unit level, that’s hit or miss a lot in our program areas just because of the depth of faculty. It’s useful to see what they’re thinking, and I would expect a lot of what you got here. It just helps reinforce that. These are the areas where we need to focus on more.

- Leader A.2. – I think it's pretty clear, and it's about what I would expect. I think that first and foremost you have to have a good environment.
- Leader B.1. – Yes, the results support my understanding.
- Leader B.2. – This does make me feel good that we're actually trying to address the mentoring and the visionary leadership for the college, so maybe we should turn some of this around. So that's good that those are the areas we already identified that need additional support. I get the sense that generally people feel supported as individuals, but we lack in these bigger areas.
- Leader C.1. – I don't know that I was surprised by anything. There are some I'd like to tease out more. I'd like to share this with leadership and then also the faculty saying I'd love to get together and get your ideas on this.
- Leader C.2. – It is not really surprising, given our approach in general about securing funding. We pivoted to focus on supporting faculty and staff to ensure we had funding not only for sponsored projects but also for related operating expenses in the college. We've also had a lot of administration changes at the departmental and college level, which would impact the leadership results. Mentoring doesn't surprise me there because we don't have many traditional faculty that are principal investigators on large scaled sponsored projects. It's difficult to prioritize and enact transformational leadership at all levels with current infrastructure and responsibilities. Your study has been helpful. I think the direct

conversations about the aforementioned factors we can have with faculty are probably the most informative and useful resources as we plan to move forward.

Q #2: *How might you, as a leader, use the results of the survey instrument in strategic planning or assessment activities?*

- Leader A.1. – Would like to share this with my leadership team and have a discussion about the results.
- Leader A.2. – I think we should always focus on environment because we're never going to improve the resources. My thoughts are that if you have an environment that's supportive of one another, overall you're going to be more productive.
- Leader B.1. – We would like to improve our graduate enrollment which is a big part of research. We need better resources for the students and to attract good students. Also, we have put an emphasis on mentoring students but not faculty. Mentoring faculty is something that we should look at.
- Leader B.2. – I think it confirms some of what we're doing, so that is helpful. Makes me think that maybe, as far as mentoring goes, we probably need to build it out a little bit more and think about ways we can target the research faculty a little bit more.
- Leader C.1. – I'm encouraged by a lot of areas that are strengths. Where we have strength, let's lean into it. Where we have weakness, or what seems to be a weakness, what is the reason for that? What are the areas

where we would have resources to do something about it? I would like to meet with my leadership team and key faculty and pick an area or two that we think we could address or move the needle in a positive way.

- Leader C.2. – I'm pleased we have this data to inform conversations about everything from overload caps to release time to alignment on the tenure and promotion process. This is a great tool to initiate these conversations. So as far as the incentives, that appears to be the biggest opportunity for improvement. It's important to discuss ways to ensure consistently productive people are compensated adequately for their work. We've got to be thoughtful about how increased research productivity impacts faculty that may already be taking a big load with classes and engaged in community service.

Q #3: *What concerns would you have with utilizing this survey data or implementing the survey in the future?*

- Leader A.1. – No concerns with utilizing the survey data or implementing the survey in the future.
- Leader A.2. – No concerns; I think it's very useful and interesting.
- Leader B.1. – No concerns but would like the data broken down by units to improve usefulness
- Leader B.2. – I don't think I have any.
- Leader C.1. – Not having individuals other than tenure or tenure-track faculty skews the overall picture of what's being generated by the college, so that would be a concern.

- Leader C.2. – My biggest concern is that if this were to be shared more broadly, there would be no way to highlight the entirety of the activity that is taking place in the college. We have pockets of incredibly successful PIs that are not traditional academic faculty within departments. Considering the opportunity for growth in traditional departments and success in non-departmental divisions within the college, there is potential for increased productivity.

Q #4: *Do you have any additional feedback about the survey instrument?*

- Leader A.1. – It might be helpful to see the results at the department level, so we might know programs or departments that are in more of a critical situation than others. It would be interesting to be able to dig deeper into what is driving flat research expenditures. I've always felt that it is more driven by the number of tenured and tenure-track faculty versus anything else.
- Leader A.2. – No additional feedback
- Leader B.1. – I would be interested in seeing what academic units the participants were from. You didn't have a question about the quarter calendar. I think research is one area that is not conducive to the quarter system. It is a fast pace calendar with an extra quarter to schedule classes, advise, start classes, give finals, and have graduation compared to semester calendars. This adds a barrier or difficulty to doing research and scholarly activity. It is encouraging that all three colleges are relatively high in climate.

- Leader B.2. – No additional feedback
- Leader C.1. – The Research Productivity chart needs to be more clear that proposals submitted are for externally funded projects and not presentation proposals. The Institutional & Leadership Factors chart is a clear representation that adds a lot to the report. A lot of people we partner with and bring in to work on externally funded projects are non-tenured track who would probably answer these questions totally different. They come in for the purpose of that and have all the resources to do that work which may be something that we need to address. I'm grateful for work like this because it raises questions and causes you to prompt thinking. The survey results reinforce perceived challenges. Interventions that started two years ago are now providing new opportunities to faculty and staff. One to two years from now, the results of the survey may dramatically improve.
- Leader C.2. – I think this work is fascinating. Further research topics include productivity with limited resources and the importance of internal communication to engage and support faculty in the research process. It would be fascinating to look at vacancies by college too, because then you could determine the level of course load and if there is time for other activities like research and service.

Results of the pilot study survey supported leaders' understanding of faculty perspectives and, in some instances, confirmed that recently implemented initiatives aligned with factors that had lower means. Leaders described plans to discuss the results with the college leadership teams to brainstorm what actions might improve results and

where to focus efforts. In general, there were no concerns with using the survey instrument. The leaders of one college expressed concerns that the survey results did not show the whole picture, given the number of non-tenure or tenure track faculty in their college that participate in externally funded projects.

Leaders would like to see information in the Executive Summary detailed by unit instead of just at the college level. Given proper interventions, a survey implemented one to two years from now may show improvements. Future research from these results could include further analysis of what is driving research expenditures, the impact of the quarter system on research productivity, research trends of non-tenure or tenure track faculty seeking research funding, and ways to improve research productivity with a limited staff.

CHAPTER 5

DISCUSSION

The strategic goal of increasing funding for research at a university is a complex objective dependent on various institutional and leadership factors (Bland et al., 2005; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). The purpose of the study was to develop an instrument to assist institutional leaders in assessing institutional and leadership factors for generating research funding at research-intensive universities. This chapter examines the research questions related to the literature review and the results of the modified Delphi panel, pilot study, and interviews of leaders. Next, recommendations are made for professional practice. Finally, recommendations are made for future research.

Examination of Research Questions

Research Question One

What institutional factors are associated with generating funding for research at a research-intensive university?

The institutional factors associated with generating funding for research include organizational culture, positive group climate, clear coordinating goals, research emphasis, diversity, equity, and inclusion initiatives, recruitment and selection, promotion and tenure, mentoring, work time, communication with a professional

network, resources, and rewards. Five additional institutional factors were not validated by the modified Delphi panel. These factors included size/experience/expertise, communication, brokered opportunities, assertive participative governance, and decentralized organization (Bland et al., 2005; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). The modified Delphi panel identified the diversity, equity, and inclusion factor and was not included in the literature.

Research Question Two

What leadership factors are associated with generating funding for research at a research-intensive university?

The leadership factors associated with generating funding for research include transformational leadership, research-oriented, and inclusive leadership. Two additional factors were not validated by the modified Delphi panel. These factors include capably fulfills all critical leadership roles and participative leadership research-oriented (Bland et al., 2005; Hedjazi & Behravan, 2011; Lase & Hartijasti, 2018). The modified Delphi panel identified inclusive leadership and transformational leadership factors that were not included in the literature.

Research Question Three

How would leaders at research-intensive universities use the instrument of institutional and leadership factors associated with generating funding for research?

The survey instrument would be used to obtain feedback from faculty and staff on their perspective of how each factor is positively or negatively contributing to research productivity. The survey results would be used to share the participants' perspectives with leadership for targeted discussions on where additional support is needed. Results

could also provide the necessary data to support new and existing efforts to improve research productivity. Data collected would help inform and drive conversations at the university, leading to improved faculty support and increased research productivity.

Bland et al. (2002) described the strategy used when the results were provided to department heads and deans; however, they did not interview leaders to determine how they would use their survey results. Department leaders were asked to identify needs based on their survey results.

Recommendations for Professional Practice

The first recommendation is to utilize the survey instrument created to determine faculty perspectives on factors contributing to funding for research. An initial survey should be administered, and the results reviewed and discussed with key leaders in the unit. Leaders should identify factors that are not contributing to research productivity and develop initiatives to improve. Which factors, if addressed, could have an overall impact on funding for research? It would also be helpful to identify the factors that successfully contribute to research productivity and ensure the initiatives in these areas continue.

The second recommendation is that leaders should analyze results based on demographics. Demographics include academic rank and unit of primary academic appointment. Analyzing the results in this way would help leaders identify who needs targeted assistance for increasing research productivity and what units may need the most support.

The final recommendation is to conduct a follow-up survey once the new initiatives have been fully implemented to determine if the results have improved. A suggested timeframe would be one to two years following the initial survey.

Recommendations for Future Research

While institutional and leadership factors associated with generating funding for research were identified, it would be helpful for leaders to understand if there are factors that predict success. Bland et al. (2005) sought to identify factors that predict faculty research productivity. Based on one key leader's response, there may be specific demographics of faculty that predict success, such as the number of tenure or tenure-track faculty.

In addition to the survey items included in the instrument created, consideration should be given to the feedback received from leaders as it relates to other survey items that may be needed. Additions to the instrument could include survey items related to graduate students or questions unique to non-tenure track faculty and staff. While this study only asked the Delphi panel participants what factors should be included, it would also be interesting to leaders to know how faculty feel the factors are associated with funding for research. If a faculty member agreed a factor was important, but responded that the survey items for that factor were negatively contributing to funding for research, then leaders may have a clearer picture of where to focus their efforts. Institutional survey items could also be added that address the institution's viewpoint on the factors associated with research productivity and vacancies of positions that would impact time to conduct research.

One interesting point discussed with a key leader was the impact of the quarter academic calendar on research productivity compared to semester calendars. It would be interesting to research whether the fast pace calendar with an extra quarter of activity adds a barrier or increased difficulty in conducting research and scholarly activity.

The participants in the pilot study survey were tenure and tenure-track faculty. Leaders from one college described their strategy for non-tenure staff to apply for external funding that would provide additional resources for the college and opportunities for faculty to participate in projects with a lower barrier to entry. A recommendation for future research is to determine if there are trends to find more creative ways to obtain external funding, such as utilizing non-tenured faculty and staff or other strategies for increasing research productivity with a limited number of employees.

Conclusion

Through the three phases of the modified Delphi panel, a survey instrument was created that identified institutional and leadership factors associated with generating funding for research. The initial survey allowed panel members to provide feedback on the institutional and leadership factors that should be included in the surveys. During the three iterative rounds, panel members responded on a 7-point Likert scale on whether they agreed or disagreed with the survey items for each factor. They provided open feedback on suggested changes and new survey items that should be included. The feedback was addressed after each round and included in the following round survey. After Round 3, the survey items validated based on Lawshe's Content Validity Ratio were included in the final survey instrument.

A pilot study of the survey instrument was conducted at a research-intensive institution in the southern United States. The instrument was administered to tenure and tenure-track faculty within three colleges. The researcher generated Executive Summaries based on the survey responses that described a summary of the results, key findings, participants' research productivity, and a college results comparison. The Executive

Summary for each college was presented to key leaders. The purpose of the interviews was to learn if the results of the pilot study supported the leaders' understanding of faculty perspectives, how leaders would use the results of the survey, what concerns they have with utilizing the survey data, and additional feedback they had of the survey instrument.

Findings include that the survey results supported leaders' understanding of faculty perspectives of institutional and leadership factors and whether the factors are contributing positively or negatively to research productivity. Leaders found the survey results useful and described ways they would use the data to discuss ways to implement improvements with their leadership teams. Recommendations for future research include understanding if there are factors that predict success in increasing funding for research, researching if the quarter academic calendar impacts research productivity, and determining if there are trends to find more creative ways to obtain external funding.

REFERENCES

- Althiga, H. (2021). Determinants of nursing faculty research productivity in three Saudi public universities: A literature review. *Journal of Nursing and Health Science*, 10(1), 30–35.
- Angaiz, D., Anwar, M., Din, K. U., Jabeen, Z., & Hussain, S. (2021). Predictors of individual characteristics, institutional characteristics and leadership support to the research productivity of teacher education faculty in higher education of Pakistan. *International Journal of Management*, 12(5), 174–185.
<https://doi.org/10.3410.34218/IJM.12.5.2021.015>
- Avella, J. R. (2016). Delphi panels: Research design, procedures, advantages, and challenges. *International Journal of Doctoral Studies*, 11, 305–321.
<https://doi.org/10.28945/3561>
- Basic classification description*. (n.d.). The Carnegie Classification of institutions of higher education. Retrieved December 18, 2021, from
https://carnegieclassifications.iu.edu/classification_descriptions/basic.php
- Batool, A., Ahmad, S., & Naz, S. (2021). Correlation of personal and institutional factors with research productivity among university teachers. *Humanities & Social Sciences Reviews*, 9(2), 240–246. <https://doi.org/10.18510/hssr.2021.9225>

- Bay, B. E., & Clerigo, M. C. (2013). Factors associated with research productivity among oral healthcare educators in an Asian university. *International Education Studies*, 6(8), 124–135. <https://doi.org/10.5539/ies.v6n8p124>
- Bland, C. J., Center, B. A., Finstad, D. A., Risbey, K. R., & Staples, J. G. (2005). A theoretical, practical, predictive model of faculty and department research productivity. *Academic Medicine*, 80(3), 225–237. <https://doi.org/10.1097/00001888-200503000-00006>
- Bland, C. J., & Ruffin, M. T., IV. (1992). Characteristics of a productive research environment: Literature review. *Academic Medicine*, 67(6), 385–397. <https://doi.org/10.1097/00001888-199206000-00010>
- Bland, C. J., Seaquist, E., Pacala, J. T., Center, B., & Finstad, D. (2002). One school's strategy to assess and improve the vitality of its faculty. *Academic Medicine*, 77(5), 368–376. <https://doi.org/10.1097/00001888-200205000-00004>
- Boyer, E. L., Moser, D., Ream, T. C., & Braxton, J. M. (2016). *Scholarship reconsidered: Priorities of the professoriate* (Expanded ed.). Jossey-Bass.
- Carter, R. G., Mundorff, K., Risen, J., Bouwma-Gearhart, J., Bratsch-Prince, D., Brown, S. A., Campbell, A. L., Hartman, J. C., Hasemann, C. A., Hollenbeck, P. J., Lupiani, B., McCarty, O. J., McClure, I. D., Mealey, K., Mimura, C., Romero, A. J., Sztajn, P., & Van Egeren, L. (2021). Innovation, entrepreneurship, promotion, and tenure: Academic incentives must reward broader societal impacts. *Science*, 373(6561), 1312–1314. <https://doi.org/10.1126/science.abj2098>

- Chval, K. B., & Nossaman, L. D. (2014). Raising the bar on external research funding: Infrastructure and strategies for enhancing faculty productivity. *Journal of Faculty Development*, 28(1), 41–48.
- Creswell, J. W. (1985). *Faculty research performance: Lessons from the sciences and social sciences*. Association for the Study of Higher Education.
- Daniel, B. V., West, J. K., Daniel, G. E., & Flowers, P. (2006). Grant writing as a funding source and collaborative endeavor. *The College Student Affairs Journal*, 25(2), 199–208.
- Dundar, H., & Lewis, D. (1998). Determinants of research productivity in higher education. *Research in Higher Education*, 39, 607–631.
- Easterly, D. M., & Ricard, C. S. (2011). Conscious efforts to end unconscious bias: Why women leave academic research. *Journal of Research Administration*, 42(1), 61–73.
- Edgar, F., & Geare, A. (2013). Factors influencing university research performance. *Studies in Higher Education*, 38(5), 774–792.
<https://doi.org/10.1080/03075079.2011.601811>
- Finkelstein, M. J. (1984). *The American academic profession: A synthesis of social scientific inquiry since World War II* (1st ed.). Ohio State University Press.
- Gilbert, G. E., & Prion, S. (2016). Making sense of methods and measurement: Lawshe's content validity index. *Clinical Simulation in Nursing*, 12(12), 530–531.
<https://doi.org/10.1016/j.ecns.2016.08.002>

Hedjazi, Y., & Behravan, J. (2011). Study of factors influencing research productivity of agriculture faculty members in Iran. *Higher Education*, 62(5), 635–647.

<https://doi.org/10.1007/s10734-011-9410-6>

Higher education research and development survey. (n.d.). National Center for Science and Engineering Statistics. Retrieved December 27, 2022, from

<https://ncesdata.nsf.gov/builder/herd>

Iqbal, M. Z., & Mahmood, A. (2011). Factors related to low research productivity at higher education level. *Asian Social Science*, 7(2), 188–193.

Joseph, R., & Waller, J. (2018). Institutional and faculty vitality impact on research productivity of occupational and physical therapy faculty. *Journal of Education and Human Development*, 7(1), 1–12. <https://doi.org/10.15640/jehd.v7n1a1>

Kuknor, S. C., & Bhattacharya, S. (2020). Inclusive leadership: New age leadership to foster organizational inclusion. *European Journal of Training and Development*, 46(9), 771–797. <https://doi.org/10.1108/EJTD-07-2019-0132>

Lase, E., & Hartijasti, Y. (2018). The effect of individual and leadership characteristics toward research productivity with institutional characteristics as a mediator variable: Analysis of academic lecturers in the faculty of economics and faculty of linguistic and arts at University of X. *The South East Asian Journal of Management*, 12(1), 20–42. <https://doi.org/10.21002/seam.v12i1.9071>

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 563–575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>

Ozgen, C. (2021). The economics of diversity: Innovation, productivity, and the labour market. *SSRN Electronic Journal*, 1168–1216. <https://doi.org/10.1111/joes.12433>

- Paul, P., Norby, M., & Meier, N. (2014). Top secrets to growing university research in uncertain times. *Merrill Series on The Research Mission of Public Universities*, 112–119. <https://doi.org/10.17161/merrill.2014.7821>
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective* (First ed.). Harper & Row.
- Rowe, G., & Wright, G. (1999). The delphi technique as a forecasting tool: Issues and analysis. *International Journal of Forecasting*, 15(4), 353–375.
[https://doi.org/10.1016/s0169-2070\(99\)00018-7](https://doi.org/10.1016/s0169-2070(99)00018-7)
- Santos, J. L. (2007). Resource allocation in public research universities. *Review of Higher Education*, 30(2), 125–144.
- Sehlaoui, A. S., Gross, E., & Ruengwattakee, P. (2021). Motivating factors and obstacles behind grant research: The case of a teaching focused state college. *Journal of Research Administration*, 52(1), 38–58.
- Shields, C. M. (2010). Transformative leadership: Working for equity in diverse contexts. *Educational Administration Quarterly*, 46(4), 558–589.
<https://doi.org/10.1177/0013161x10375609>
- Taylor, J. (2006). Managing the unmanageable: The management of research in research-intensive universities. *Higher Education Management and Policy*, 18(2), 9–33.
<https://doi.org/10.1787/hemp-v18-art8-en>
- Teodorescu, D. (2000). Correlates of faculty publication productivity: A cross-national analysis. *Higher Education*, 39(2), 201–222.

- Vatankhah, S. Javid, Elyeh, & Raoofi, Ali (2017). Perceived organizational support as the mediator of the relationships between high-performance work practices and counter-productive work behavior: Evidence from airline industry. *Journal of Air Transport Management*. 59. 107-115. 10.1016/j.jairtraman.2016.12.001.
- Vogel, C., Zwolinsky, S., Griffiths, C., Hobbs, M., Henderson, E., & Wilkins, E. (2019). A delphi study to build consensus on the definition and use of big data in obesity research. *International Journal of Obesity*, 43(12), 2573–2586.
<https://doi.org/10.1038/s41366-018-0313-9>
- Wasserman, I. C., Gallegos, P. V., & Ferdman, B. M. (2008). Dancing with resistance: Leadership challenges in fostering a culture of inclusion. In K. M. Thomas (Ed.), *Diversity resistance in organizations* (1st ed., pp. 175–200). Lawrence Erlbaum Associates.
- Wedman, J. (2010). The performance pyramid. In K. H. Silber, W. R. Foshay, R. Watkins, D. Leigh, J. L. Moseley, & J. C. Dessinger (Eds.), *Handbook of improving performance in the workplace, Volume two* (1st ed., pp. 51–74). Pfeiffer.

APPENDIX A

HUMAN USE APPROVAL LETTER



Office of Research and Partnerships

MEMORANDUM

TO: Courtney Jarrell, (Student Researcher) and Dr. Bryan McCoy

FROM:  Dr. Walter Buboltz, Professor/Elva L. Smith Endowed Professor
buboltz@latech.edu

SUBJECT: Human Use Committee - Review DECISION

DATE: April 14, 2022

In order to facilitate your project, an EXPEDITED REVIEW has been completed for your proposed study:

HUC No.: 1411, 22-084

TITLE: Institutional and Leadership Variables Associated with Generating Funding for Research

HUC DECISION: **Exempt from full review**

According to the Code of Federal Regulations Title 45 Part 46, your research protocol is determined to be exempt from full review under the following exemption category(s):

It has been determined that your study meets the requirements for exemption **45 CFR §46.104(d) (2) (i)**:

(2) **Research that only includes interactions involving** educational tests (cognitive, diagnostic, aptitude, achievement), **survey procedures**, interview procedures, or observation of public behavior (including visual or auditory recording) **if at least one of the following criteria is met:**

(i) **The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;**

Additional comments from Reviewer: *This research project uses an established survey instrument with permission from the authors. Delphi members remain confidential. Information collected will remain on a password-protected device. Participants complete an IRB Human Subjects Consent Form. The pilot study and Delphi panel are conducted electronically. There is no contact with participants or treatments offered.*

Thank you for submitting your Human Use Proposal to Louisiana Tech's Institutional Review Board.

APPENDIX B

INITIAL SURVEY INSTRUMENT

Institutional and Leadership Factors Associated with Research Funding (Brief Initial Survey)

Start of Block: Default Question Block

Label_Title **Institutional and Leadership Factors Associated with Generating Funding for Research - Initial Survey**

Label_IRB **Human Subjects Consent Form** The following summarizes the project you are asked to participate in. Please read this information before signing the statement below.

Title of study: Institutional and leadership factors associated with generating funding for research

Purpose of study: The purpose of this study is to create an instrument to identify institutional factors and leadership factors associated with generating funding for research in a research-intensive university.

Subjects of study: Modified Delphi Panel participants will include experts in research administration in higher education in the United States.

Procedures of study: In this research, you will be provided a series of electronically-delivered surveys to assist in the creation of an instrument to identify institutional factors and leadership factors associated with generating funding for research. Initially, a brief survey will be completed to verify a comprehensive set of institutional and leadership factors. Then a minimum of three surveys will be emailed to you addressing specific survey instrument items. Each will include quantitative questions and the opportunity to give open feedback. This data will be used to refine the new instrument further to be created. After each round, you will receive an email outlining previous survey results and another survey seeking further feedback. Once there is consensus between experts, the instrument will be considered finalized. The participants' names will remain confidential. Although it may be possible to identify an individual digitally, the researcher will not attempt to do so. The material collected will remain on a password-protected laptop.

Time Expectations: Each round of surveying should take approximately 15-30 minutes to complete. Please return the survey within one week of receipt.

Benefits/Compensation: The participants will not be compensated in any way during this study, but they may potentially benefit from the outcomes of the study.

Risks, Discomforts, Alternative Treatments: The Modified Delphi Panel will be conducted electronically, so there will be no or very minimal physical risks. There is a potential risk associated with confidentiality and anonymity; however, the researcher will follow the above practices to maintain confidentiality and anonymity to mitigate these risks. The researchers listed below may be reached to answer questions about the research, subjects' rights, or related matters.

Contact Information: Principal Investigator: Courtney Jarrell (cjarrell@latech.edu) Co-Investigator: Bryan McCoy (bmccoy@latech.edu)

IRB If you agree to participate in this study, you are agreeing to the following: I attest that I have read and understood the description of the study and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the results of the material will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

Do you agree to participate in this study?

☐ Yes (1)

☐ No (2)

Skip To: End of Survey If If you agree to participate in this study, you are agreeing to the following: I attest that I hav... = No

Label_Demographics **Demographics**

Q1_Role **Current Role** - Please select the primary focus of your current role as it relates to research administration which includes any role that supports faculty and staff in identifying, acquiring, or managing externally funded projects across a university or college.

☐ Pre-Award Research (1)

☐ Financial Research (2)

☐ Research Compliance (3)

☐ Director/Manager of Sponsored Research Office (4)

☐ Grants Manager of a specific unit (5)

☐ Research Director of a specific unit (6)

☐ AVP/VP of Research (7)

☐ Other Research Administration Role (please list below) (8)

Q2_RA_Exp **Years of Experience in Research Administration** - Please select your cumulative years of experience in roles supporting faculty and staff in identifying, acquiring, or managing externally funded projects across a university or college.

- ☐ 0 (1)
- ☐ 1-2 (2)
- ☐ 3-4 (3)
- ☐ 5-6 (4)
- ☐ 7-8 (5)
- ☐ 9-10 (6)
- ☐ 10+ (7)

Q3_PI_Exp Years of Experience as a Principal Investigator - Please select your cumulative years of experience leading an externally funded project as a Principal Investigator or Co-Principal Investigator.

- ☐ 0 (1)
- ☐ 1-2 (2)
- ☐ 3-4 (3)
- ☐ 5-6 (4)
- ☐ 7-8 (5)
- ☐ 9-10 (6)
- ☐ 10+ (7)

Label_Institutional **Institutional Factors**

This section includes proposed institutional factors that are associated with generating funding for research based on a comprehensive literature review. Please review each definition and respond to the statement provided. At the end of this section, you will be given the opportunity to suggest additional factors not identified and propose changes to the factor definitions.

Q4_Recruit **Recruitment and Selection** is described as a great effort is expended to recruit and hire faculty who have the training, goals, commitment, and socialization that match the institution's research goals ([Bland et al., 2005, p. 228](#)).

The institutional factor of faculty Recruitment and Selection is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

s

Q5_ Goals **Clear coordinating goals** is described as visible, shared research goals coordinate faculty's work ([Bland et al., 2005, p. 228](#)).

The institutional factor of Clear coordinating goals is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q6_ Research **Research Emphasis** is described as “research has greater or equal priority than other goals” ([Bland et al., 2005, p. 228](#)).

The institutional factor of Research Emphasis is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q7_Culture **Culture** is described as faculty having shared, research-related values and practices and a safe home for testing new ideas ([Bland et al., 2005, p. 228](#)).
The institutional factor of Culture is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q8_Climate **Positive Group Climate** is described as “the climate is characterized by high morale, a spirit of innovation, dedication to work, receptivity to new ideas, frequent interactions, high degree of cooperation, low faculty turnover, good leader/faculty relationships, and open discussion of disagreements” ([Bland et al., 2005, p. 228](#)).
The institutional factor of Positive Group Climate is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q9_Mentoring **Mentoring** is described as “beginning and midlevel faculty are assisted by and collaborate with established scholars” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Mentoring** is associated with generating funding for research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q10_Network **Communication with a professional network** is described as “faculty have a vibrant network of colleagues with whom they have frequent and substantive (not merely social) research communication, both impromptu and formal, in and outside of the institution” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Communication with a professional network** is associated with generating funding for research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q11_Resources **Resources** is described as faculty having access to sufficient resources such as funding, facilities, equipment, and personnel, including adequate research administration support, local peers for support, research assistants, and technical consultants ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Resources** is associated with generating funding for research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q12_Work_Time **Sufficient Work Time** is described as “faculty have significant periods of uninterrupted time to devote to scholarly activities” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Sufficient Work Time** is associated with generating funding for research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q13_Expertise **Size/experience/expertise** is described as “faculty offer different perspectives by virtue of differences in their degree levels, approaches to problems, and varying discipline backgrounds; the group is stable, and its size is at or above a critical mass” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Size/experience/expertise** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q14_Communication **Communication** is described as clear and multiple forms of communication such that all faculty feel informed about research goals, support, and opportunities ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Communication** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q15_Rewards **Rewards** is described as “research is rewarded equitably and in accordance with defined benchmarks of achievement; potential rewards include money, promotion, recognition, and new responsibilities” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Rewards** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q16_Opportunities **Brokered Opportunities** is described as “professional development opportunities are routinely and proactively offered to faculty to assure their continued growth and vitality” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Brokered Opportunities** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q17_Participative **Assertive Participative Governance** is described as “clear and common goals, assertive and participative leadership where active participation of faculty are expected, and effective feedback systems are utilized” ([Bland et al., 2005, p. 228](#)).

The institutional factor of **Assertive Participative Governance** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q18_Decentralized **Decentralized Organization** is described as autonomy and support are decentralized to the college or departmental level ([Lase & Hartijasti, 2018](#); [Hedjazi & Behravan, 2011](#)).

The institutional factor of **Decentralized Organization** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q19_Tenure **Tenure and Promotion Requirements** is described as tenure and promotion requirements encourage faculty to participate in externally funded research projects ([Bay & Clerigo, 2013](#)).

The institutional factor of **Tenure and Promotion Requirements** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q20_Institution_Add Please list and describe any additional institutional factors that have not been covered in above.

Q21_Institution_Def Please describe any changes suggested to the institutional factor definitions included above.

Label_Leadership **Leadership Factors**

This section includes proposed leadership factors that are associated with generating funding for research based on a comprehensive literature review. Please review each definition and respond to the statement provided. At the end of this section, you will be given the opportunity to suggest additional factors not identified and propose changes to the factor definitions.

Q22_Scholar **Scholar** is described as “highly regarded as a scholar; serves as a sponsor, mentor, and peer model for other group faculty” ([Bland et al., 2005, p. 228](#)).

The leadership factor of Scholar is associated with generating funding for research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q23_Res_Oriented **Research-oriented** is described as “possesses a ‘research orientation’; has internalized the group’s research-centered mission” ([Bland et al., 2005, p. 228](#)).

The leadership factor of Research-oriented is associated with generating funding for research.

☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q24_Leadership_Roles **Capably Fulfills All Critical Leadership Roles** is described as “manager of people and resources, fund-raiser, group advocate, keeps the group’s mission and shared goals visible to all faculty, attends to the many individuals and institutional features that facilitate research productivity” ([Bland et al., 2005, p. 228](#)). The leadership factor of **Capably Fulfills All Critical Leadership Roles** is associated with generating funding for research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q25_Part_Leader **Participative Leader** is described as “uses an assertive, participative style of leadership; holds frequent meetings with clear objectives; creates formal mechanisms and sets expectations for all faculty to contribute to decision making; makes high-quality information readily available to the group; vests ownership of projects with faculty and values their ideas” ([Bland et al., 2005, p. 228](#)). The leadership factor of **Participative Leader** is associated with generating funding for research.

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q26_Leadership_Add Please list and describe any additional leadership factors that have not been covered above.

Q27_Leadership_Def Please describe any changes suggested to the leadership factor definitions included above.

End of Block: Default Question Block

APPENDIX C

ROUND ONE SURVEY INSTRUMENT

Round 1 Survey - Institutional and Leadership Factors Associated with Research Funding

Start of Block: Default Question Block

Label_Title **Institutional and Leadership Factors Associated with Generating Funding for Research - Round 1 Survey**

Label_IRB **Human Subjects Consent Form**

The following summarizes the project you are asked to participate in. Please read this information before signing the statement below.

Title of study: Institutional and leadership factors associated with generating funding for research

Purpose of study: The purpose of this study is to create an instrument to identify institutional factors and leadership factors associated with generating funding for research in a research-intensive university.

Subjects of study: Modified Delphi Panel participants will include experts in research administration in higher education in the United States.

Procedures of study: In this research, you will be provided a series of electronically-delivered surveys to assist in the creation of an instrument to identify institutional factors and leadership factors associated with generating funding for research. Initially, a brief survey will be completed to verify a comprehensive set of institutional and leadership factors. Then a minimum of three surveys will be emailed to you addressing specific survey instrument items. Each will include quantitative questions and the opportunity to give open feedback. This data will be used to refine the new instrument to be created. After each round, you will receive an email outlining previous survey results and another survey seeking further feedback. Once there is consensus between experts, the instrument will be considered finalized. The participants' names will remain confidential. Although it may be possible to identify an individual digitally, the researcher will not attempt to do so. The material collected will remain on a password-protected laptop.

Time Expectations: Each round of surveying should take approximately 60 minutes to complete. Please return the survey within one week of receipt.

Benefits/Compensation: The participants will not be compensated in any way during this study, but they may potentially benefit from the outcomes of the study.

Risks, Discomforts, Alternative Treatments: The Modified Delphi Panel will be conducted electronically, so there will be no or very minimal physical risks. There is a potential risk associated with confidentiality and anonymity; however, the researcher will follow the above practices to maintain confidentiality and anonymity to mitigate these risks. The researchers listed below may be reached to answer questions about the research, subjects' rights, or related matters.

Contact Information: Principal Investigator: Courtney Jarrell (cjarrell@latech.edu)
Co-Investigator: Bryan McCoy (bmccoy@latech.edu)

IRB If you agree to participate in this study, you are agreeing to the following: I attest that I have read and understood the description of the study and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the responses to the survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

Do you agree to participate in this study?

☐ Yes (1)

☐ No (2)

Skip To: End of Survey If If you agree to participate in this study, you are agreeing to the following: I attest that I hav... = No

Label_Demographics **Demographics**

Q1_Role **Current Role** - Please select all roles that apply to your current position.

☐ Pre-Award Research (1)

☐ Post-Award Research (2)

☐ Financial Research (3)

☐ Research Compliance (4)

☐ Research Contracts/Awards (5)

☐ Professional Development and Training (6)

- ☐ Commercialization and Technology Transfer (7)
 - ☐ Research Development (8)
 - ☐ Director/Manager of Sponsored Research Office (9)
 - ☐ Grants Manager of a specific unit (10)
 - ☐ Research Director of a specific unit (11)
 - ☐ AVP/VP of Research (12)
 - ☐ Other Research Administration Role (please list below) (13)
-

Q2_RA_Exp **Years of Experience in Research Administration** - Please select your cumulative years of experience in roles supporting faculty and staff in identifying, acquiring, or managing externally funded projects across a university or college.

- ☐ 0 (1)
- ☐ 1-2 (2)
- ☐ 3-4 (3)
- ☐ 5-6 (4)
- ☐ 7-8 (5)
- ☐ 9-10 (6)
- ☐ 11-13 (7)

☐ 14-16 (8)

☐ 17-19 (9)

☐ 20+ (10)

Q3_PI_Exp Years of Experience as a Principal Investigator - Please select your cumulative years of experience leading an externally funded project as a Principal Investigator or Co-Principal Investigator.

☐ 0 (1)

☐ 1-2 (2)

☐ 3-4 (3)

☐ 5-6 (4)

☐ 7-8 (5)

☐ 9-10 (6)

☐ 10+ (7)

Q4_Inst Characterist **Institution** - Please select all of the following characteristics that describe your institution.

☐ Public, Four-Year (1)

☐ Public, Two-Year (2)

☐ Private, Four-Year (3)

- ☐ Private, Two-Year (4)
- ☐ For-Profit (5)
- ☐ Asian American and Pacific Islander Serving Institutions (AAPISIs) (6)
- ☐ Hispanic-Serving Institutions (HSIs) (7)
- ☐ Historically Black College or University (HBCUs) (8)
- ☐ Tribal Colleges and Universities (TCUs) (9)
- ☐ Women's College (10)

Label_Institutional **Institutional Factors**

This section includes institutional factors that are associated with generating funding for research based on a comprehensive literature review and the initial modified Delphi panel survey. Please review each survey item and respond to the statement provided. At the end of each section, you will be given the opportunity to suggest additional survey items needed to address the factor.

Label_Recruit **Recruitment and Selection**

Keywords: Recruit and Hire Research Faculty, Recruitment Strategies, Best Talent

Q5a_Recruit-1 **1. Effective recruitment strategies are in place for attracting the best talent in priority areas in my unit.**

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q5b_Recruit-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q5c_Recruit-1 Edit Please provide any suggested edits to the sample survey item.

Q6a_Recruit-2 **2. My unit places an emphasis on hiring faculty with experience conducting research.**

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q6b_Recruit-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q6c_Recruit-2 Edit Please provide any suggested edits to the sample survey item.

Q7_Recruit-3 **3. Please describe any additional survey items needed to address the institutional factor of Recruitment and Selection.**

Label_Goals **Institutional Factor - Clear Coordinating Goals**

Keywords: Shared Research Goals, Vision, Priorities, Direction

Q8a_Goals-1 **1. The priorities of my unit include strategies to facilitate research productivity.**

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q8b_Goals-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q8c_Goals-1 Edit Please provide any suggested edits to the sample survey item.

Q9a_Goals-2 **2. It is clear to me how my unit's vision and goals are or can be related to the college/division's vision and goals.**

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q9b_Goals-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q9c_Goals-2 Edit Please provide any suggested edits to the sample survey item.

Q10a_Goals-3 **3. It is clear to me how my work and goals are or can be related to the unit's vision.**

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q10b_Goals-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q10c_Goals-3 Edit Please provide any suggested edits to the sample survey item.

Q11a_Goals-4 **4. The priorities in my unit (as evidenced by such things as money allocations, new hires, cuts, etc.) match the stated vision.**

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q11b_Goals-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q11c_Goals-4 Edit Please provide any suggested edits to the sample survey item.

Q12_Goals-5 **5. Please describe any additional survey items needed to address the institutional factor of Clear Coordinating Goals.**

Label_Emphasis **Institutional Factor - Research Emphasis**

Keywords: Research Expectations, Priorities, Research Incentives

Q13a_Emph-1 **1. There is a high expectation in my unit for faculty to be productive in research (e.g. produce peer-reviewed articles, develop innovations that can be patented or copyrighted).**

The survey item adequately addresses the institutional factor of Research Emphasis:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q13b_Emph-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q13c_Emph-1 Edit Please provide any suggested edits to the sample survey item.

Q14a_Emph-2 **2. There is a high expectation in my unit for faculty to conduct research that is externally funded.**

The survey item adequately addresses the institutional factor of Research Emphasis:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q14b_Emph-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q14c_Emph-2 Edit Please provide any suggested edits to the sample survey item.

Q15a_Emph-3 3. My unit's financial budget model supports and incentivizes research.

The survey item adequately addresses the institutional factor of Research Emphasis:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q15b_Emph-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q15c_Emph-3 Edit Please provide any suggested edits to the sample survey item.

Q77a_Emph-4 4. My college/division's financial budget model supports and incentivizes research.

The survey item adequately addresses the institutional factor of Research Emphasis:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q77b_Emph-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q77c_Emph-4 Edit Please provide any suggested edits to the sample survey item.

Q16_Emph-5 **5. Please describe any additional survey items needed to address the institutional factor of Research Emphasis.**

Label_Culture **Institutional Factor - Culture**

Keywords: Opportunities, Research Values, Research Practice, Risk Tolerance, Community Engagement

Q17a_Cult-1 **1. I have excellent opportunities at my institution to pursue my interests in research.**

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q17b_Cult-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q17c_Cult-1 Edit Please provide any suggested edits to the sample survey item.

Q18a_Cult-2 2. **A large portion of my unit's faculty can be considered to be productive in research (e.g. produce peer-reviewed articles, develop innovations that can be patented or copyrighted).**

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q18b_Cult-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q18c_Cult-2 Edit Please provide any suggested edits to the sample survey item.

Q19a_Cult-3 **3. A large portion of my unit's faculty can be considered to be significant external grant "getters."**

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q19b_Cult-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q19c_Cult-3 Edit Please provide any suggested edits to the sample survey item.

Q20a_Cult-4 **4. My institution has a tolerance for strategic risks when pursuing research and innovation activities.**

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q20b_Cult-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q20c_Cult-4 Edit Please provide any suggested edits to the sample survey item.

Q21a_Cult-5 5. I have opportunities at my institution to participate in impactful community engagement including activities that foster external research collaborations.

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q21b_Cult-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q21c_Cult-5 Edit Please provide any suggested edits to the sample survey item.

Q22_Cult-6 **6. Please describe any additional survey items needed to address the institutional factor of Culture.**

Label_Clim **Institutional Factor - Positive Group Climate**

Keywords: High morale, Spirit of Innovation, Dedication, Open to New Ideas, Collaboration, Frequent Communication, Low Turnover, Positive Relationships

Q23a_Clim-1 **1. I feel appreciated and valued by my local colleagues (dept/school/univ) for my work in research.**

The survey item adequately addresses the institutional factor of Positive Group Climate:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q23b_Clim-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q23c_Clim-1 Edit Please provide any suggested edits to the sample survey item.

Q24a_Clim-2 2. Collaboration on research projects internally within my institution is encouraged by my unit.

The survey item adequately addresses the institutional factor of Positive Group Climate:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q24b_Clim-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q24c_Clim-2 Edit Please provide any suggested edits to the sample survey item.

Q25a_Clim-3 **3. Collaboration on research projects external to my institution is encouraged by my unit.**

The survey item adequately addresses the institutional factor of Positive Group Climate:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q25b_Clim-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q25c_Clim-3 Edit Please provide any suggested edits to the sample survey item.

Q26_Clim-4 **4. Please describe any additional survey items needed to address the institutional factor of Positive Group Climate.**

Label_Mentoring **Institutional Factor - Mentoring**

Keywords: Formal Advisor, Informal Advisor, Guidance, Research Expectations, Career Goals, Collaboration

Q27a_Ment-1 1. I have been (or when I was a junior faculty member) formally assigned an advisor or mentor within my unit who provided valuable guidance in research.

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q27b_Ment-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q27c_Ment-1 Edit Please provide any suggested edits to the sample survey item.

Q28a_Ment-2 2. I fully understand the research and teaching expectations in the appointment I hold (e.g. tenure track).

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q28b_Ment-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q28c_Ment-2 Edit Please provide any suggested edits to the sample survey item.

Q29a_Ment-3 **3. I have a well-defined plan for achieving my academic and research career goals.**

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q29b_Ment-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q29c_Ment-3 Edit Please provide any suggested edits to the sample survey item.

Q30a_Ment-4 **4. I get constructive feedback, guidance, and suggestions that help my efforts to perform my best from my colleagues.**

The survey item adequately addresses the institutional factor of Mentoring:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q30b_Ment-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q30c_Ment-4 Edit Please provide any suggested edits to the sample survey item.

Q31_Ment-5 **5. Please describe any additional survey items needed to address the institutional factor of Mentoring.**

Label_ProfNet **Institutional Factor - Communication with a Professional Network**

Keywords: Network of Colleagues, Frequent Communication

Q32a_ProfNet-1 **1. I have a well-developed network of colleagues with whom I discuss research projects and education within my unit.**

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q32b_ProfNet-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q32c_ProfNet-1 Edit Please provide any suggested edits to the sample survey item.

Q33a_ProfNet-2 **2. I have a well-developed network of colleagues with whom I discuss research projects and education within units outside of my own at my institution.**

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q33b_ProfNet-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q33c_ProfNet-2 Edit Please provide any suggested edits to the sample survey item.

Q34a_ProfNet-3 **3. I have a well-developed network of colleagues with whom I discuss research projects and education outside my institution.**

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q34b_ProfNet-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q34c_ProfNet-3 Edit Please provide any suggested edits to the sample survey item.

Q35a_ProfNet-4 **4. I regularly have substantive, uninterrupted conversations with colleagues about research.**

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q35b_ProfNet-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q35c_ProfNet-4 Edit Please provide any suggested edits to the sample survey item.

Q36_ProfNet-5 **5. Please describe any additional survey items needed to address the institutional factor of Communication with a Professional Network.**

Label_Resources **Institutional Factor - Resources**

Keywords: Sufficient Internal Funding, Adequate Support Personnel and Processes, Adequate Technical Personnel, Appropriately Equipped Space, Training Opportunities

Q37a_Resr-1 **1. I have access to adequate resources such as support staff and processes to conduct my research projects.**

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q37b_Resr-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q37c_Resr-1 Edit Please provide any suggested edits to the sample survey item.

Q38a_Resr-2 **2. I have access to adequate resources such as research assistants and technical support to conduct my research projects.**

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q38b_Resr-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q38c_Resr-2 Edit Please provide any suggested edits to the sample survey item.

Q39a_Resr-3 **3. I have access to adequate resources such as supplies, computers, library materials, data analyses, etc., to conduct my research projects.**

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q39b_Resr-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q39c_Resr-3 Edit Please provide any suggested edits to the sample survey item.

Q40a_Resr-4 **4. I have adequate support to travel to research-based conferences.**

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q40b_Resr-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q40c_Resr-4 Edit Please provide any suggested edits to the sample survey item.

Q41a_Resr-5 **5. I have adequate space to conduct my research.**

The survey item adequately addresses the institutional factor of Resources:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q41b_Resr-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q41c_Resr-5 Edit Please provide any suggested edits to the sample survey item.

Q79a_Resr-6 **6. My space to conduct research is well equipped.**

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q79b_Resr-6 Logic Please provide a brief explanation of why you disagree with this survey item.

Q79c_Resr-6 Edit Please provide any suggested edits to the sample survey item.

Q42_Resr-7 **7. Please describe any additional survey items needed to address the institutional factor of Resources.**

Label_Work **Institutional Factor - Sufficient Work Time**

Keywords: Time to Devote to Scholarly Activities, Input on Schedule, Release Time for Research

Q43a_Work-1 **1. I have a high degree of input into how I wish to spend my time as a faculty member within each of my faculty roles.**

The survey item adequately addresses the institutional factor of Sufficient Work Time:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q43b_Work-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q43c_Work-1 Edit Please provide any suggested edits to the sample survey item.

Q44a_Work-2 **2. I have adequate hours to devote to scholarly activities to achieve my research goals.**

The survey item adequately addresses the institutional factor of Sufficient Work Time:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q44b_Work-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q44c_Work-2 Edit Please provide any suggested edits to the sample survey item.

Q45a_Work-3 **3. My unit supports me through release time while I conduct research or acquire new research skills.**

The survey item adequately addresses the institutional factor of Sufficient Work Time:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q45b_Work-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q45c_Work-3 Edit Please provide any suggested edits to the sample survey item.

Q46_Work-4 **4. Please describe any additional survey items needed to address the institutional factor of Sufficient Work Time.**

Label_Rewards **Institutional Factor - Rewards**

Keywords: Equitable Rewards, Defined Benchmarks, Monetary Recognition, Non-Monetary Recognition, Flexible Work Environment

Q47a_Rewd-1 **1. My unit has systematic and fair mechanisms for non-monetarily recognizing and celebrating achievements (e.g. putting in unit newsletter, “toasting” at faculty meetings) in research.**

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q47b_Rewd-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q47c_Rewd-1 Edit Please provide any suggested edits to the sample survey item.

Q48a_Rewd-2 **2. When money is available, my unit has systematic and fair mechanisms for monetarily recognizing and rewarding achievements in research.**

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q48b_Rewd-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q48c_Rewd-2 Edit Please provide any suggested edits to the sample survey item.

Q49a_Rewd-3 3. As compared to others at my institution, my compensation (salary and fringe benefits) is fair for the work I do.

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q49b_Rewd-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q49c_Rewd-3 Edit Please provide any suggested edits to the sample survey item.

Q50a_Rewd-4 **4. My institution promotes a positive work/life balance and supportive work environment by offering opportunities for flexible work time and/or remote work.**

The survey item adequately addresses the institutional factor of Rewards:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q50b_Rewd-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q50c_Rewd-4 Edit Please provide any suggested edits to the sample survey item.

Q51_Rewd-5 **5. Please describe any additional survey items needed to address the institutional factor of Rewards.**

Label_T&P **Institutional Factor - Tenure and Promotion Requirements**

Keywords: Tenure Requirements Encourage Research, Research Expectations

Q52a_TP-1 **1. My college's Tenure and Promotion requirements and evaluations are aligned with its mission, values, and goals as it relates to research.**

The survey item adequately addresses the institutional factor of Tenure and Promotion Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q52b_TP-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q52c_TP-1 Edit Please provide any suggested edits to the sample survey item.

Q53a_TP-2 2. My college's Tenure and Promotion requirements and evaluations address societal or economic impact priorities including sponsored research (e.g. contracts, awards, research, services and testing, SBIR/STTR grants).

The survey item adequately addresses the institutional factor of Tenure and Promotion Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q53b_TP-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q53c_TP-2 Edit Please provide any suggested edits to the sample survey item.

Q54a_TP-3 3. My college's Tenure and Promotion requirements and evaluations address societal or economic impact priorities including intellectual property (e.g. invention disclosures, patent applications, patents awarded, copyrights, trademarks).

The survey item adequately addresses the institutional factor of Tenure and Promotion Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q54b_TP-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q54c_TP-3 Edit Please provide any suggested edits to the sample survey item.

Q55_TP-4 4. Please describe any additional survey items needed to address the institutional factor of Tenure and Promotion Requirements.

Label_DEI **Institutional Factor - Diversity, Equity, and Inclusion Initiatives**

Keywords: Culture of Respect for Others, Diverse Personnel, Equality, Inclusive Climate

Q56a_DEI-1 1. Diversity, equity, and inclusion are explicitly addressed in my institution's mission statements or strategic plans.

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q56b_DEI-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q56c_DEI-1 Edit Please provide any suggested edits to the sample survey item.

Q57a_DEI-2 2. Commitments to diversity, equity, and inclusion are supported by actions through financial investments in recruitment, hiring practices, marketing, or program improvement.

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q57b_DEI-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q57c_DEI-2 Edit Please provide any suggested edits to the sample survey item.

Q58a_DEI-3 3. My institution has a culture of inclusivity and respect for others that promotes cultural understanding.

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q58b_DEI-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q58c_DEI-3 Edit Please provide any suggested edits to the sample survey item.

Q59a_DEI-4 4. As a faculty researcher, I believe that my opinions are heard and my research interests and goals are supported by my institution.

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q59b_DEI-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q59c_DEI-4 Edit Please provide any suggested edits to the sample survey item.

Q60a_DEI-5 5. Institution-wide training is provided to faculty and staff to address implicit and explicit bias.

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q60b_DEI-5 Please provide a brief explanation of why you disagree with this survey item.

Q60c_DEI-5 Please provide any suggested edits to the sample survey item.

Q61_DEI-6 **6. Please describe any additional survey items needed to address the institutional factor of Diversity, Equity, and Inclusion Initiatives.**

Label_Leadership **Leadership Factors**

This section includes leadership factors that are associated with generating funding for research based on a comprehensive literature review and the initial modified Delphi panel survey. Please review each survey item and respond to the statement provided. At the end of each section, you will be given the opportunity to suggest additional survey items needed to address the factor.

Label_Transformation **Transformational Leadership**

Keywords: Visionary, Leads Transformative Change, New Ways of Thinking, Inspires Participation

Q62a_Transf-1 **1. My supervisor communicates expectations and goals in a way that inspires participation.**

The survey item adequately addresses the leadership factor of Transformational Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q62b_Transf-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q62c_Transf-1 Edit Please provide any suggested edits to the sample survey item.

Q63a_Transf-2 **2. My supervisor serves coaching and mentoring roles that challenge faculty to new ways of thinking.**

The survey item adequately addresses the leadership factor of Transformational Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q63b_Transf-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q63c_Transf-2 Edit Please provide any suggested edits to the sample survey item.

Q64a_Transf-3 **3. My supervisor leads collaborative goal-setting/visioning for my unit related to research goals.**

The survey item adequately addresses the leadership factor of Transformational Leadership:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q64b_Transf-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q64c_Transf-3 Edit Please provide any suggested edits to the sample survey item.

Q65a_Transf-4 **4. My supervisor influences positive change in the institution's culture and performance.**

The survey item adequately addresses the leadership factor of Transformational Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q65b_Transf-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q65c_Transf-4 Edit Please provide any suggested edits to the sample survey item.

Q66_Transf-5 **5. Please describe any additional survey items needed to address the leadership factor of Transformational Leadership.**

Label_Scholar **Leadership Factor - Scholar**

Keywords: Highly Regarded for Research, Serves as a Mentor

Q67a_Schol-1 **1. My supervisor is a highly regarded Subject Matter Expert for his/her research.**

The survey item adequately addresses the leadership factor of Scholar:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q67b_Schol-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q67c_Schol-1 Edit Please provide any suggested edits to the sample survey item.

Q68a_Schol-2 **2. My supervisor serves as a mentor and peer model for faculty.**

The survey item adequately addresses the leadership factor of Scholar:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q68b_Schol-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q68c_Schol-2 Edit Please provide any suggested edits to the sample survey item.

Q69_Schol-3 **3. Please describe any additional survey items needed to address the leadership factor of Scholar.**

Label_ResOr **Leadership Factor - Research-Oriented**

Keywords: Supportive of Research, Internalized Research Mission

Q70a_ResOr-1 **1. My supervisor is very supportive of my efforts in research.**

The survey item adequately addresses the leadership factor of Research-Oriented:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q70b_ResOr-1 Please provide a brief explanation of why you disagree with this survey item.

Q70c_ResOr-1 Please provide any suggested edits to the sample survey item.

Q71a_ResOr-2 **2. My supervisor has internalized the institution's research-centered mission.**

The survey item adequately addresses the leadership factor of Research-Oriented:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q71b_ResOr-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q71c_ResOr-2 Edit Please provide any suggested edits to the sample survey item.

Q72_ResOr-3 **3. Please describe any additional survey items needed to address the leadership factor of Research-Oriented.**

Label_Inclusive **Leadership Factor - Inclusive Leadership**

Keywords: Respect for Others, Equity, Collaboration, Cultural Diversity, Safe Environment

Q73a_Incl-1 **1. My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging regardless of their social identities.**

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q73b_Incl-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q73c_Incl-1 Edit Please provide any suggested edits to the sample survey item.

Q74a_Incl-2 **2. My supervisor displays inclusive leadership qualities by encouraging open dialogue across lines of differences and assists in leveraging the benefits of cultural diversity.**

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q74b_Incl-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q74c_Incl-2 Edit Please provide any suggested edits to the sample survey item.

Q75a_Incl-3 **3. My supervisor encourages a creative work environment promoting cooperation and collaboration.**

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q75b_Incl-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q75c_Incl-3 Edit Please provide any suggested edits to the sample survey item.

Q78a_Incl-4 **4. My supervisor fosters empowerment and trust through delegating leadership responsibilities.**

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q78b_Inclu-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q78c_Incl-4 Edit Please provide any suggested edits to the sample survey item.

Q76_Incl-5 5. Please describe any additional survey items needed to address the leadership factor of Inclusive Leadership.

Q80-Overall Feedback Please provide any overall survey feedback you would like to share.

End of Block: Default Question Block

APPENDIX D

ROUND TWO SURVEY INSTRUMENT

Round 2 Survey - Institutional and Leadership Factors Associated with Research Funding

Start of Block: Default Question Block

Label_Title **Institutional and Leadership Factors Associated with Generating Funding for Research - Round 2 Survey**

Label_IRB **Human Subjects Consent Form**

The following summarizes the project you are asked to participate in. Please read this information before signing the statement below.

Title of study: Institutional and leadership factors associated with generating funding for research

Purpose of study: The purpose of this study is to create an instrument to identify institutional factors and leadership factors associated with generating funding for research in a research-intensive university.

Subjects of study: Modified Delphi Panel participants will include experts in research administration in higher education in the United States.

Procedures of study: In this research, you will be provided a series of electronically-delivered surveys to assist in the creation of an instrument to identify institutional factors and leadership factors associated with generating funding for research. Initially, a brief survey will be completed to verify a comprehensive set of institutional and leadership factors. Then a minimum of three surveys will be emailed to you addressing specific survey instrument items. Each will include quantitative questions and the opportunity to give open feedback. This data will be used to refine the new instrument to be created. After each round, you will receive an email with notes on the previous survey results and another survey seeking further feedback. At the conclusion of the panel surveys, the instrument will be finalized. The participants' names will remain confidential. Although it may be possible to identify an individual digitally, the researcher will not attempt to do so. The material collected will remain on a password-protected laptop.

Time Expectations: Each round of surveying should take approximately 60 minutes to complete. Please return the survey within one week of receipt.

Benefits/Compensation: The participants will not be compensated in any way during this study, but they may potentially benefit from the outcomes of the study.

Risks, Discomforts, Alternative Treatments: The Modified Delphi Panel will be conducted electronically, so there will be no or very minimal physical risks. There is a potential risk associated with confidentiality and anonymity; however, the researcher will follow the above practices to maintain confidentiality and anonymity to mitigate these risks. The researchers listed below may be reached to answer questions about the research, subjects' rights, or related matters.

Contact Information: Principal Investigator: Courtney Jarrell (cjarrell@latech.edu)
Co-Investigator: Bryan McCoy (bmccoy@latech.edu)

IRB If you agree to participate in this study, you are agreeing to the following: I attest that I have read and understood the description of the study and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the responses to the survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

Do you agree to participate in this study?

☐ Yes (1)

☐ No (2)

Label_Demographics **Demographics**

Q1_Role **Current Role** - Please select all roles that apply to your current position.

☐ Pre-Award Research (1)

☐ Post-Award Research (2)

☐ Financial Research (3)

☐ Research Compliance (4)

☐ Research Contracts/Awards (5)

☐ Professional Development and Training (6)

☐ Commercialization and Technology Transfer (7)

- ☐ Research Development (8)
 - ☐ Director/Manager of Sponsored Research Office (9)
 - ☐ Grants Manager of a specific unit (10)
 - ☐ Research Director of a specific unit (11)
 - ☐ AVP/VP of Research (12)
 - ☐ Other Research Administration Role (please list below) (13)
-

Q2_RA_Exp **Years of Experience in Research Administration** - Please select your cumulative years of experience in roles supporting faculty and staff in identifying, acquiring, or managing externally funded projects across a university or college.

- ☐ 0 (1)
- ☐ 1-2 (2)
- ☐ 3-4 (3)
- ☐ 5-6 (4)
- ☐ 7-8 (5)
- ☐ 9-10 (6)
- ☐ 11-13 (7)
- ☐ 14-16 (8)

☐ 17-19 (9)

☐ 20+ (10)

Q3_PI_Exp Years of Experience as a Principal Investigator - Please select your cumulative years of experience leading an externally funded project as a Principal Investigator or Co-Principal Investigator.

☐ 0 (1)

☐ 1-2 (2)

☐ 3-4 (3)

☐ 5-6 (4)

☐ 7-8 (5)

☐ 9-10 (6)

☐ 10+ (7)

Q4_Inst Characterist **Institution** - Please select all of the following characteristics that describe your institution.

☐ Public, Four-Year (1)

☐ Public, Two-Year (2)

☐ Private, Four-Year (3)

☐ Private, Two-Year (4)

- ☐ For-Profit (5)
- ☐ Asian American and Pacific Islander Serving Institutions (AAPISIs) (6)
- ☐ Hispanic-Serving Institutions (HSIs) (7)
- ☐ Historically Black College or University (HBCUs) (8)
- ☐ Tribal Colleges and Universities (TCUs) (9)
- ☐ Women's College (10)

Label_Definitions **Survey Definitions**

The following definitions have been provided to assist with completing this survey:

Unit - the individual's department, center, or division to which they report

Institution - the research-intensive university that employs the faculty member

Vision - what the institution or unit wants to accomplish

Goals - the specific objectives outlined to accomplish the vision

Research - obtaining new knowledge in a subject area with a specific emphasis on externally funded research

Scholarly Activity - maintaining knowledge in a particular field with a specific emphasis on publications and non-funded research

Culture - how people act at the institution or within the unit

Climate - how people feel about the institution or unit

Q91_Definitions Please include any feedback you may have on the Definitions including revisions or additional definitions to include.

Label_Institutional **Institutional Factors**

This section includes institutional factors that are associated with generating funding for research based on a comprehensive literature review and the initial modified Delphi panel survey. Please review each survey item and respond to the statement provided.

NOTE: Please do not respond to survey items as a faculty would for your institution, but rather respond as to whether the survey item is relevant to the factor.

Round 1 results have been provided for each survey item which describes whether it was validated based on Lawshe's Content Validity Ratio (CVR), the CVR score if the item was not validated (a minimum of 0.78 is required to be included in the final survey instrument), and whether the survey item was revised. Any survey items that met the minimum CVR score and were not revised do not need to be addressed in this Round 2 survey, so the Likert scale variables have been removed.

Label_Recruit **Recruitment and Selection**

Keywords: Recruit and Hire Research Faculty, Recruitment Strategies, Best Talent

Q5a_Recruit-1 **1. Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q5b_Recruit-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q5c_Recruit-1 Edit Please provide any suggested edits to the sample survey item.

Q6a_Recruit-2 **2. My unit places an emphasis on hiring tenure-track faculty with experience conducting research.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q6b_Recruit-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q6c_Recruit-2 Edit Please provide any suggested edits to the sample survey item.

Q83a_Recruit-3 **3. My institution hires faculty in strategic clusters in research priority areas to promote interdisciplinary research.** *(NEW Survey Item)*

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q83b_Recruit-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q83c_Recruit-3 Edit Please provide any suggested edits to the sample survey item.

Q84a_Recruit-4 **4. My institution recruits faculty from minoritized populations to increase diversity in research perspectives.** (*NEW Survey Item*)

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q84b_Recruit-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q84c_Recruit-4 Edit Please provide any suggested edits to the sample survey item.

Q86a_Recruit-5 **5. My institution provides hiring incentives such as start-up funding.**
(NEW Survey Item)

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q86b_Recruit-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q86c_Recruit-5 Edit Please provide any suggested edits to the sample survey item.

Label_Goals **Institutional Factor - Clear Coordinating Goals**

Keywords: Shared Research Goals, Vision, Priorities, Direction

Q9a_Goals-1 **1. It is clear to me how my unit's vision and goals are related to the institution's vision and goals.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q9b_Goals-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q9c_Goals-1 Edit Please provide any suggested edits to the sample survey item.

Q11a_Goals-2 **2. The priorities in my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) match the unit's stated vision.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q11b_Goals-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q11c_Goals-2 Edit Please provide any suggested edits to the sample survey item.

Q8a_Goals-3 **3. The priorities of my unit (as evidenced by such things as money allocations, new hires, budget cuts, etc.) include strategies to encourage research productivity.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q8b_Goals-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q8c_Goals-3 Edit Please provide any suggested edits to the sample survey item.

Q10a_Goals-4 **4. It is clear to me how my individual goals are related to the unit's vision and goals.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Clear Coordinating Goals:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q10b_Goals-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q10c_Goals-4 Edit Please provide any suggested edits to the sample survey item.

Label_Emphasis **Institutional Factor - Research Emphasis**

Keywords: Research Expectations, Priorities, Research Incentives

Q13a_Emph-1 **1. There is a high expectation in my unit for faculty** to be productive in scholarly activity (**e.g. producing peer-reviewed articles**). (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Research Emphasis:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q13b_Emph-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q13c_Emph-1 Edit Please provide any suggested edits to the sample survey item.

Q14a_Emph-2 **2. There is a high expectation in my unit for faculty** to conduct research that is externally funded. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Research Emphasis:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q14b_Emph-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q14c_Emph-2 Edit Please provide any suggested edits to the sample survey item.

Q15a_Emph-3 **3. My unit's financial budget supports and incentivizes research through ways such as bridge funding, seed funding, or buy-out of courses.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Research Emphasis:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q15b_Emph-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q15c_Emph-3 Edit Please provide any suggested edits to the sample survey item.

Label_Culture **Institutional Factor - Culture**

Keywords: Opportunities, Research Values, Research Practice, Risk Tolerance, Community Engagement

Q17a_Cult-1 **1. At my institution, I am supported in pursuing my interests in externally funded research.** (*Round 1 Results: Survey item not validated (CVR - 0.58), revised*)

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q17b_Cult-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q17c_Cult-1 Edit Please provide any suggested edits to the sample survey item.

Q18a_Cult-2 **2. A high percentage of my unit's faculty are productive in scholarly activity (e.g. producing peer-reviewed articles).** (*Round 1 Results: Survey item not validated (CVR - 0.67), revised*)

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q18b_Cult-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q18c_Cult-2 Edit Please provide any suggested edits to the sample survey item.

Q81a_Cult-3 3. A high percentage of my unit's faculty apply for external research funding on a regular basis. (NEW Survey Item)

The survey item adequately addresses the institutional factor of Culture:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q81b_Cult-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q81c_Cult-3 Edit Please provide any suggested edits to the sample survey item.

Q19a_Cult-4 **4. A high percentage of my unit's faculty receive external research funding on a regular basis.** *(Round 1 Results: Survey item not validated (CVR - 0.67), revised)*

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q19b_Cult-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q19c_Cult-4 Edit Please provide any suggested edits to the sample survey item.

Q20a_Cult-5 **5. My institution has a tolerance for strategic risks when pursuing research and innovation activities.** *(Round 1 Results: Survey item not validated (CVR - 0.67), revised)*

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q20b_Cult-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q20c_Cult-5 Edit Please provide any suggested edits to the sample survey item.

Q21a_Cult-6 **6. I have opportunities at my institution to participate in impactful external engagements including activities that foster external research collaborations.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q21b_Cult-6 Logic Please provide a brief explanation of why you disagree with this survey item.

Q21c_Cult-6 Edit Please provide any suggested edits to the sample survey item.

Label_Clim **Institutional Factor - Positive Group Climate**

Keywords: High morale, Spirit of Innovation, Dedication, Open to New Ideas, Collaboration, Frequent Communication, Positive Relationships

Q23a_Clim-1 **1. I feel appreciated and valued by my colleagues in my unit for my work in research.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Positive Group Climate:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q23b_Clim-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q23c_Clim-1 Edit Please provide any suggested edits to the sample survey item.

Q82a_Clim-2 **2. I feel appreciated and valued by my colleagues at my institution for my work in research.** (*NEW Survey Item*)

The survey item adequately addresses the institutional factor of Positive Group Climate:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q82b_Clim-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q82c_Clim-2 Edit Please provide any suggested edits to the sample survey item.

Q24a_Clim-3 3. I feel comfortable collaborating with colleagues internal to my institution on research projects. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Positive Group Climate:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q24b_Clim-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q24c_Clim-3 Edit Please provide any suggested edits to the sample survey item.

Q25a_Clim-4 4. I feel comfortable collaborating with colleagues external to my institution on research projects. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Positive Group Climate:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q25b_Clim-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q25c_Clim-4 Edit Please provide any suggested edits to the sample survey item.

Q59a_Clim-5 **5. As a faculty researcher, I believe that my opinions are heard and my research interests are supported by my institution.** (*Round 1 Results: Survey item not validated (CVR - 0.74), revised*)

The survey item adequately addresses the institutional factor of Positive Group Climate:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q59b_Clim-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q59c_Clim-5 Edit Please provide any suggested edits to the sample survey item.

Label_Mentoring **Institutional Factor - Mentoring**

Keywords: Formal Advisor, Informal Advisor, Guidance, Research Expectations, Career Goals, Collaboration

Q27a_Ment-1 **1. At one time, I was formally assigned an advisor or mentor within my unit.** *(Round 1 Results: Survey item not validated (CVR - 0.50), revised)*

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q27b_Ment-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q27c_Ment-1 Edit Please provide any suggested edits to the sample survey item.

Q28a_Ment-2 **2. I had a formal or informal mentor who helped me to understand the research expectations in the appointment I hold.** (*Round 1 Results: Survey item not validated (CVR - 0.75), revised*)

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q28b_Ment-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q28c_Ment-2 Edit Please provide any suggested edits to the sample survey item.

Q29a_Ment-3 **3. I had a formal or informal mentor who helped me develop a well-defined plan for achieving my academic and research career goals.** (*Round 1 Results: Survey item not validated (CVR - 0.75), revised*)

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q29b_Ment-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q29c_Ment-3 Edit Please provide any suggested edits to the sample survey item.

Q30a_Ment-4 **4. I have colleagues or leaders that provide helpful feedback and guidance that assist my efforts to perform my best.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q30b_Ment-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q30c_Ment-4 Edit Please provide any suggested edits to the sample survey item.

Q87a_Ment-5 **5. I have at least one other colleague within my unit whose research interests match or complement my own.** (*NEW Survey Item*)

The survey item adequately addresses the institutional factor of Mentoring:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q87b_Ment-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q87c_Ment-5 Edit Please provide any suggested edits to the sample survey item.

Label_ProfNet **Institutional Factor - Communication with a Professional Network**

Keywords: Network of Colleagues, Frequent Communication

Q32a_ProfNet-1 1. I have a well-developed network of colleagues within my unit with whom I discuss research. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q32b_ProfNet-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q32c_ProfNet-1 Edit Please provide any suggested edits to the sample survey item.

Q33a_ProfNet-2 2. I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q33b_ProfNet-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q33c_ProfNet-2 Edit Please provide any suggested edits to the sample survey item.

Q34a_ProfNet-3 **3. I have a well-developed network of colleagues outside my institution with whom I discuss research.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q34b_ProfNet-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q34c_ProfNet-3 Edit Please provide any suggested edits to the sample survey item.

Q35a_ProfNet-4 **4. I regularly have substantive conversations with colleagues about research.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q35b_ProfNet-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q35c_ProfNet-4 Edit Please provide any suggested edits to the sample survey item.

Q88a_ProfNet-6 **6. My institution promotes activities that foster networking across the institution (e.g. events that spotlight research activity).** *(NEW Survey Item)*

The survey item adequately addresses the institutional factor of Communication with a Professional Network:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q88b_ProfNet-6 Logic Please provide a brief explanation of why you disagree with this survey item.

Q88c_ProfNet-6 Edit Please provide any suggested edits to the sample survey item.

Label_Resources **Institutional Factor - Resources**

Keywords: Sufficient Internal Funding, Adequate Support Personnel and Processes, Adequate Technical Personnel, Appropriately Equipped Space, Training Opportunities

Q85a_Resr-1 **1. I have access to adequate resources such as equipment to conduct my research.** *(NEW Survey Item)*

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q85b_Resr-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q85c_Resr1 Edit Please provide any suggested edits to the sample survey item.

Q38a_Resr-2 **2. I have access to adequate resources such as technical support to conduct my research.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q38b_Resr-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q38c_Resr-2 Edit Please provide any suggested edits to the sample survey item.

Q41a_Resr-3 **3. I have adequate space to conduct my research.** (*Round 1 Results: Survey item validated, no response needed*)

Q37a_Resr-4 **4. I have access to adequate resources such as support staff to conduct my research.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Resources:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q37b_Resr-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q37c_Resr-4 Edit Please provide any suggested edits to the sample survey item.

Q39a_Resr-5 **5. I have access to adequate resources such as supplies, computers, library materials, data analyses, etc., to conduct my research projects.** (*Round 1 Results: Survey item validated, no response needed*)

Q40a_Resr-6 **6. I have access to adequate resources to travel to research-based conferences to attend or present research results.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q40b_Resr-6 Logic Please provide a brief explanation of why you disagree with this survey item.

Q40c_Resr-6 Edit Please provide any suggested edits to the sample survey item.

Q89a_Resr-7 **7. I have access to adequate support through internal grant programs to conduct preliminary research (e.g. pilot data).** *(NEW Survey Item)*

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q89b_Resr-7 Logic Please provide a brief explanation of why you disagree with this survey item.

Q89c_Resr-7 Edit Please provide any suggested edits to the sample survey item.

Label_Work **Institutional Factor - Sufficient Work Time**

Keywords: Time to Devote to Scholarly Activities, Input on Schedule, Release Time for Research

Q43a_Work-1 **1. I have a high degree of input into how I wish to spend my time at work.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Sufficient Work Time:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q43b_Work-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q43c_Work-1 Edit Please provide any suggested edits to the sample survey item.

Q44a_Work-2 **2. I have adequate time to devote to my research goals.** (*Round 1 Results: Survey item not validated (CVR - 0.75), revised*)

The survey item adequately addresses the institutional factor of Sufficient Work Time:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q44b_Work-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q44c_Work-2 Edit Please provide any suggested edits to the sample survey item.

Q45a_Work-3 **3. I am able to negotiate my workload distribution to conduct externally funded research.** (*Round 1 Results: Survey item not validated (CVR - 0.65), revised*)

The survey item adequately addresses the institutional factor of Sufficient Work Time:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q45b_Work-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q45c_Work-3 Edit Please provide any suggested edits to the sample survey item.

Label_Rewards **Institutional Factor - Rewards**

Keywords: Equitable Rewards, Defined Benchmarks, Monetary Recognition, Non-Monetary Recognition, Flexible Work Environment

Q47a_Rewd-1 **1. My unit has systematic mechanisms for non-monetarily recognizing and celebrating achievements in research (e.g. featuring in unit's newsletter, "toasting" at faculty meetings).** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q47b_Rewd-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q47c_Rewd-1 Edit Please provide any suggested edits to the sample survey item.

Q48a_Rewd-2 **2. My unit has systematic mechanisms for monetarily recognizing and rewarding achievements in research (e.g. cash awards, funds for travel or supplies).** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q48b_Rewd-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q48c_Rewd-2 Edit Please provide any suggested edits to the sample survey item.

Q49a_Rewd-3 **3. As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.** (*Round 1 Results: Survey item not validated (CVR - 0.50), revised*)

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q49b_Rewd-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q49c_Rewd-3 Edit Please provide any suggested edits to the sample survey item.

Q50a_Rewd-4 **4. My institution promotes a positive work/life balance and supportive work environment (e.g. offers opportunities for flexible work time or remote work).**
(Round 1 Results: Survey item not validated (CVR - 0.67), revised)

The survey item adequately addresses the institutional factor of Rewards:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q50b_Rewd-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q50c_Rewd-4 Edit Please provide any suggested edits to the sample survey item.

Label_T&P **Institutional Factor - Promotion and Tenure Requirements**

Keywords: Tenure Requirements Encourage Research, Research Expectations

Q52a_TP-1 **1. My unit's Promotion and Tenure requirements and evaluations are aligned with its values and goals as it relates to research.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Promotion and Tenure Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q52b_TP-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q52c_TP-1 Edit Please provide any suggested edits to the sample survey item.

Q53a_TP-2 2. My unit's Promotion and Tenure requirements and evaluations address sponsored research activities (e.g. grants, contracts, awards, services and testing). *(Round 1 Results: Survey item not validated (CVR - 0.75), revised)*

The survey item adequately addresses the institutional factor of Promotion and Tenure Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q53b_TP-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q53c_TP-2 Edit Please provide any suggested edits to the sample survey item.

Q54a_TP-3 3. My unit's Promotion and Tenure requirements and evaluations address intellectual property (e.g. invention disclosures, patent applications, patents awarded, copyrights, trademarks). *(Round 1 Results: Survey item not validated (CVR - 0.50), revised)*

The survey item adequately addresses the institutional factor of Promotion and Tenure Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q54b_TP-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q54c_TP-3 Edit Please provide any suggested edits to the sample survey item.

Label_DEI **Institutional Factor - Diversity, Equity, and Inclusion Initiatives**

Keywords: Culture of Respect for Others, Diverse Personnel, Equality, Inclusive Climate

Q56a_DEI-1 **1. Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are addressed in my institution's mission statements or strategic plans.** *(Round 1 Results: Survey item not validated (CVR - 0.65), revised)*

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q56b_DEI-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q56c_DEI-1 Edit Please provide any suggested edits to the sample survey item.

Q58a_DEI-2 2. My institution has a culture of inclusivity and respect for others that promotes diverse perspectives in research. *(Round 1 Results: Survey item not validated (CVR - 0.74), revised)*

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q58b_DEI-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q58c_DEI-2 Edit Please provide any suggested edits to the sample survey item.

Q57a_DEI-3 3. Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q57b_DEI-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q57c_DEI-3 Edit Please provide any suggested edits to the sample survey item.

Q60a_DEI-4 **4. Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers include institution-wide training for faculty and staff to address implicit and explicit bias.** (*Round 1 Results: Survey item not validated (CVR - 0.30), revised*)

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q60b_DEI-4 Please provide a brief explanation of why you disagree with this survey item.

Q60c_DEI-4 Please provide any suggested edits to the sample survey item.

Label_Leadership **Leadership Factors**

This section includes leadership factors that are associated with generating funding for research based on a comprehensive literature review and the initial modified Delphi panel survey. Please review each survey item and respond to the statement provided.

NOTE: Please do not respond to survey items as a faculty would for your institution, but rather respond as to whether the survey item is relevant to the factor.

Round 1 results have been provided for each survey item which describes whether it was validated based on Lawshe's Content Validity Ratio (CVR), the CVR score if the item was not validated (a minimum of 0.78 is required to be included in the final survey instrument), and whether the survey item was revised. Any survey items that met the minimum CVR score and were not revised do not need to be addressed in this Round 2 survey, so the Likert scale variables have been removed.

Label_Transformation **Transformational Leadership**

Keywords: Visionary, Leads Transformative Change, New Ways of Thinking, Inspires Participation

Q62a_Transf-1 **1. My supervisor communicates expectations and goals in a way that inspires me to participate in research.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the leadership factor of Transformational Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q62b_Transf-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q62c_Transf-1 Edit Please provide any suggested edits to the sample survey item.

Q63a_Transf-2 **2. My supervisor serves coaching and mentoring roles that challenge me to new ways of thinking.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the leadership factor of Transformational Leadership:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q63b_Transf-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q63c_Transf-2 Edit Please provide any suggested edits to the sample survey item.

Q64a_Transf-3 **3. My supervisor leads collaborative goal-setting/visioning for my unit related to research goals.** *(Round 1 Results: Survey item validated, no response needed)*

Q65a_Transf-4 **4. My supervisor influences positive change in the institution's culture of research expectations.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the leadership factor of Transformational Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q65b_Transf-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q65c_Transf-4 Edit Please provide any suggested edits to the sample survey item.

Label_Scholar **Leadership Factor - Scholar**

Keywords: Highly Regarded for Research, Serves as a Mentor

Q67a_Schol-1 **1. My supervisor is a highly regarded Subject Matter Expert for their research.** *(Round 1 Results: Survey item not validated (CVR - 0.75), revised)*

The survey item adequately addresses the leadership factor of Scholar:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q67b_Schol-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q67c_Schol-1 Edit Please provide any suggested edits to the sample survey item.

Q68a_Schol-2 **2. My supervisor serves as a mentor and peer model for faculty.**
(Round 1 Results: Survey item validated, no response needed)

Label_ResOr **Leadership Factor - Research-Oriented**

Keywords: Supportive of Research, Internalized Research Mission

Q70a_ResOr-1 **1. My supervisor is very supportive of my efforts in research.** *(Round 1 Results: Survey item validated, no response needed)*

Q71a_ResOr-2 **2. My supervisor demonstrates support for the institution's research-centered mission.** *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the leadership factor of Research-Oriented:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q71b_ResOr-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q71c_ResOr-2 Edit Please provide any suggested edits to the sample survey item.

Q90a_ResOr-3 **3. My supervisor encourages taking the time to write proposals for externally funded research.** (*NEW Survey Item*)

The survey item adequately addresses the leadership factor of Research-Oriented:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q90b_ResOr-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q90c_ResOr-3 Edit Please provide any suggested edits to the sample survey item.

Label_Inclusive **Leadership Factor - Inclusive Leadership**

Keywords: Respect for Others, Equity, Collaboration, Cultural Diversity, Safe Environment

Q73a_Incl-1 **1. My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty feel valued, are treated respectfully and fairly, and have a sense of belonging which supports diverse research perspectives.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the leadership factor of Inclusive Leadership:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q73b_Incl-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q73c_Incl-1 Edit Please provide any suggested edits to the sample survey item.

Q74a_Incl-2 **2. My supervisor displays inclusive leadership qualities by encouraging open dialogue across lines of differences and assists in leveraging the benefits of cultural diversity which supports diverse research perspectives.** (*Round 1 Results: Survey item validated but revised*)

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q74b_Incl-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q74c_Incl-2 Edit Please provide any suggested edits to the sample survey item.

Q75a_Incl-3 3. My supervisor encourages a creative work environment promoting cooperation and collaboration in research endeavors. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q75b_Incl-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q75c_Incl-3 Edit Please provide any suggested edits to the sample survey item.

Q78a_Incl-4 4. My supervisor fosters empowerment and trust through creating opportunities for growing leadership experience including leadership in externally funded research projects. *(Round 1 Results: Survey item validated but revised)*

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q78b_Inclu-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q78c_Incl-4 Edit Please provide any suggested edits to the sample survey item.

Q80-Overall Feedback Please provide any overall survey feedback you would like to share.

End of Block: Default Question Block

APPENDIX E

ROUND THREE SURVEY INSTRUMENT

Round 3 Survey - Institutional and Leadership Factors Associated with Research Funding

Start of Block: Default Question Block

Label_Title **Institutional and Leadership Factors Associated with Generating Funding for Research - Round 3 Survey**

Label_IRB **Human Subjects Consent Form**

The following summarizes the project you are asked to participate in. Please read this information before signing the statement below.

Title of study: Institutional and leadership factors associated with generating funding for research

Purpose of study: The purpose of this study is to create an instrument to identify institutional factors and leadership factors associated with generating funding for research in a research-intensive university.

Subjects of study: Modified Delphi Panel participants will include experts in research administration in higher education in the United States.

Procedures of study: In this research, you will be provided a series of electronically-delivered surveys to assist in the creation of an instrument to evaluate institutional factors and leadership factors associated with generating funding for research. Initially, a brief survey will be completed to verify a comprehensive set of institutional and leadership factors. Then a minimum of three surveys will be emailed to you addressing specific survey items. Each will include quantitative questions and the opportunity to give open feedback. This data will be used to refine the new instrument to be created. After each round, you will receive an email with notes on the previous survey results and another survey seeking further feedback. At the conclusion of the panel surveys, the instrument will be finalized. The participants' names will remain confidential. Although it may be possible to identify an individual digitally, the researcher will not attempt to do so. The material collected will remain on a password-protected laptop.

Time Expectations: Each round of surveying should take approximately 60 minutes to complete. Please return the survey within one week of receipt.

Benefits/Compensation: The participants will not be compensated in any way during this study, but they may potentially benefit from the outcomes of the study.

Risks, Discomforts, Alternative Treatments: The Modified Delphi Panel will be conducted electronically, so there will be no or very minimal physical risks. There is a potential risk associated with confidentiality and anonymity; however, the researcher will follow the above practices to maintain confidentiality and anonymity to mitigate these risks. The researchers listed below may be reached to answer questions about the research, subjects' rights, or related matters.

Contact Information: Principal Investigator: Courtney Jarrell (cjarrell@latech.edu)
Co-Investigator: Bryan McCoy (bmccoy@latech.edu)

IRB If you agree to participate in this study, you are agreeing to the following: I attest that I have read and understood the description of the study and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the responses to the survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

Do you agree to participate in this study?

☐ Yes (1)

☐ No (2)

Label_Demographics **Demographics**

Q1_Role **Current Role** - Please select all roles that apply to your current position.

- ☐ Pre-Award Research (1)
- ☐ Post-Award Research (2)
- ☐ Financial Research (3)
- ☐ Research Compliance (4)
- ☐ Research Contracts/Awards (5)
- ☐ Professional Development and Training (6)
- ☐ Commercialization and Technology Transfer (7)

- ☐ Research Development (8)
 - ☐ Director/Manager of Sponsored Research Office (9)
 - ☐ Grants Manager of a specific unit (10)
 - ☐ Research Director of a specific unit (11)
 - ☐ AVP/VP of Research (12)
 - ☐ Other Research Administration Role (please list below) (13)
-

Q2_RA_Exp **Years of Experience in Research Administration** - Please select your cumulative years of experience in roles supporting faculty and staff in identifying, acquiring, or managing externally funded projects across a university or college.

- ☐ 0 (1)
- ☐ 1-2 (2)
- ☐ 3-4 (3)
- ☐ 5-6 (4)
- ☐ 7-8 (5)
- ☐ 9-10 (6)
- ☐ 11-13 (7)
- ☐ 14-16 (8)

☐ 17-19 (9)

☐ 20+ (10)

Q3_PI_Exp Years of Experience as a Principal Investigator - Please select your cumulative years of experience leading an externally funded project as a Principal Investigator or Co-Principal Investigator.

☐ 0 (1)

☐ 1-2 (2)

☐ 3-4 (3)

☐ 5-6 (4)

☐ 7-8 (5)

☐ 9-10 (6)

☐ 10+ (7)

Q4_Inst Characterist **Institution** - Please select all of the following characteristics that describe your institution.

☐ Public, Four-Year (1)

☐ Public, Two-Year (2)

☐ Private, Four-Year (3)

☐ Private, Two-Year (4)

- ☐ For-Profit (5)
- ☐ Asian American and Pacific Islander Serving Institutions (AAPISIs) (6)
- ☐ Hispanic-Serving Institutions (HSIs) (7)
- ☐ Historically Black College or University (HBCUs) (8)
- ☐ Tribal Colleges and Universities (TCUs) (9)
- ☐ Women's College (10)

Label_Definitions **Survey Definitions**

The following definitions have been provided to assist with completing this survey:

Unit - the individual's department, center, or division to which they report

Institution - the research-intensive university that employs the individual

Vision - what the institution or unit wants to accomplish

Goals - the specific objectives outlined to accomplish the vision

Culture - the shared values, belief systems, attitudes, and set of assumptions that people in a workplace share

Climate - the perception of the workplace environment; how people feel about the institution or unit

Externally Funded Research - obtaining new knowledge in a subject area that is funded by external agencies (e.g., grants, awards, contracts)

Internally Funded Research - obtaining new knowledge or maintaining knowledge in a subject area that is funded by the institution (e.g., producing peer-reviewed articles, seed funding, pilot studies, books, pieces of art)

Research Productivity – output measures such as published articles, conference presentations, books, grants, awards, patents, and artistic accomplishments

Strategic Research Cluster - an informal group of researchers focusing on an interdisciplinary research area of excellence for the institution to solve key societal problems; the goal of a cluster is to prioritize resources and facilitate collaboration

Q91_Definitions Please include any feedback you may have on the Definitions including revisions or additional definitions to include.

Label_Institutional **Institutional Factors**

This section includes institutional factors that are associated with generating funding for research based on a comprehensive literature review and the initial modified Delphi panel survey. Please review each survey item and respond to the statement provided.

NOTE: Please do not respond to survey items as a faculty or research administrator would for your institution, but rather respond as to whether the survey item is relevant to the factor.

A response in the range of “Agree” equates to your support of the survey item being included in the final instrument. A response in the range of “Disagree” or “Neither” equates to you not supporting the survey item being included in the final instrument.

Round 2 results have been provided for each survey item which describes whether it was validated based on Lawshe’s Content Validity Ratio (CVR), the CVR score if the item was not validated (a minimum of 0.78 is required to be included in the final survey instrument), and whether the survey item was revised. Any survey items that met the minimum CVR score and were not revised do not need to be addressed in this Round 2 survey, so the Likert scale variables have been removed. Some factors have had all survey items validated and will not need a response.

Label_Recruit **Recruitment and Selection**

Keywords: Recruit and Hire Research Faculty, Recruitment Strategies, Best Talent

Q5a_Recruit-1 **1. Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.** (*Round 2 Results: Survey item validated, no response needed*)

Q6a_Recruit-2 **2. My unit places an emphasis on hiring tenure-track faculty with experience conducting research.** (*Round 2 Results: Survey item validated, no response needed*)

Q83a_Recruit-3 **3. My institution hires faculty in strategic research clusters related to priority areas in order to promote interdisciplinary research.** (*Round 2 Results: Survey item not validated (CVR - 0.70), revised*)

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q83b_Recruit-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q83c_Recruit-3 Edit Please provide any suggested edits to the sample survey item.

Q84a_Recruit-4 **4. My institution places an emphasis on hiring faculty from minority populations to increase diversity in research perspectives.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Recruitment and Selection:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q84b_Recruit-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q84c_Recruit-4 Edit Please provide any suggested edits to the sample survey item.

Q86a_Recruit-5 **5. My institution provides hiring incentives such as start-up funding, lab space, access to facilities, or other incentives.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Recruitment and Selection:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q86b_Recruit-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q86c_Recruit-5 Edit Please provide any suggested edits to the sample survey item.

Label_Goals **Institutional Factor - Clear Coordinating Goals**

Keywords: Shared Research Goals, Vision, Priorities, Direction

Q9a_Goals-1 **1. It is clear to me how my unit's vision and goals are related to the institution's vision and goals.** (*Round 2 Results: Survey item validated, no response needed*)

Q11a_Goals-2 **2. The priorities in my unit (as evidenced by such things as money allocations, new hires, etc.) match the unit's stated vision and goals.** (*Round 2 Results: Survey item validated, no response needed*)

Q8a_Goals-3 **3. The priorities of my unit (as evidenced by such things as money allocations, new hires, etc.) include strategies to encourage research productivity.** (*Round 2 Results: Survey item validated, no response needed*)

Q10a_Goals-4 **4. It is clear to me how my individual goals are related to the unit's vision and goals.** (*Round 2 Results: Survey item validated, no response needed*)

Label_Emphasis **Institutional Factor - Research Emphasis**

Keywords: Research Expectations, Priorities, Research Incentives

Q13a_Emph-1 **1. There is a high expectation in my unit for tenure-track faculty to be productive in internally funded research (e.g., producing peer-reviewed articles, books, pieces of art).** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Research Emphasis:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q13b_Emph-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q13c_Emph-1 Edit Please provide any suggested edits to the sample survey item.

Q14a_Emph-2 **2. There is a high expectation in my unit for tenure-track faculty** to conduct research that is externally funded (e.g., grants, awards, contracts). (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Research Emphasis:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q14b_Emph-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q14c_Emph-2 Edit Please provide any suggested edits to the sample survey item.

Q15a_Emph-3 **3. My unit supports and incentivizes research through internal funding such as bridge funding, seed funding, institutionally funded research salary, or buyout of courses.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Research Emphasis:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q15b_Emph-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q15c_Emph-3 Edit Please provide any suggested edits to the sample survey item.

Label_Culture **Institutional Factor - Culture**

Keywords: Opportunities, Research Values, Research Practice, Risk Tolerance, Community Engagement

Q17a_Cult-1 1. My institution supports my interest to pursue externally funded research. (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q17b_Cult-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q17c_Cult-1 Edit Please provide any suggested edits to the sample survey item.

Q18a_Cult-2 2. A high percentage of my unit's faculty are productive in internally funded research (e.g., producing peer-reviewed articles, books, pieces of art). (*Round 2 Results: Survey item not validated (CVR - 0.70), revised*)

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)

- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q18b_Cult-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q18c_Cult-2 Edit Please provide any suggested edits to the sample survey item.

Q81a_Cult-3 **3. A high percentage of my unit's active research faculty apply for external research funding on a regular basis.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q81b_Cult-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q81c_Cult-3 Edit Please provide any suggested edits to the sample survey item.

Q19a_Cult-4 **4. A high percentage of my unit's active research faculty receive external research funding each year.** (*Round 2 Results: Survey item not validated (CVR - 0.70), revised*)

The survey item adequately addresses the institutional factor of Culture:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q19b_Cult-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q19c_Cult-4 Edit Please provide any suggested edits to the sample survey item.

Q20a_Cult-5 **5. My institution has a tolerance for strategic risks when pursuing research activities (e.g., resource allocation risk).** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Culture:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q20b_Cult-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q20c_Cult-5 Edit Please provide any suggested edits to the sample survey item.

Q21a_Cult-6 **6. I have opportunities at my institution to participate in impactful external engagements including activities that foster external research collaborations.** (*Round 2 Results: Survey item validated, no response needed*)

Label_Clim **Institutional Factor - Positive Group Climate**

Keywords: High Morale, Spirit of Innovation, Dedication, Open to New Ideas, Collaboration, Frequent Communication, Positive Relationships

Q23a_Clim-1 **1. I feel appreciated and valued by my colleagues in my unit for my work in research.** (*Round 2 Results: Survey item not validated (CVR - 0.60), revised*)

The survey item adequately addresses the institutional factor of Positive Group Climate:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q23b_Clim-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q23c_Clim-1 Edit Please provide any suggested edits to the sample survey item.

Q82a_Clim-2 **2. I feel appreciated and valued by my colleagues in other units at my institution for my work in research.** (*Round 2 Results: Survey item not validated (CVR - 0.60), revised*)

The survey item adequately addresses the institutional factor of Positive Group Climate:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q82b_Clim-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q82c_Clim-2 Edit Please provide any suggested edits to the sample survey item.

Q24a_Clim-3 **3. I feel comfortable collaborating with colleagues internal to my institution on research projects.** (*Round 2 Results: Survey item validated, no response needed*)

Q25a_Clim-4 **4. I feel comfortable collaborating with colleagues external to my institution on research projects.** (*Round 2 Results: Survey item not validated (CVR - 0.60), revised*)

The survey item adequately addresses the institutional factor of Positive Group Climate:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q25b_Clim-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q25c_Clim-4 Edit Please provide any suggested edits to the sample survey item.

Q59a_Clim-5 **5. As a faculty researcher, I believe that my research interests are supported by my institution.** (Round 2 Results: Survey item validated but revised)

The survey item adequately addresses the institutional factor of Positive Group Climate:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q59b_Clim-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q59c_Clim-5 Edit Please provide any suggested edits to the sample survey item.

Label_Mentoring **Institutional Factor - Mentoring**

Keywords: Formal Advisor, Informal Advisor, Guidance, Research Expectations, Career Goals, Collaboration

Q27a_Ment-1 **1. I have been formally assigned an advisor or mentor within my unit.**
(Round 2 Results: Survey item validated but revised)

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q27b_Ment-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q27c_Ment-1 Edit Please provide any suggested edits to the sample survey item.

Q28a_Ment-2 **2. I had a formal or informal mentor at my institution who helped me to understand the research expectations in the appointment I hold.** *(Round 2 Results: Survey item not validated (CVR - 0.70), revised)*

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q28b_Ment-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q28c_Ment-2 Edit Please provide any suggested edits to the sample survey item.

Q29a_Ment-3 **3. I had a formal or informal mentor at my institution who helped me develop a well-defined plan for achieving my research career goals.** (*Round 2 Results: Survey item not validated (CVR - 0.70), revised*)

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q29b_Ment-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q29c_Ment-3 Edit Please provide any suggested edits to the sample survey item.

Q30a_Ment-4 **4. I have colleagues or leaders at my institution that provide helpful feedback and guidance that assist my efforts to perform my best.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Mentoring:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q30b_Ment-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q30c_Ment-4 Edit Please provide any suggested edits to the sample survey item.

Q87a_Ment-5 **5. I have at least one colleague within my unit whose research interests match or complement my own.** (*Round 2 Results: Survey item not validated (CVR - 0.50), revised*)

The survey item adequately addresses the institutional factor of Mentoring:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q87b_Ment-5 Logic Please provide a brief explanation of why you disagree with this survey item.

Q87c_Ment-5 Edit Please provide any suggested edits to the sample survey item.

Label_ProfNet **Institutional Factor - Communication with a Professional Network**

Keywords: Network of Colleagues, Frequent Communication

Q32a_ProfNet-1 **1. I have a well-developed network of colleagues within my unit with whom I discuss research.** (*Round 2 Results: Survey item validated, no response needed*)

Q33a_ProfNet-2 **2. I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.** (*Round 2 Results: Survey item validated, no response needed*)

Q34a_ProfNet-3 **3. I have a well-developed network of colleagues outside my institution with whom I discuss research.** (*Round 2 Results: Survey item validated, no response needed*)

Q35a_ProfNet-4 **4. I regularly have substantive conversations with colleagues about research.** (*Round 2 Results: Survey item validated, no response needed*)

Q88a_ProfNet-6 **6. My institution promotes activities that foster networking across the institution (e.g., events that spotlight research activity).** (*Round 2 Results: Survey item validated, no response needed*)

Label_Resources **Institutional Factor - Resources**

Keywords: Sufficient Internal Funding, Adequate Support Personnel and Processes, Adequate Technical Personnel, Appropriately Equipped Space, Training Opportunities

Q85a_Resr-1 **1. I have access to adequate equipment to conduct my research.** (*Round 2 Results: Survey item validated, no response needed*)

Q38a_Resr-2 **2. I have access to adequate research assistants to conduct my research.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Resources:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q38b_Resr-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q38c_Resr-2 Edit Please provide any suggested edits to the sample survey item.

Q41a_Resr-3 **3. I have access to adequate space to conduct my research.** (*Round 1 Results: Survey item validated, no response needed*)

Q37a_Resr-4 **4. I have access to adequate support staff to conduct my research.** (*Round 2 Results: Survey item validated, no response needed*)

Q39a_Resr-5 **5. I have access to adequate supplies, computers, library materials, data analyses, etc., to conduct my research projects.** (*Round 1 Results: Survey item validated, no response needed*)

Q40a_Resr-6 **6. I have access to adequate resources to travel to research-based conferences to attend or present results.** (*Round 2 Results: Survey item validated, no response needed*)

Q89a_Resr-7 **7. I have access to adequate support through internal grant programs to conduct preliminary research (e.g., pilot data).** (*Round 2 Results: Survey item validated, no response needed*)

Label_Work **Institutional Factor - Sufficient Work Time**

Keywords: Time to Devote to Scholarly Activities, Input on Schedule, Release Time for Research

Q43a_Work-1 **1. I have a high degree of input into how I wish to spend my time at work.** (*Round 2 Results: Survey item validated, no response needed*)

Q44a_Work-2 **2. I have adequate time to devote to my research goals when factoring in other job duties.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Sufficient Work Time:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q44b_Work-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q44c_Work-2 Edit Please provide any suggested edits to the sample survey item.

Q45a_Work-3 **3. I am able to negotiate my workload distribution to conduct externally funded research.** (Round 2 Results: Survey item validated, no response needed)

Label_Rewards **Institutional Factor - Rewards**

Keywords: Equitable Rewards, Defined Benchmarks, Monetary Recognition, Non-Monetary Recognition, Flexible Work Environment

Q47a_Rewd-1 **1. My unit has non-monetary rewards for recognizing and celebrating achievements in research (e.g., featuring in unit's newsletter, "toasting" at faculty meetings).** (Round 2 Results: Survey item validated but revised)

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q47b_Rewd-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q47c_Rewd-1 Edit Please provide any suggested edits to the sample survey item.

Q48a_Rewd-2 **2. My unit has monetary rewards for recognizing achievements in research (e.g., cash awards, funds for travel or supplies).** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q48b_Rewd-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q48c_Rewd-2 Edit Please provide any suggested edits to the sample survey item.

Q49a_Rewd-3 **3. As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.** (*Round 2 Results: Survey item not validated (CVR - 0.70)*)

The survey item adequately addresses the institutional factor of Rewards:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q49b_Rewd-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q49c_Rewd-3 Edit Please provide any suggested edits to the sample survey item.

Q50a_Rewd-4 **4. My institution promotes a positive work/life balance (e.g., offers opportunities for flexible work time or remote work).** (*Round 2 Results: Survey item not validated (CVR - 0.70)*)

The survey item adequately addresses the institutional factor of Rewards:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q50b_Rewd-4 Logic Please provide a brief explanation of why you disagree with this survey item.

Q50c_Rewd-4 Edit Please provide any suggested edits to the sample survey item.

Label_T&P **Institutional Factor - Promotion and Tenure Requirements**

Keywords: Tenure Requirements Encourage Research, Research Expectations

Q52a_TP-1 1. My unit's Promotion and Tenure requirements and evaluations are aligned with its values and goals as it relates to research. (*Round 2 Results: Survey item validated, no response needed*)

Q53a_TP-2 2. My unit's Promotion and Tenure requirements and evaluations address externally funded research (e.g., grants, awards, contracts). (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the institutional factor of Promotion and Tenure Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q53b_TP-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q53c_TP-2 Edit Please provide any suggested edits to the sample survey item.

Q54a_TP-3 3. My unit's Promotion and Tenure requirements and evaluations address intellectual property (e.g., invention disclosures, patent applications, patents awarded, copyrights, trademarks). (*Round 2 Results: Survey item not validated (CVR - 0.70)*)

The survey item adequately addresses the institutional factor of Promotion and Tenure Requirements:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q54b_TP-3 Logic Please provide a brief explanation of why you disagree with this survey item.

Q54c_TP-3 Edit Please provide any suggested edits to the sample survey item.

Label_DEI **Institutional Factor - Diversity, Equity, and Inclusion Initiatives**

Keywords: Culture of Respect for Others, Diverse Personnel, Equality, Inclusive Climate

Q56a_DEI-1 **1. Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are addressed in my institution's mission statements or strategic plans.** (*Round 2 Results: Survey item validated, no response needed*)

Q58a_DEI-2 **2. My institution has a culture of inclusivity and respect for others that promotes diverse perspectives in research.** (*Round 2 Results: Survey item not validated (CVR - 0.70)*)

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q58b_DEI-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q58c_DEI-2 Edit Please provide any suggested edits to the sample survey item.

Q57a_DEI-3 **3. Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.** (*Round 2 Results: Survey item validated, no response needed*)

Q60a_DEI-4 **4. Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers include institution-wide training for faculty and staff to address implicit and explicit bias.** (*Round 2 Results: Survey item not validated (CVR - 0.50)*)

The survey item adequately addresses the institutional factor of Diversity, Equity, and Inclusion Initiatives:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q60b_DEI-4 Please provide a brief explanation of why you disagree with this survey item.

Q60c_DEI-4 Please provide any suggested edits to the sample survey item.

Label_Leadership **Leadership Factors**

This section includes leadership factors that are associated with generating funding for research based on a comprehensive literature review and the initial modified Delphi panel survey. Please review each survey item and respond to the statement provided.

NOTE: Please do not respond to survey items as a faculty or research administrator would for your institution, but rather respond as to whether the survey item is relevant to the factor.

A response in the range of “Agree” equates to your support of the survey item being included in the final instrument. A response in the range of “Disagree” or “Neither” equates to you not supporting the survey item being included in the final instrument.

Round 2 results have been provided for each survey item which describes whether it was validated based on Lawshe's Content Validity Ratio (CVR), the CVR score if the item was not validated (a minimum of 0.78 is required to be included in the final survey instrument), and whether the survey item was revised. Any survey items that met the minimum CVR score and were not revised do not need to be addressed in this Round 2 survey, so the Likert scale variables have been removed. Some factors have had all survey items validated and will not need a response.

Label_Transformation **Transformational Leadership**

Keywords: Visionary, Leads Transformative Change, New Ways of Thinking, Inspires Participation

Q62a_Transf-1 **1. My supervisor communicates expectations and goals in a way that inspires me to participate in research.** (Round 2 Results: Survey item validated, no response needed)

Q63a_Transf-2 **2. My supervisor coaches and mentors in ways that challenge my thinking.** (Round 2 Results: Survey item validated but revised)

The survey item adequately addresses the leadership factor of Transformational Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q63b_Transf-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q63c_Transf-2 Edit Please provide any suggested edits to the sample survey item.

Q64a_Transf-3 **3. My supervisor leads collaborative goal-setting/visioning for my unit related to research goals.** (*Round 1 Results: Survey item validated, no response needed*)

Q65a_Transf-4 **4. My supervisor influences positive change in the institution's culture of research expectations.** (*Round 2 Results: Survey item validated, no response needed*)

Label_Scholar **Leadership Factor - Scholar**

Keywords: Highly Regarded for Research, Serves as a Mentor

Q67a_Schol-1 **1. My supervisor is a highly regarded Subject Matter Expert for their research.** (*Round 2 Results: Survey item not validated (CVR - 0.60)*)

The survey item adequately addresses the leadership factor of Scholar:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q67b_Schol-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q67c_Schol-1 Edit Please provide any suggested edits to the sample survey item.

Q68a_Schol-2 **2. My supervisor serves as a mentor and peer model for faculty.**

(Round 1 Results: Survey item validated, no response needed)

Label_ResOr **Leadership Factor - Research-Oriented**

Keywords: Supportive of Research, Internalized Research Mission

Q70a_ResOr-1 **1. My supervisor is very supportive of my efforts in research.** *(Round*

1 Results: Survey item validated, no response needed)

Q71a_ResOr-2 **2. My supervisor demonstrates support for the institution's research-centered mission.** *(Round 2 Results: Survey item validated, no response needed)*

Q90a_ResOr-3 **3. My supervisor encourages taking the time to write proposals for externally funded research.** *(Round 2 Results: Survey item validated, no response needed)*

Label_Inclusive **Leadership Factor - Inclusive Leadership**

Keywords: Respect for Others, Equity, Collaboration, Cultural Diversity, Safe Environment

Q73a_Incl-1 **1. My supervisor displays inclusive leadership qualities by creating a safe work environment where faculty are treated respectfully and have a sense of belonging to support diverse research perspectives.** *(Round 2 Results: Survey item validated but revised)*

The survey item adequately addresses the leadership factor of Inclusive Leadership:

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q73b_Incl-1 Logic Please provide a brief explanation of why you disagree with this survey item.

Q73c_Incl-1 Edit Please provide any suggested edits to the sample survey item.

Q74a_Incl-2 **2. My supervisor displays inclusive leadership qualities by encouraging open dialogue to support diverse research perspectives.** (*Round 2 Results: Survey item validated but revised*)

The survey item adequately addresses the leadership factor of Inclusive Leadership:

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q74b_Incl-2 Logic Please provide a brief explanation of why you disagree with this survey item.

Q74c_Incl-2 Edit Please provide any suggested edits to the sample survey item.

Q75a_Incl-3 **3. My supervisor encourages a creative work environment promoting cooperation and collaboration in research endeavors.** (*Round 2 Results: Survey item validated, no response needed*)

Q78a_Incl-4 **4. My supervisor fosters empowerment and trust through creating opportunities for growing leadership experience including leadership in externally funded research projects.** (*Round 2 Results: Survey item validated, no response needed*)

Q80-Overall Feedback Please provide any overall survey feedback you would like to share.

End of Block: Default Question Block

APPENDIX F

PILOT STUDY SURVEY INSTRUMENT

Institutional & Leadership Factors Associated with Generating Research Funding

Start of Block: Consent

Label_Title **Institutional & Leadership Factors Associated with Generating Research Funding**

Label_Human Subjects **Human Subjects Consent Form**

The following summarizes the project you are asked to participate in. Please read this information before answering the question below.

Title of study: Institutional and leadership factors associated with generating funding for research

Purpose of study: The purpose of this study is to create an instrument to identify institutional factors and leadership factors associated with generating funding for research in a research-intensive university.

Subjects of study: Faculty in select colleges will be presented with the survey for completion.

Procedures of study: A survey instrument will be electronically delivered to evaluate institutional factors and leadership factors associated with generating funding for research. Results will be collected, analyzed, and presented to key leadership to assess the usefulness and value of the instrument. The participants' names will remain anonymous. Although it may be possible to identify an individual digitally, the researcher will not attempt to do so. The material collected will remain on a password-protected laptop.

Time Expectations: Each round of surveying should take approximately 30 minutes to complete. Please return the survey within one week of receipt.

Benefits/Compensation: The participants will not be compensated in any way during this study, but they may potentially benefit from the outcomes of the study.

Risks, Discomforts, Alternative Treatments: The survey will be conducted electronically, so there will be no or very minimal physical risks. There is a potential risk associated with confidentiality and anonymity; however, the researcher will follow the above practices to maintain confidentiality and anonymity to mitigate these risks.

The researchers listed below may be reached to answer questions about the research, subjects' rights, or related matters.

Contact Information:

Principal Investigator: Courtney Jarrell (cjarrell@latech.edu)

Co-Investigator: Bryan McCoy (bmccoy@latech.edu)

IRB If you agree to participate in this study, you are agreeing to the following:

I attest that I have read and understood the description of the study and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the survey, I understand that the results will be freely available to me upon request. I understand that the responses to the survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

Do you agree to participate in this study?

☐ Yes (1)

☐ No (2)

End of Block: Consent

Start of Block: Demographics

Q1_Dem_Rank What is your current academic rank? (select one)

☐ Instructor (1)

☐ Assistant Professor (2)

☐ Associate Professor (3)

☐ Professor (4)

☐ Other (5) _____

Q2_Dem_College In what College do you hold your primary academic appointment?

- ☐ College of Applied and Natural Sciences (1)
- ☐ College of Education (2)
- ☐ College of Engineering and Science (3)

Q3a_Dem_ANS In what Unit do you hold your primary academic appointment?

- ☐ Agricultural Sciences and Forestry (1)
- ☐ Biological Sciences (2)
- ☐ Health Informatics and Information Management (3)
- ☐ Human Ecology (4)
- ☐ Nursing (5)

Q3b_Dem_COE In what Unit do you hold your primary academic appointment?

- ☐ Curriculum, Instruction, and Leadership (1)
- ☐ Kinesiology (2)
- ☐ Psychology and Behavioral Sciences (3)
- ☐ Professional Development and Research Institute on Blindness (4)
- ☐ Science and Technology Education Center (SciTEC) (5)

Q3c_Dem_COES In what Unit do you hold your primary academic appointment?

- ☐ Biomedical Engineering (16)
- ☐ Chemical Engineering (1)
- ☐ Chemistry (2)
- ☐ Civil Engineering (3)
- ☐ Computer Science (4)
- ☐ Construction Engineering Technology (5)
- ☐ Cyber Engineering (6)
- ☐ Electrical Engineering (7)
- ☐ Engineering and Technology Management (8)
- ☐ Industrial Engineering (9)
- ☐ Instrumentation and Control Systems Engineering Technology (10)
- ☐ Mathematics and Statistics (11)
- ☐ Mechanical Engineering (12)
- ☐ Molecular Science and Nanotechnology (13)
- ☐ Nanosystems Engineering (14)

○ Physics (15)

End of Block: Demographics

Start of Block: Survey Definitions

Label_Definitions

Survey Definitions

The following definitions have been provided to assist with completing this survey:

1. **Unit** - the individual's department, center, or division to which they report
2. **Institution** - the research-intensive university that employs the individual
3. **Vision** - what the institution or unit wants to accomplish
4. **Goals** - the specific objectives outlined to accomplish the vision
5. **Culture** - the shared values, belief systems, attitudes, and set of assumptions that people in a workplace share
6. **Climate** - the perception of the workplace environment; how people feel about the institution or unit
7. **Externally Funded Research** - Research funded by external agencies (e.g., grants, awards, contracts)
8. **Internally Funded Research** - Research funded by the institution (e.g., cash, funding of students, release from teaching and other obligations)
9. **Research Productivity** – output measures such as published articles, conference presentations, books, grants, awards, patents, and artistic accomplishments
10. **Strategic Research Cluster** - an informal group of researchers focusing on an interdisciplinary research area of excellence for the institution to solve key societal problems; the goal of a cluster is to prioritize resources and facilitate collaboration

End of Block: Survey Definitions

Start of Block: Organizational Culture

Q4_Cult-1 I estimate that the following percentage of my unit's faculty are productive in internally funded research (e.g., producing peer-reviewed articles, books, pieces of art).

- ☐ 0% - 25% (1)
- ☐ 26% - 50% (2)
- ☐ 51% - 75% (3)
- ☐ 76% - 100% (4)

Q5_Cult-2 I estimate that the following percentage of my unit's active research faculty apply for external research funding on a regular basis.

- ☐ 0% - 25% (1)
- ☐ 26% - 50% (2)
- ☐ 51% - 75% (3)
- ☐ 76% - 100% (4)

Q6_Cult-3 I estimate that the following percentage of my unit's active research faculty receive external research funding each year.

- ☐ 0% - 25% (1)
- ☐ 26% - 50% (2)
- ☐ 51% - 75% (3)
- ☐ 76% - 100% (4)

Q7_Cult-4 My institution supports my interest to pursue externally funded research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q8_Cult-5 My institution has a tolerance for strategic risks when pursuing research activities (e.g., resource allocation risk).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q9_Cult-6 I have opportunities at my institution to participate in external engagements, including activities that foster external research collaborations.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

End of Block: Organizational Culture

Start of Block: Positive Group Climate

Q10_Clim-1 I feel appreciated and valued by my colleagues in my unit for my work in research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q11_Clim-2 I feel appreciated and valued by my colleagues in other units at my institution for my work in research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q12_Clim-3 I feel comfortable collaborating with colleagues internal to my institution on research projects.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q13_Clim-4 I feel comfortable collaborating with colleagues external to my institution on research projects.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q14_Clim-5 As a faculty researcher, I believe that my research interests are supported by my institution.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Positive Group Climate

Start of Block: Clear Coordinating Goals

Q15_Goals-1 It is clear to me how my unit's vision and goals are related to the institution's vision and goals.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q16_Goals-2 The priorities in my unit (as evidenced by such things as money allocations, new hires, etc.) match the unit's stated vision and goals.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q17_Goals-3 The priorities of my unit (as evidenced by such things as money allocations, new hires, etc.) include strategies to encourage research productivity.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q18_Goals-4 It is clear to me how my individual goals are related to the unit's vision and goals.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Clear Coordinating Goals

Start of Block: Research Emphasis

Q19_Emph-1 There is an expectation in my unit for tenure-track faculty to be productive in research supported by internal funding (e.g., producing peer-reviewed articles, books, pieces of art).

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q20_Emph-2 There is an expectation in my unit for tenure-track faculty to conduct research that is externally funded (e.g., grants, awards, contracts).

☐ Strongly disagree (1)

☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q21_Emph-3 My unit supports and incentivizes research through internal funding such as bridge funding, seed funding, institutionally funded research salary, or buyout of courses.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

End of Block: Research Emphasis

Start of Block: Diversity, Equity, and Inclusion Initiatives

Q22_DEI-1 Diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are addressed in my institution's mission statements or strategic plans.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q23_DEI-2 My institution has a culture of inclusivity and respect for others that promotes diverse perspectives in research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q24_DEI-3 Institutional commitments to diversity, equity, and inclusion initiatives to support a diverse group of faculty researchers are evident by financial investments in areas such as recruitment, hiring practices, marketing, or program improvement.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q25_DEI-4 There are diversity, equity, and inclusion initiatives at my institution to support a diverse population of faculty researchers, such as institution-wide training for faculty and staff to address implicit and explicit bias.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

End of Block: Diversity, Equity, and Inclusion Initiatives

Start of Block: Recruitment and Selection

Q26_Recruit-1 Effective recruitment strategies are implemented in my unit to attract the best talent in research priority areas.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q27_Recruit-2 My unit places an emphasis on hiring tenure-track faculty with experience conducting research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q28_Recruit-3 My institution hires faculty in strategic research clusters in order to promote interdisciplinary research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q29_Recruit-4 My institution places an emphasis on hiring faculty from minority populations to increase diversity in research perspectives.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q30_Recruit-5 My institution provides hiring incentives such as start-up funding, lab space, access to facilities, or other incentives.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Recruitment and Selection

Start of Block: Promotion and Tenure

Q31_PT-1 My unit's Promotion and Tenure requirements and evaluations are aligned with its values and goals as it relates to research.

☐ Strongly disagree (1)

☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q32_PT-2 My unit's Promotion and Tenure requirements and evaluations address externally funded research (e.g., grants, awards, contracts).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q33_PT-3 My unit's Promotion and Tenure requirements and evaluations address intellectual property (e.g., invention disclosures, patent applications, patents awarded, copyrights, trademarks).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

End of Block: Promotion and Tenure

Start of Block: Mentoring

Q34_Ment-1 Mentoring was available to me within my unit.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q35_Ment-2 I have had a formal or informal mentor at my institution who helped me to understand the research expectations in the appointment I hold.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q36_Ment-3 I have had a formal or informal mentor at my institution who helped me develop a well-defined plan for achieving my research career goals.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q37_Ment-4 I have colleagues or leaders at my institution that provide helpful feedback and guidance that assist my efforts to perform my best in research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Mentoring

Start of Block: Work Time

Q38_Work-1 I have a high degree of input into how I wish to spend my time at work.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q39_Work-2 I have adequate time to devote to my research goals when factoring in other job duties.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q40_Work-3 I am able to negotiate my workload distribution to conduct externally funded research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Work Time

Start of Block: Communication with Professional Network

Q41_ProfNet-1 I have a network of colleagues within my unit with whom I discuss research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q42_ProfNet-2 I have a well-developed network of colleagues from units outside of my own at my institution with whom I discuss research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q43_ProfNet-3 I have a well-developed network of colleagues outside my institution with whom I discuss research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q44_ProfNet-4 I regularly have substantive conversations with colleagues about research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q45_ProfNet-5 My institution promotes activities that foster networking across the institution (e.g., events that spotlight research activity).

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Communication with Professional Network

Start of Block: Resources

Q46_Resr-1 I have access to adequate equipment to conduct my research.

☐ Strongly disagree (1)

☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q47_Resr-2 I have access to adequate research assistants to help conduct my research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q48_Resr-3 I have access to adequate space to conduct my research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q49_Resr-4 I have access to adequate support staff to conduct my research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q50_Resr-5 I have access to adequate supplies, computers, library materials, data analyses, etc., to conduct my research projects.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q51_Resr-6 I have access to adequate resources to travel to research-based conferences to attend or present results.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q52_Resr-7 I have access to adequate support through internal grant programs to conduct preliminary research (e.g., pilot data).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)

- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

End of Block: Resources

Start of Block: Rewards

Q53_Rewd-1 My unit has non-monetary rewards to recognize and celebrate achievements in research (e.g., featuring in unit's newsletter, "toasting" at faculty meetings).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q54_Rewd-2 My unit has monetary rewards to recognize achievements in research (e.g., cash awards, funds for travel or supplies).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q55_Rewd-3 As compared to others in my unit, my compensation (salary) is fair for the work I do and my history of accomplishments.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q56_Rewd-4 My institution promotes a positive work/life balance (e.g., offers opportunities for flexible work time or remote work).

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

End of Block: Rewards

Start of Block: Transformational Leadership

Q57_Transf-1 My supervisor communicates expectations and goals in a way that inspires me to participate in research.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Somewhat disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Somewhat agree (5)
- ☐ Agree (6)

☐ Strongly agree (7)

Q58_Transf-2 My supervisor coaches and mentors in ways that challenge my thinking.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q59_Transf-3 My supervisor leads collaborative goal-setting/visioning for my unit related to research goals.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q60_Transf-4 My supervisor influences positive change in the institution's culture of research expectations.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Transformational Leadership

Start of Block: Research Oriented

Q61_ResOr-1 My supervisor is supportive of my efforts in research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q62_ResOr-2 My supervisor demonstrates support for the institution's research-centered mission.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q63_ResOr-3 My supervisor encourages taking the time to write proposals for externally funded research.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q64_ResOr-4 My supervisor serves as a mentor for faculty.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Research Oriented

Start of Block: Inclusive Leadership

Q65_Incl-1 My supervisor creates a safe work environment, where faculty are treated respectfully, to support diverse research perspectives.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q66_Incl-2 My supervisor encourages open dialogue to support diverse research perspectives.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q67_Incl-3 My supervisor promotes cooperation and collaboration in research endeavors.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

Q68_Incl-4 My supervisor creates opportunities for growing leadership experience, including leadership in externally funded research projects.

☐ Strongly disagree (1)

☐ Disagree (2)

☐ Somewhat disagree (3)

☐ Neither agree nor disagree (4)

☐ Somewhat agree (5)

☐ Agree (6)

☐ Strongly agree (7)

End of Block: Inclusive Leadership

Start of Block: Research Productivity

Q70_ResProd-1 How many peer-reviewed articles did you submit for publication in the academic years 2020-2021 and 2021-2022?

☐ Zero (1)

☐ One (2)

- ☐ Two (3)
- ☐ Three (4)
- ☐ Four (5)
- ☐ Five or More (6)

Q71_ResProd-2 How many peer-reviewed articles did you publish in the academic years 2020-2021 and 2021-2022?

- ☐ Zero (1)
- ☐ One (2)
- ☐ Two (3)
- ☐ Three (4)
- ☐ Four (5)
- ☐ Five or More (6)

Q72_ResProd-3 How many proposals for externally funded research did you submit as a Principal Investigator or Co-Principal Investigator in the academic years 2020-2021 and 2021-2022?

- ☐ Zero (1)
- ☐ One (2)
- ☐ Two (3)

☐ Three (4)

☐ Four (5)

☐ Five or More (6)

Q73_ResProd-4 How many externally funded research projects were you awarded as a Principal Investigator or Co-Principal Investigator in the academic years 2020-2021 and 2021-2022?

☐ Zero (1)

☐ One (2)

☐ Two (3)

☐ Three (4)

☐ Four (5)

☐ Five or More (6)

Q74_ResProd-5 What total dollar amount of externally funded research projects were you awarded as Principal Investigator or Co-Principal Investigator in the academic years 2020-2021 and 2021-2022?

☐ \$0 (1)

☐ \$1 - \$99,999 (2)

☐ \$100,000 - \$249,999 (3)

☐ \$250,000 - \$499,999 (4)

☐ \$500,000 - \$749,999 (5)

☐ \$750,000 - \$999,999 (6)

☐ \$1,000,000 or More (7)

End of Block: Research Productivity

APPENDIX G

EXECUTIVE SUMMARY SAMPLE



Executive Summary – College A

Pilot Study – Institutional and Leadership Factors Associated with Generating Revenue for Research

OCTOBER 2022

EXECUTIVE SUMMARY

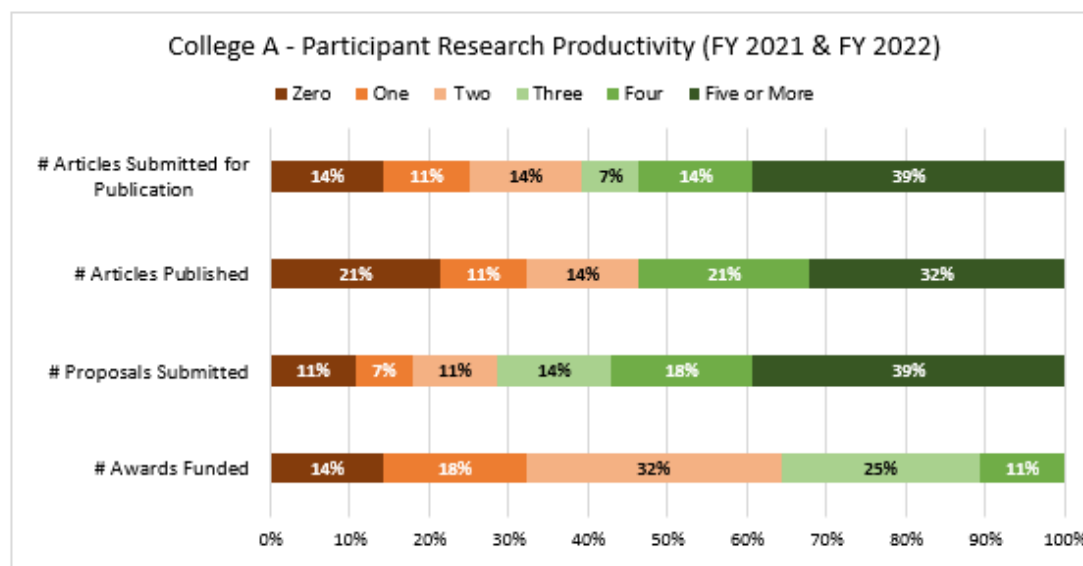
The strategic goal of increasing funding for research at a university is a complex objective dependent on various institutional and leadership factors. The purpose of this pilot study is to validate an instrument for leaders to assess institutional and leadership factors associated with generating funding for research in a research-intensive university.

In total, **81** participants completed the survey, which represents **45%** of tenure and tenure track faculty in the three colleges that participated. Of the total participants, **31** were faculty in **College A**, which represents approximately **41%** of the total tenure and tenure track faculty in the college. The survey included **74** survey items. The results are reported at the college level to ensure participant confidentiality.

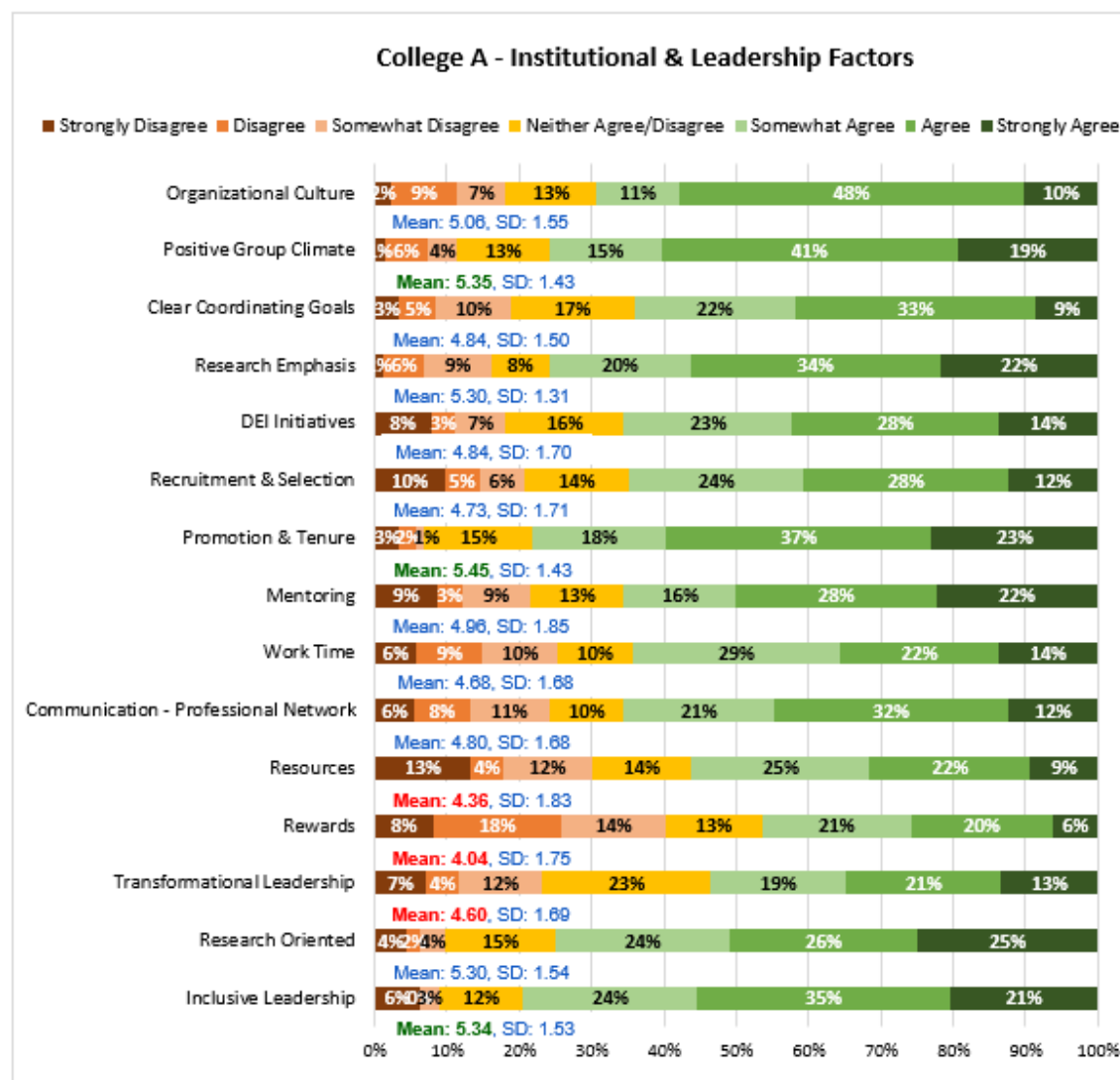
Initial Key Findings

- Highest Contributing Factors to Research Productivity:
 - Promotion & Tenure, Positive Group Climate, Inclusive Leadership
- Lowest Contributing Factors to Research Productivity:
 - Transformational Leadership, Resources, Rewards
- Access to Research Assistants – Neither Agree/Disagree that it is contributing to research productivity (Mean: 4.31)

Participants Research Productivity



The survey included questions related to 12 institutional factors and 3 leadership factors that were identified through current literature and a modified Delphi panel as associated with generating funding for research. A 7-point Likert scale was used, with the value of 1 equaling Strongly Disagree and 7 equaling Strongly Agree. The institutional and leadership factors and related keywords are included below, along with response data for each factor. The response data are the average mean for all survey items within an institutional or leadership factor.



College Results Comparisons

	Factors	College A n = 31 (41%)	College B n = 36 (54%)	College C n = 14 (36%)
Environment	Organizational Culture	Mean – 5.06 SD – 1.55	Mean – 4.54 SD – 1.52	Mean – 5.05 SD – 1.31
	Positive Group Climate	Mean – 5.35 SD – 1.43	Mean – 5.02 SD – 1.49	Mean – 5.03 SD – 1.43
	Clear Coordinating Goals	Mean – 4.84 SD – 1.50	Mean – 4.66 SD – 1.69	Mean – 4.30 SD – 1.66
	Research Emphasis	Mean – 5.30 SD – 1.31	Mean – 4.94 SD – 1.50	Mean – 4.40 SD – 1.67
	Diversity, Equity, & Inclusion Initiatives	Mean – 4.84 SD – 1.70	Mean – 4.65 SD – 1.60	Mean – 4.77 SD – 1.42
Personnel Support	Recruitment & Selection	Mean – 4.73 SD – 1.71	Mean – 4.05 SD – 1.65	Mean – 3.76 SD – 1.51
	Promotion & Tenure	Mean – 5.45 SD – 1.43	Mean – 5.08 SD – 1.49	Mean – 4.12 SD – 1.60
	Mentoring	Mean – 4.96 SD – 1.85	Mean – 3.83 SD – 2.13	Mean – 3.50 SD – 1.62
	Work Time	Mean – 4.68 SD – 1.68	Mean – 4.18 SD – 1.91	Mean – 4.24 SD – 1.74
	Communication with a Professional Network	Mean – 4.80 SD – 1.68	Mean – 4.64 SD – 1.76	Mean – 4.22 SD – 1.99
Resources/ Rewards	Resources	Mean – 4.36 SD – 1.83	Mean – 3.93 SD – 1.71	Mean – 3.66 SD – 1.85
	Rewards	Mean – 4.04 SD – 1.75	Mean – 3.97 SD – 1.95	Mean – 3.83 SD – 1.62
Leadership	Transformational Leadership	Mean – 4.60 SD – 1.69	Mean – 3.85 SD – 1.97	Mean – 3.98 SD – 1.67
	Research Oriented	Mean – 5.30 SD – 1.54	Mean – 4.57 SD – 2.02	Mean – 4.48 SD – 1.80
	Inclusive Leadership	Mean – 5.34 SD – 1.53	Mean – 4.74 SD – 1.93	Mean – 4.69 SD – 1.75

****Note:** The participants in this pilot study survey were tenure and tenure track faculty. These responses do not include staff or non-tenure track faculty who may also participate in externally funded projects.

CONCLUSIONS

As external funding to support researchers becomes increasingly important, I believe a well-developed survey instrument could assist leaders in identifying areas of improvement in institutional and leadership factors that could better support faculty in their research endeavors.

It would be valuable to understand how you would use the survey instrument of institutional and leadership factors associated with generating funding for research in your college. Included below are questions to guide further conversations about the instrument and the results collected.

- Do the results of the pilot study support your understanding of the faculty perspectives on factors associated with generating funding for research?
- How might you, as a leader, use the results of the survey instrument in strategic planning or assessment activities?
- What concerns would you have with utilizing this survey data or implementing the survey in the future?
- Do you have any additional feedback about the survey instrument?