



Unique Challenges and Opportunities for Business Schools in Pursuing Federal Research Grants



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Sponsored by The National Science
Foundation Programs: Science of
Organizations (SoO) & Science of Science
and Innovation Policy (SciSIP)

This material is based upon work supported by the National Science Foundation under Grant No. 1545303. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation. In addition, the content of this report should not be attributed to any individual workshop participant or contributor. Address correspondence to: Todd Maurer, J. Mack Robinson College of Business, Georgia State University, tmaurer@gsu.edu.

EXECUTIVE SUMMARY

Much research conducted within business schools is scientifically rigorous, of practical relevance to business and society, and offers multidisciplinary perspectives. Given these qualities, the match between business school research and funding priorities of agencies such as the National Science Foundation (NSF) is potentially high. Despite these strengths and potential for outstanding federally sponsored research, many business schools wrestle with unique challenges that interfere with the pursuit of research grants that is more common in other disciplines. Therefore, funding agencies and business schools may be missing opportunities for outstanding sponsored research. If business schools could become more oriented toward research funding in the future, valuable funds could be leveraged to a greater extent than they currently are to bring even stronger research to market from within the business discipline. This would be valuable to several constituents and stakeholders, including business schools, scholars, funding agencies and society. To contribute to this goal, a workshop was conducted in which participants closely examined the unique challenges and opportunities that business schools specifically face in applying for and administering research grants. Workshop participants consisted of leadership from 24 research-oriented colleges of business from across the United States. These leaders discussed barriers that prevent business faculty from pursuing research proposals and the challenges colleges of business face in supporting the acquisition and administration of grants. Challenges identified include a lack of rewards and incentives within business schools, lack of awareness and skill involved with pursuing funding opportunities among business faculty, lack of infrastructure and support from business schools for the pursuit and administration of grants, and perceptions by faculty of misalignment of funding agency priorities and policies with business school research. Workshop participants also addressed the unique strengths and assets that business schools possess that make them highly competitive for doing outstanding sponsored research. The opportunities and strengths identified were a strong orientation to business and industry as a unique scientific resource and source of partnership, outstanding unique intellectual capital, and representation of multiple disciplines. Building on these discussions, workshop participants recommended possible successful strategies and potential practices to enhance and leverage opportunities for pursuing grants, while minimizing challenges. Possible strategies put forth included offering incentives and rewards, creating support and infrastructure, and deploying appropriate human capital. Finally, they discussed ideas for future coordination, communication and initiatives that could be pursued in collaboration with key sponsors such as NSF. These ideas included better alignment of resources and awareness as well as enhanced communication channels. This report summarizes the background, format and detailed findings of the workshop.

Reference: Maurer, T. (2016). *Unique challenges and opportunities for business schools in pursuing federal research grants*. NSF Workshop Report for Grant # 1545303. Georgia State University.

WORKSHOP DESCRIPTION

Background

Business schools are uniquely positioned to offer very strong research contributions relevant to science, industry and society. Therefore, they are well positioned to offer competitive research proposals to funding agencies such as the National Science Foundation (NSF) as well as many others. However, business schools also face a number of unique challenges in pursuing and administering research grants. If top researchers are not being paired with available resources intended to maximize scientific outcomes, this is an undesirable state of affairs for business schools, sponsors and society. Getting resources invested to provide the best possible outcomes in terms of intellectual merits and broader societal impact is in the interest of multiple stakeholders. To address this state of affairs, a workshop was conducted to explore the unique challenges and opportunities that business schools specifically face in applying for and administering grants from sponsors such as NSF. The need for such a workshop has its origins in the orientation of business school research and faculty composition as well as the cultural and policy situation in which business school researchers operate.

Bennis and O’Toole (2005) discussed the orientation of business schools in research and pointed to the heavy emphasis on combining science and knowledge from across many disciplines, stating “...business calls upon the work of many academic disciplines...they include mathematics, economics, psychology, philosophy, and sociology” (pp. 96-97). “They have adopted a model of science that uses abstract financial and economic analysis, statistical multiple regressions, and laboratory psychology” (p. 96). “In practice, business schools need a diverse faculty populated with professors who, collectively, hold a variety of skills and interests that cover territory as broad and as deep as business itself” (p. 104). Counter to a myth that business schools focus only on applied research, these statements reflect the heavy emphasis on the intellectual merit of research being conducted in business schools as well as the significant potential to contribute to multidisciplinary or interdisciplinary research. This corresponds closely to values important to sponsors such as NSF in its mission to fund basic research that advances knowledge and understanding via strong scholarship. However, business schools are squarely within a profession that values practical relevance as well as rigor. As suggested by Gulati (2007) about research in business, “if we can view rigor and relevance as outcomes to be simultaneously maximized, we can more actively pursue true synergy” (p. 779; see also: Stokes, 1997). This also corresponds closely to a value important to NSF, that of broader impacts--contributing to the achievement of societally-relevant outcomes, including such things as the well-being of individuals, competitiveness of the workforce, partnerships between academia and industry, and increased economic competitiveness of the United States (National Science Foundation, 2013).

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Kurana and Spender (2012) discuss a very influential scholar, Herbert Simon, stating that “in spite of his giant reputation in political science, economics, organizational theory, computer science, and psychology, plus his Nobel Prize in Economics, his National Medal of Science, and his A. M. Turing Award, one dimension of his work is often overlooked: his role in the creation of the contemporary business school” (p. 619). Simon was very influential in helping establish the Graduate School of Industrial Administration (GSIA), which was later renamed the Tepper School of Business in 2003, part of what is now Carnegie Mellon University (CMU). Kurana and Spender stated “Projecting his own aesthetic, Simon hoped first-rate scholars could be attracted to the unique challenges of interdisciplinary research, spanning the realms of pure and applied research, and thereby into the managerially and societally-critical questions on which he believed business schools should concentrate.” In fact, there is a human capital market dynamic in which top scholars from various disciplines may be attracted to business schools in favor of higher pay and other favorable incentives. Scholars have noted that some of the most active and influential researchers have been moving to business schools (Aguinis, Bradley, & Brodersen, 2014).

Beyond these strengths that make business research potentially competitive for grants, there are also substantial benefits for researchers and their schools in pursuing and obtaining sponsored funding for their research. Obtaining significant funds for research can provide faculty a liberating capability for undertaking projects of significant scope and magnitude that might otherwise be impossible if relying solely on a research account provided by a college or other more limited resources. This can provide faculty an opportunity to “white

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board a dream project” in a way that can be transformational for a research program. Further, obtaining grant funds can signal alignment of a research agenda with a national priority and serve as a triangulating source of data on impact, relevance and value of a research program. This may be of increasing value as business schools continue to explore optimal ways of defining reputation, rigor, relevance and performance via meaningful metrics (Gulati, 2007; Vidaver-Cohen, 2007). Finally, streams of alternative revenue coming into a college

help to provide for the greater good and the larger community when more resources are added to the pool of those available otherwise. Support for undergraduate and graduate students and post-docs, travel, software and materials, equipment, data bases and other types of funding may be helpful to college budgets at a time when traditional sources of revenue such as MBA programs or state support may be declining (Datar, Garvin & Cullen, 2011; Friga, Bettis & Sullivan, 2003; National Science Board, 2012). These all serve as sources of value and potential impact of the researcher’s efforts in the grants space.

Yet, despite these many strengths and opportunities creating tremendous potential for outstanding funded research, business schools wrestle with unique challenges in integrating external grant seeking into their portfolios of scholarly activities. These include a strong

pressure to measure research by journal lists that can present difficulties for pursuing interdisciplinary research (Rafols, Leydesdorff, O'Hare, Nightingale, & Stirling, 2012; Mingers & Willmott, 2013) and a culture that does not always promote the pursuit of research grants to support scholarship as is common in other disciplines, including some of those disciplines in which business scholars may have roots. Thus, pursuing grants by faculty in business schools may be less common or typical compared to that by faculty in other colleges (e.g. science, education, engineering, etc.). Therefore, both funding agencies such as NSF and business schools may be missing out on the opportunity to have some outstanding funded research projects because of these dynamics. To the extent that business schools may be positioned to become more oriented toward grant funds in the future, the present workshop was timely and helpful for both funding agencies such as NSF and business schools.

The workshop addressed how NSF and business schools can work together to help advance a national research agenda involving top scholars from varied disciplines within business schools working with NSF to maximize value for all stakeholders with an interest in enhancing the impact of federal research funding. Workshop participants were included from business schools that have research programs in line with funding priorities of two NSF programs that sponsored the workshop, the Science of Organizations (SoO; research that advances our fundamental understanding of how organizations develop, form and operate) and the Science of Science and Innovation Policy (SciSIP; research that advances the scientific basis of science and innovation policy). The workshop focused on barriers that prevent business faculty from pursuing research proposals and the challenges in colleges of business in supporting the acquisition and administration of grants; the unique strengths and assets that business schools possess that make them highly competitive for doing outstanding research and for obtaining funding for that work; possible strategies and best practices to enhance and leverage opportunities for pursuing grants, while minimizing challenges; and ideas for future business school-NSF coordination, communication and initiatives to advance funded research activity that would benefit all relevant stakeholders.

Workshop Content and Format

To allow participants to meet and build rapport, a reception and dinner was held the evening before the workshop. The next day, the workshop included an introduction, four information and discussion sessions and a concluding session.. Within each of the four main sessions, a specific topic guided the focus of conversation. In order to facilitate discussion, the group was split into five smaller groups. Each session involved smaller group discussions and then a larger, common group summary session in which the smaller groups reported on their discussion highlights and ideas. This facilitated idea generation and maximized participation by everyone in the smaller groups, as well as brainstorming across groups, problem solving and integration of strong ideas and findings from the work of the smaller groups in the larger report out. To enhance objective and independent facilitation of the summary group, not influenced by a college administrator, investigator, or faculty agenda, a professional facilitator (e.g. non-faculty/administrator from outside academia) facilitated the larger group discussions (Kimberly Douglas, President of Firefly Facilitation). Five business Ph.D. students took notes from each small group discussion (one student per group) as well as during the larger group sessions. Both the small and large group discussions were approximately 45 minutes each. The following describes the four topical sessions:

Session 1-Unique challenges: Barriers that prevent business faculty from pursuing research proposals and challenges in colleges of business supporting the acquisition and administration of grants;

Session 2-Unique opportunities/strengths: unique strengths and assets that business schools possess that make them (potentially) very competitive for funding;

Session 3-Possible strategies and best practices to enhance and leverage opportunities while addressing or minimizing challenges;

Session 4-Ideas for future business/NSF coordination, communication and initiatives.

Workshop Participants, Organizer/Chair, Host Institution

Business school leaders from a variety of schools, including those who were identified by NSF as successful in securing NSF funding, as well as a number of other schools with a research focus in the relevant domains, were invited. They were informed that this was an expense paid event, sponsored by the NSF. Both deans and vice/associate deans with research oversight responsibilities attended. The assembled group brought a mix of perspectives including operational, strategic, policy, internal- vs. external-facing, large vs. small, public vs. private and varying sub-discipline backgrounds. The invitees were given a pre-work exercise to think/write about the session questions in advance so that they came to the discussions prepared. Representatives from the following 24 business schools attended the workshop:

University of Alabama, Jonathon Halbesleben, Associate Dean for Research, Culverhouse College of Business

Arizona State University, Michael Goul, Associate Dean for Research, W. P. Carey School of Business

University of Arizona, Jeffrey Schatzberg, Interim Dean, Eller College of Management

University of Arkansas, Anne O'Leary-Kelly, Associate Dean for Research and Graduate Programs, Sam M. Walton College of Business

Auburn University, Bill Hardgrave, Dean, Raymond J. Harbert College of Business

Colorado State University, Beth Walker, Dean, College of Business

Cornell University, Elizabeth Fox, Assistant Dean of Academic Affairs, Johnson Graduate School of Management

DePaul University, Ray Whittington, Dean, Driehaus College of Business

University of Florida, John Kraft, Dean, Warrington College of Business

Georgia State University, Richard Phillips, Dean, J. Mack Robinson College of Business

University of Georgia, Marisa Pagnattaro, Associate Dean for Research and Graduate Programs, Terry College of Business

Indiana University, Lauren Maines, Executive Associate Dean of Faculty and Research, Kelley School of Business

Johns Hopkins University, Valerie Suslow, Vice Dean of Faculty and Research, Carey Business School

University of Kentucky, Kenneth Troske, Senior Associate Dean, Gatton College of Business and Economics

Louisiana State University, Helmut Schneider, Associate Dean for Research and Graduate Programs, E. J. Ourso College of Business

Michigan State University, Robert Wiseman, Senior Associate Dean, Eli Broad College of Business

State University of New York – Albany, Donald Siegel, Dean, School of Business

University of North Carolina at Chapel Hill, Gregory Brown, Director, Frank Hawkins Kenan Institute of Private Enterprise, Kenan-Flagler Business School

University of Notre Dame, Roger Huang, Dean, Mendoza College of Business

Ohio State University, Peter Ward, Senior Associate Dean for Faculty and Outreach, Fisher College of Business

Pennsylvania State University, Russell Barton, Senior Associate Dean for Research and Faculty, Smeal College of Business

Pepperdine University, David Smith, Dean, Graziadio School of Business and Management

Temple University, Paul Pavlou, Associate Dean of Research, Fox School of Business

University of Tennessee, Annette Ranft, Sr. Associate Dean of Academic Affairs, Haslam College of Business

The workshop chairperson and organizer was Dr. Todd Maurer, Associate Dean for Research Strategy and Professor, Robinson College of Business, Georgia State University. The chairperson had experience as an investigator in research funded by NSF, National Institutes of Health (NIH), the US Army, private foundations and corporations. Before serving as associate dean for research strategy (a role that includes leadership responsibility for promoting sponsored program activity within the college), he also had served within the Robinson College as a tenured faculty member, department chair, and multidisciplinary research center director.

The workshop was held at the J. Mack Robinson College of Business Executive Education Center, Atlanta, GA. As one of the largest business schools in the South and part of a major research institution, the Robinson College of Business at Georgia State University has 200 faculty, 8,000 students, and 70,000 alumni.

FINDINGS

The findings of the workshop are summarized below and are presented within four categories corresponding to the four sessions in the workshop: 1) Challenges, 2) Opportunities and Strengths, 3) Possible Strategies and Successful Practices, and 4) Future Coordination. These findings are not intended to be exhaustive or to comprehensively reflect existing programs, policies, or literature but rather to capture the ideas addressed by the business school leaders in response to the themes and questions in the workshop. A summary of these findings is provided in the Appendix.

Challenges

There are four overlapping categories of challenges. These are: 1) Lack of Rewards and Incentives within Business Schools, 2) Lack of Awareness/Skill in Grants Possessed by Business Faculty, 3) Lack of Infrastructure/Support for Grant Proposal and Administration from Schools, and 4) Lack of Perceived Alignment Between Funding Agency Priorities and Policies and Business School Research.

Lack of Rewards and Incentives within Business

Grants are not valued or rewarded by business schools as they are in many other disciplines. Faculty may share the impression (often very justified) that only journal articles matter—particularly top tier or premier articles in journals on target lists. Grants as a resource contributing toward that output or as possible indicators of the value of the research are not rewarded by many business schools. Further, there is a perception that NSF-oriented research (e.g. science and engineering and multi-disciplinary collaborations) may not fit into business journals. A related issue is that there are differences across business departments (or sub-disciplines) in the relevance of NSF-sponsored research (for example, Computer Information System vs. Accounting), so significant numbers of business faculty may not perceive rewards for pursuing the challenging task of grant-getting.

Further, resources provided by grants (e.g. summer salary, undergraduate/graduate research assistantships, research resources, travel, etc.) are often provided by the dean's office at research-oriented schools, so the need for these resources from external sources such as grants is not high. Faculty recruiting and retention competitiveness results in these resources being expected by productive faculty. Thus, if the college creates a new demand that faculty should generate such resources, this may hurt recruiting/retention efforts targeting sought-after faculty who seek an "all-inclusive" research destination in which the resources needed to produce research are provided.

Even if there is an incentive of additional income during summer months for having a grant (grants will often pay summer salary), the incentive of making additional salary in the summer beyond that provided by a school's deans office must compete with alternative sources of salary funding such as industry funding for project work, consulting, teaching or executive education. These alternatives may be perceived as easier, more profitable and less risky as a time investment (vs. writing proposals that may have a small chance of funding).

Therefore, the risk-reward balance for grants vs. other sources of funds may be relatively unattractive to faculty who seek additional income.

Further, salary limitations in the form of a maximum two-months summer salary (from NSF), and possibly less if total project budgets are capped by a program, may require reduced summer salary allocated in an overall budget. Although NSF does not impose maximum salary caps on monthly salary rate, some program managers at their discretion may impose rate caps (e.g. \$20,000/month) as a means to control budget size and extend resources across projects. This can result in higher paid and conceivably more productive and experienced researchers—a prime target population for writing proposals for sponsored research—not having their time covered at their salary rate. All of these factors can result in relatively modest perceived incentives.

Lack of Awareness/Skill in Grants Possessed by Business Faculty

Business faculty typically are not trained or oriented to the grant-writing process. There is much to know about sponsors, programs, policies and tacit knowledge about how to write strong proposals. This is not part of the training process of Ph.D. students or in the mentorship of early stage faculty in business schools. This creates not only a lack of skill but also a lack of motivation. Related to this is a perception by faculty that not having a track record of funded grants to show in the review process will preclude competitiveness for a proposal within the review panels. So, lacking the know-how affects the perceived difficulty of the task and also the perceived payoff or likelihood of success.

Lack of Infrastructure/Support for Grant Proposal and Administration from Schools

A key issue of concern is the level of support, guidance and infrastructure provided in the grants space to facilitate and enable grant proposal preparation and post-award administration of grants. Business schools have historically relied upon revenue streams from graduate degree programs and executive education as well as other corporate sources, so they are not set up to support grant-seeking. Business schools are not oriented toward this process and lack the support staff and resources—which may especially be needed to compensate for the lack of pre-existing preparedness by faculty compared to other disciplines.

A related challenge is that the opportunity to serve as a co-Principal Investigator (co-PI) with investigators in other disciplines across the university is likely limited by a lack of mutual awareness, within business and within the other disciplines, about how business faculty may contribute to multi-discipline projects. Further, there may not be worthwhile acknowledgement (or “credit”) from the university and business school to the business faculty for his/her contributions to a multi-discipline project where the PI resides in another college on campus that receives credit for the project funding. Likewise, differences in the types of scholarly outcomes prioritized by different colleges may serve as an impediment to collaborations. Lacking an infrastructure within the business school

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and/or university to facilitate and support these partnerships across campus (including recognition/credit for contributions) is a hindrance to participation in the multidiscipline grants process.

Lack of Perceived Alignment: Funding Agency Priorities and Policies with Business School Research

Business faculty have the perception that NSF's funding priorities are aligned with science, technology and engineering and not with business, so they perceive little opportunity and receptiveness to business research. There can be concern that review panels are not comprised of business faculty and that reviewers will not be receptive to business research. There may be a misunderstanding or prejudice that business research is not theory-driven or methodologically rigorous when in fact these are strengths of current, top-level business research. A belief that NSF is oriented to hard science and engineering (and not to business) can result in faculty not believing in the potential payoff of pursuing grants.

Further, there is a perception that there are not large amounts of funding or significant targets to pursue for sponsorship of business research. Related to this, faculty find the process of identifying relevant programs and funding priorities daunting and difficult. Identifying support for the science underlying business areas such as accounting or finance may be especially challenging and faculty may perceive this as having small probability of success.

Another related issue is that some NSF programs will fund up to two months per year of summer salary but not academic year salary. If business faculty members already have summer support from their college they might prefer to have teaching relief during the academic year to work on a funded project. The policy creates a lack of flexibility regarding when the work can be done and it seems wise for investigators to contact specific program directors in advance to determine their policies. In addition to, or compounding this possible challenge, the aforementioned monthly salary cap strategy utilized by some program managers (caps also exist as a matter of policy at NIH) may further play into this alignment issue for business schools. Salaries for some productive investigators can exceed the monthly cap, creating misalignment between the research resource faculty and the sponsor.

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Additional concerns include the lack of alignment between sponsor processes and policies and business research that may largely be dependent on and in cooperation with businesses and organizations. First, opportunities for collaboration and data collection within industry in a “real time” business context may emerge quickly and the project may need to progress toward a conclusion at a rapid pace. The normal

proposal writing and funding review process, sometimes involving an invitation to revise and submit in a future round, may not fit well with business’ pace and cycle times. Although there is a special program available to address such situations (i.e. RAPID), it is more limited in budget size and project duration and may depend on budget availability.

Another possible concern is the policy of promoting and valuing data sharing as part of the funding process. Although data sharing is not absolutely required by NSF and can be waived with good justification, the community of interest through the process of peer review and program management determines what should be considered reasonable. To the extent that companies require confidentiality and nondisclosure of certain information as part of the research process, this may create an additional concern. If business researchers perceive that there is an expectation that data should be shared widely with the research community whenever possible in NSF projects, the researchers may believe that reviewers will value and appreciate projects that create data sharing opportunities more so than those that do not. This may add to the perception that business projects may be at a disadvantage when competing for NSF resources.

Opportunities and Strengths

There are three overlapping categories of opportunities and strengths. These are: 1) a Strong Orientation to Business/Industry, 2) Outstanding Unique Intellectual Capital, and 3) Representation of Multiple Disciplines.

Strong Orientation to Business/Industry

By nature and definition, business schools have a strong focus on and orientation to business and industry. Business schools have a foot in both science and practice and can serve as a platform intermediary. This creates a number of unique strengths and opportunities in research that offer significant value to funding agencies such as NSF. First, this creates the potential to link scientists to business resources and data that may otherwise be unavailable and remain private and unstudied. To the extent that business schools offer business organizations the potential for new insights and value to be gleaned from available data and resources for research, this may open doors and create new value for the scientific enterprise that cannot be obtained by scientists from other disciplines. Business schools may serve as a portal into that resource base for the scientific community. Business school advisory boards and roundtables may serve as gatekeepers and valuable conduits for ideas and resources between industry and science. Further, to the extent that business and industry can provide additional financial or human resources to assist with carrying out a project, this can further contribute to the research effort and leverage the funds provided by the federal agency.

Related to this idea is the potential for business research to create economic value and to have impact on broader societal problems related to business, economic prosperity, innovation and well-being that flows from the business enterprise. Research conducted by business has great potential to have these broader impacts on society and the economy. Business research can address unique issues not part of other areas such as finance, tax, asset valuation and management, corporate strategy and economics, the relation of human capital within and across organizations, accounting, employment, business innovation,

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entrepreneurship and small business and a host of other issues that have significant broader impacts on society. These issues have underlying theory and science that may not be addressed adequately via other disciplinary studies supported by funding agencies.

Along these lines, business research may be actionable and may lead to new processes, products and ideas, or may even lead to commercialization. For example, one theme studied and taught in business schools is entrepreneurship and this offers a unique dimension of strength as part of a business research portfolio. Likewise, business school research may help to shape policy via focus on matters such as market efficiency, accounting issues related to reporting and disclosure, internet use, social inequities and others.

Outstanding Unique Intellectual Capital

Business school researchers bring an analytical mindset to practical problems in non-laboratory settings and applied research. Although business problems tend to be pragmatic in nature, business researchers are trained to frame these problems with relevant theory and apply rigorous research methods to understand and make advancements in business. Business schools have increasingly applied rigorous methods and invoked strong theoretical bases underlying theory. Indeed, advancement of theory is strongly reinforced in the missions of prestigious business journals.

Business school salaries and resources can be higher than related disciplines, often providing an ability to compete for some of the most productive and best scholars from other disciplines as well as scholars from within business. This results in a labor market dynamic in which some of the strongest scholars may be drawn from other disciplines across the university to reside in a business school as they seek higher rewards and resources for their work.

Representation of Multiple Disciplines

Business schools originated via the combination of ideas from different disciplines being applied in commerce and business. Business schools have multidisciplinary roots and are still composed of faculty that apply expertise from multiple areas of study, including economics, mathematics, statistics, psychology, sociology, law, and others. This creates the opportunity to understand, contribute to, and bridge multiple disciplines in a way that

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creates unique value in research. Big societal and economic challenges and opportunities are multidisciplinary in nature, and business schools are uniquely prepared to contribute to understanding and solving these problems via research.

Business schools also may offer another unique entry point for STEM-related education and workforce entrants via specialized degrees offered in business schools as well as STEM-related research conducted within business schools or through cross-university collaborations that include business schools. Topics such as analytics, technology, innovation, commercialization of science, engineering management and process optimization, and related themes in research and teaching are

all within the purview of business schools. Business schools can offer value via research and related funded activity from organizations such as NSF to students and scholars who have interests in straddling STEM and business or who may move across scientific and business boundaries. Such science-business boundary spanning may be increasingly common in the coming decades as science must rely upon business principles to remain viable and business relies upon and leverages science in commercial endeavors. Business schools are uniquely positioned to contribute to this via sponsored projects.

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Successful Practices

There are three overlapping categories of successful practices. Not surprisingly, these align to mitigate several challenges discussed above, especially those under the control of business schools. These are: 1) Offering Incentives and Rewards, 2) Creating Support and Infrastructure, and 3) Deploying Appropriate Human Capital.

Offering Incentives and Rewards

A major overarching limitation to the pursuit of grants in business schools is that the culture does not align with grant-getting. An important strategy for counteracting this existing limitation is to provide appropriate incentives and rewards to encourage the pursuit of grants. A common complaint of faculty is that grants are not recognized or rewarded in important human resource practices and processes such as promotion and tenure reviews, annual faculty evaluations and merit salary adjustments, or if they are recognized, that appropriate weight to justify the effort is not provided. Recognizing and rewarding successful grant applications in a similar way that top tier research articles are recognized is one strategy. Schools must decide how much and in what ways grants should be recognized and rewarded amidst all valued activities, but it is clear that without any recognition the pursuit of grants is unlikely to be taken seriously.

Some direct compensation and rewards can come in the form of extra summer funds as part of a grant budget. It is common for investigators to build in some investigator time allocated during summer months, and these funds can supplement academic year and other salary received from the college (Academic Year (AY) and/or summer), thus increasing the net income of faculty during a calendar year. Although some NSF programs may not encourage funded personnel time during the academic year, it is possible for a school to offer its own course release time (e.g. reduced teaching) as an incentive for successful grant applications or to experiment with financial incentives for grant-getting (e.g. merit raise, salary supplements, etc.) as provided by their institution policies.

Another incentive or resource that is a key part of grants is graduate (or other level) student support as research assistants. This is a key priority of funding agencies such as NSF, and being able to hire talented graduate students and other research staff can be appealing to faculty and administrators alike in business schools. Post docs are also a “resource” that can be supported on grants and this is something that faculty and administrators should

be mindful of as they weigh the benefits of grant support for their research programs. As internal research budgets for support may be tightening amidst economic pressures, providing financial support for assistance to be more productive at generating top research articles is likely to be appealing to business faculty and administrators. For faculty, through external funding, one can essentially build an ecosystem around oneself that helps to free him/her from local demands. So external funding can provide a level of independence above and beyond that provided by other resources, such as being an endowed professor.

Another source of funds is facilities and administrative costs or “overhead” charged to grants to cover costs for conducting research that cannot be easily attributable to individual direct project costs. Universities bill an administrative overhead rate on top of direct costs for the research and these amounts can be substantial (for example, 50 percent of direct costs added as an overhead charge). Some institutions share the revenue created by grants by returning a portion of the overhead or indirect funds from grants to the college or unit generating the grant income. To the extent that a college provides access to these funds by an investigator and his/her home department, this creates an additional financial incentive to investigators and administrators for generating this income. To the extent that investigators can receive such funds for use beyond the grant project in a discretionary way (e.g. for other projects, salary supplements, travel, etc.), this kind of additional fund pool becomes analogous to an endowed research fund. The investigator therefore might essentially “grow his/her own professorship.” If this policy is not in place, business schools might make the case to their universities that their facilities and administrative needs are low relative to other disciplines (e.g. those who require lab space and major equipment), and so some portion might be returned to the business school.

Finally, with respect to specific financial incentives, it is possible to offer as encouragement for investment into the grant-writing process various forms of “seed grants” or support explicitly for generating proposals for funding. This is a form of cost-sharing between the college and faculty member for investment of time and risk into the process of proposal generation.

While many of the issues discussed above relate to concrete financial or tangible recognition as part of human resource processes and rewards, there are also intangible or intrinsic rewards that may be as important or possibly more important as a motivator to business faculty. Helping business faculty gain further insight into the intrinsic benefits of grants (vs. solely the extrinsic) is key. The idea of celebrating and publicizing effort and successes related to grants is potentially worthwhile. Evangelizing wins and sharing success stories and contributions to the community via grants can be helpful.

Creating Support and Infrastructure

One challenge and obstacle to the pursuit of grants is lack of support and infrastructure to enable and remove some of the personal effort and time investment that falls to the investigator absent that support. Providing support and taking some of the pain out of the process lowers the cost of involvement by the faculty investigators, thus making the risk/reward ratio more attractive to them. Business schools can retain and/or develop staff members who specifically allocate time for grant-related efforts involved with proposal preparation and/or post-award management tasks. This activity can include searching for

opportunities aligned with faculty interests and funneling these to faculty, summarizing funding program priorities, budget preparation, form completion, boilerplate university descriptions and context data, navigating submission systems, obtaining signatures and approvals and so on—all tasks that are ancillary to research ideas and plans but that are

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nonetheless necessary to submitting a proposal. As part of the staffing support, systems and policies for managing grant-related efforts, universities usually have existing systems for searching and managing grant opportunities, although business faculty may not have much familiarity or experience

with them. In post-award, this can include tracking budget expenditures, dealing with disbursement and other project resource procurement, and so on.

If administrative faculty members have time allocated to strategically facilitate and lead the development of this function in a college, this can also accelerate success. Likewise, there are a variety of consultants and consulting agencies that provide services in the grants space that can be retained on a project or contractual basis to provide support (e.g. guide process, feedback on proposals, strategy, etc.).

This support function from either internal or external sources also can include development and delivery of training or workshops to faculty investigators on skills and knowledge related to grants. Further, interviewing or holding focus groups with faculty to identify interests and to share information and ideas can help to build awareness and create a two-way flow of information. Another idea is helping faculty to align journal article writing with proposal writing to identify ways to exploit commonalities in effort. This might be a useful strategy because journal articles are so very important in business schools—aligning these efforts in any way (i.e. converting concept or theory papers to proposals or vice versa) could be useful.

Finally, to the extent that research centers, departments and unit leaders are encouraged to support grants, this broadens the base and orientation of the community to problem-solving, identifying needs, scoping out possible areas of commonality and alignment with potential sponsors, and generally building capability in this space. Regular communication and publicizing policies, resources and priorities can be part of this process.

Deploying Appropriate Human Capital

Part of the success of any organizational effort is deploying the appropriate human capital to undertake the challenges. There are several considerations and ideas in this category. First, it seems potentially worthwhile to consider which sub-disciplines have significant opportunity for grants and to target those areas. Also, there is the issue of seniority—whether the pursuit of grants should primarily be the activity of senior faculty who have an established track record of research and who may be in a better position to allocate risk into the proposal process (vs. junior faculty who are yet establishing their research and pursuing tenure and promotion criteria on tight timelines). There seems no “one size fits all” model for grant expectations and encouragement.

Another possibility is to specifically recruit faculty from related disciplines with greater emphasis on grants and whose research and teaching will fit the priorities of a business

school. Additionally, one strategy is acquiring nontraditional research or clinical faculty who may have experience in grants or working in a grant-rich environment and then assigning them the responsibility of generating grant projects, either independently or in collaboration with other faculty. Creating centers with this orientation and faculty makeup (i.e. faculty funded partly or entirely via soft money, or possibly in a way that shifts from hard to soft funding over time—to become at least partly self-supporting) might serve as a way to seed and maintain a focus on grant-getting. NSF does allow covering more than two months of salary for positions paid by “soft” funds such as grants.

Finally, appropriate human capital might be organized from within, either by explicitly encouraging, rewarding and supporting collaboration within and across faculty and groups in a college of business or with faculty in other disciplines on campus. Business faculty might become co-investigators with faculty in other disciplines or units in which a project can benefit from the participation of business faculty. This effort may require some proactivity on behalf of a business school to organize meetings and discussions among faculty around opportunities and potential for collaboration. Further, universities must acknowledge and provide for shared credit for co-investigator contributions to grant projects so that the PI’s home college is not the sole beneficiary of credit for a multi-college award on campus. One strong version of this, possibly in concert with university level agents, is cluster hires around a theme or area that has high potential for external funding. To the extent that such groups are built and originated with external funding in mind, this can become part of the operating norms of such a group. If a center or initiative can seed such an effort, this might be a strategic route to encouraging grant funding—and to serve as a resource to other faculty in this space.

Future Coordination Between the Business Discipline & Funding Agencies Such as NSF

There are two overlapping categories of future coordination between business as a discipline and funding agencies such as NSF. These are: 1) Better Alignment of Resources and Awareness as well as 2) Enhanced Communication Channels and Venues.

Better Alignment of Resources and Awareness

One idea to help create better alignment of resources and awareness is to create a joint task force or blue ribbon panel involving representatives from NSF, the business academic discipline and executives from the business community. This group would be charged with the goal of strengthening alignment, awareness and coordination so that available research resources can be leveraged to their full potential. Such a group would consist of members from the respective communities and could serve as an intersection point to enhance awareness and help to facilitate alignment of effort and resources within the respective communities (e.g. business discipline, industry and funding agency). Part of the challenge is establishing the appropriate role of business executives in this process of finding the best alignment of the scientific and business community. They typically are not involved in either the research or the funding agency processes and could be involved in strategic planning, information dissemination, coordination and possibly even grant review panels.

There also could be organization of personnel within the discipline and funding agency separately. For example, within NSF, greater effort could be made to formally involve

business faculty into the actual funding process of NSF in the roles of panelists, rotator program directors and possibly other NSF leadership roles. Further, within NSF there might be special training or orientation for non-business staff around the role of business in science and society and how to better appreciate and leverage the value of business research within and across various NSF programs. Better awareness of the content of business research might create better program development plans to leverage the research resources within the scientific community.

Within the business discipline, there could be new and greater organization of leaders and faculty to be better oriented to the role of funding in business research, learning the process of applying for and conducting grants (perhaps beginning with Ph.D. student training), and greater attention to and awareness of the scientific and social value of business research. Business leaders (e.g. deans) interested in this issue and changing the culture of business schools to better leverage available research resources at a national level might become organized into a standing group of academic leaders that address these challenging and difficult issues for the discipline. Representatives from organizations such as AACSB and sub-discipline groups such as the Academy of Management, Strategic Management Society, INFORMS, and others might participate in such organizations to address matters such as the role of funded research in accreditation, professional development, student training, business community involvement, and related concerns. For example, there is a strong orientation around business school rankings related to journals—could there be more attention paid to research orientation around engagement with research sponsors, whether federal agencies such as NSF, NIH or others or around corporate sponsorship? Such metrics might contribute to a broader view on impact, relevance and value.

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As there is greater organization of personnel within and across the discipline and the funding agency, this could lead to special programs at NSF in which business themes are explicitly identified as funding priorities. Via such new program structuring, more funding might specifically and explicitly be earmarked to maximize research and science related to business. This could be a good investment to create broader impacts on economic and societal outcomes flowing from greater innovations in business research. One source of information on such a process of coordinating efforts might be to study the evolution of the relationship between medical schools and NIH. Another idea might be the creation of an entirely new federal funding agency designed to support economic development through business research.

Other efforts toward better alignment include possible adjustments and/or greater awareness of the unique challenges and opportunities of business research with regard to funding agency processes and programs. Several of these challenges and opportunities were discussed earlier in this report and are again briefly referenced here explicitly through the lens of creating greater alignment between agency policy and process and business school research. These issues include cycle and review time required for funded projects, data management expectations, and faculty salary charges.

First, with respect to the timing of grant proposal reviews, most NSF programs require a cycle time of grant submission, review and prioritization followed by awards being made, all of which can take many months – and it is not unusual that an initial submission is invited for revision in a future cycle of review in a funding program. These cycle times may be misaligned with practical business time lines. Accelerating the cycle time in funding business-related research or increasing the amounts available in accelerated projects (such as those funded by NSF RAPID) could result in greater alignment.

Second, with respect to data management, an expectation by some program managers and reviewers about making data publicly available to other researchers might influence how a specific project is perceived and evaluated (e.g., projects with data management plans that involve making data widely available are viewed more favorably). If business organizations are concerned about widely sharing confidential business data, this may have an inhibitory effect on research funding. Attention to constructive policies and decisions related to this issue may benefit from joint scrutiny by NSF, discipline leaders and the business community.

Third, with regard to faculty salary charges to an NSF grant, at many schools the business research faculty may be provided with summer salary as part of their existing arrangement with the school. For such faculty, reduced teaching during the academic year instead of increased summer salary may be a preferable arrangement. However, to the extent that some NSF programs limit grant salary charges to the summer months and not to the academic year, this precludes that kind of flexibility in allocating time to the grant. Although informal arrangements within the school could create appropriate offsets to provide for this, certification requirements may mandate that faculty allocate their time across AY and summer months accordingly. Greater flexibility to allocate time during the academic year on a grant could enhance motivation of some business faculty to pursue them.

Another related faculty salary issue stems from imposed caps on monthly salary rates. If a specific program imposes a limit on monthly salary rates, then the amount of funding provided may not cover all of an investigator's time. Certainly one way to address this issue is for PIs to contact program managers to inquire about any program-specific parameters regarding the funding they intend to pursue to facilitate their decision-making and planning; however, awareness of this issue within NSF can also shed light on motivation of business school faculty and administrators to pursue funding. To the extent that a goal is to encourage more submissions from business schools, awareness of the possible effects of this limitation seems worthwhile.

Enhanced Communication Channels and Venues

There are several opportunities for enhanced communications including journals, conferences and meetings, and web-based media. Journals are very important in business research and, in fact, may represent the single biggest criterion of measuring research productivity -- any other factor (including grants) would likely come in a distant second place. Publishing in the top journals determines faculty hiring, tenure, promotion, merit raises, teaching requirements and other outcomes. For departments and colleges, rankings based upon journal publications are powerful drivers of status, applicant attraction, and resourcing. Not surprisingly, research efforts by faculty and colleges are usually geared toward the efficient production of premier or "A" journal publications. Other activities that

create inefficiency in this pursuit can be viewed as relatively poor investments of time. Given the very important role that journals play in business research, coordinating efforts in communication surrounding funded research with journals could be valuable.

One idea is to work with researchers and journal editors to identify some business themes to develop special issues related to specific NSF programs and coordinate a funding cycle or cycles with the journal, creating agreements around competitive proposal and paper coordination. Variations on this theme might be possible. For example, competitive ideas might receive seed funding and a commitment to publish a product of the effort, or competitive theory papers published in a journal might receive seed funding to conduct an empirical exploration. This would highlight the connection between the funding agency priorities and publication priorities in the discipline in top outlets.

Another possibility is to convene journal editors or publishers and gain commitments to work with funding agencies. In an effort to maximize the quality of research within a field, it could be in the best interest of editors to help researchers maximize their share of funding allocated to studies within the disciplinary focus of the journal. Reaching researchers via this channel can be in the joint interest of journal editors, researchers and funding agencies. Editors and publishers might publicize funding agency program announcements or partner in providing information about possible funded projects within the area of focus by the journals. Relatedly, journal editors are in a good position to work with funding agencies to help shape priorities of programs in response to current research trends and directions. In whatever form, communication via existing journal infrastructure seems a potentially valuable channel that should be maximized in business scholarship.

Another format for enhancing communication is via conferences and meetings. Ideas here are conferences and workshops offered or sponsored by the funding agency to convene NSF program managers and experts (e.g. prior panelists, successful PIs, etc.) to orient and train faculty researchers who have no experience with grants. Alternatively, these kinds of events can be coordinated with existing conferences via special sessions, workshops and similar events that are brought to the researchers in an area. To the extent that journal editors, executives, and other organizational leaders are committed to and attend this effort of coordinating resources to maximize output of stronger research, greater numbers of faculty might be drawn to such events. Involving AACSB in this process to consider and discuss the possible role of grants in accreditation criteria might also create a worthwhile participant in such meetings.

Another channel for communicating about grants to business researchers is web-based media. Although there are existing search engines to identify grants and funding opportunities, one idea is to create a specific section within the funding agency web site that is entirely devoted to identifying business-related program themes, organized in a way that parallels business school structure. This portal for business researchers might provide links to programs that fund research related to finance, information systems, organizational behavior, entrepreneurship, and so on, and would facilitate search and identification of funding by faculty who may lack the perspective and support that other disciplines do in finding grants. Also this type of organization may help the funding agency to more clearly track how programs are aligned with business and the ways in which resources can be channeled to have the greatest impact on business and society. Likewise, funding agencies

and professional organizations (e.g. AACSB, Academy of Management, etc.) might coordinate dissemination of relevant program links and other such information via their web sites. Business schools could more efficiently capitalize on such resources to disseminate relevant information to faculty.

Conclusions

Across funding cycles from 2011 to 2015 in the NSF “Science of Organizations” program (a sponsor of the workshop), there is an intriguing fact that is counterintuitive given the focus of the present report. In looking at the principal investigators’ departmental affiliations of the program’s awardees during that interval, business was at the top of the list (at 20%) followed by sociology (at 16%) (McComb, 2016). Thus, while it may not yet be too common for faculty within individual business schools to have grants, when it comes down to directly competing head to head with other applicants at the level of this program that funds some business-related research, business faculty seem to do pretty well. Given the strengths of business school research, this may not be surprising. As reflected in this report, business is prepared to uniquely contribute to NSF’s Big Ideas for Future Investments (National Science Foundation, 2016), such as in relation to work at the human-technology frontier, shaping a 21st century workforce capable of working effectively with data, growing convergent

Greater insight into, awareness of, and ultimately better alignment of high value research resources at a national level could have transformative effects across the United States business school research markets in which agencies such as NSF could play increasingly key roles as sponsors and partners in the coming decades.

multidisciplinary research in areas that might not fit inside the “box” of any particular existing program, and several others. There are a variety of large research themes within NSF and other sponsors that might be part of a national agenda to advance knowledge and economic prosperity to which business schools can make exceptional contributions. To the extent that business schools could become more broadly oriented to grant funding in the future, and sponsors such

as NSF were receptive to strengthening coordination and alignment, research funds could be leveraged further to bring even stronger research to market from within the business discipline. This would be valuable to all constituents and stakeholders that could benefit from greater insights into issues that affect the well-being of individuals, competitiveness of the workforce, innovativeness of research, partnerships between academia and industry, and increased economic competitiveness—all concerns of both business schools and funding agencies such as NSF. Greater insight into, awareness of, and ultimately better alignment of high value research resources at a national level could have transformative effects across the United States business school research markets in which agencies such as NSF could play increasingly key roles as sponsors and partners in the coming decades.

In encouraging more grant activity, it is clear that business schools must exist and compete within their unique markets--business schools cannot simply adopt wholesale the mindsets, cultures, criteria and policies of colleges of science or engineering. Real success will likely come from organizing those within and will involve those who really understand business schools to address these challenges—not outsiders trying to impose their norms, views or understanding. This means that those who have been business faculty and who have

served in leadership roles in business schools are important to success. In addition, greater awareness by sponsors of the unique challenges and opportunities for business and efforts to better coordinate with discipline leaders could be important to progress. It should also be noted that the present effort was designed to address challenges and opportunities in relation to federal research grants from sponsors such as NSF. Although many of the ideas discussed here should apply in relation to corporate or business funding for research, the partnership between industry and the business discipline in research has its own potential challenges and opportunities and these ideas may warrant additional elaboration elsewhere. The present report provides a good foundation upon which to build in that space.

It is clear that business schools must exist and compete within their unique markets--business schools cannot simply adopt wholesale the mindsets, cultures, criteria and policies of colleges of science or engineering. Real success will likely come from organizing those within and will involve those who really understand business schools to address these challenges—not outsiders trying to impose their norms, views or understanding.

While not intended to be exhaustive or to comprehensively address existing programs, policies, or literature, this report captures ideas offered by business school leaders in response to the themes and questions in the workshop. These ideas relate to the unique challenges and opportunities faced as we look toward the future in building stronger funded research from the business discipline in relation to federal grants. Challenges identified include a lack of: a) rewards and incentives within business, b) awareness/skill possessed by business faculty, c) infrastructure/support for grant proposal and administration from schools, and d) perceived alignment of funding agency priorities and policies with business school research. Opportunities/strengths of business schools in the potential for funded research included a strong orientation to business/industry as a unique scientific resource and source of partnership, outstanding unique intellectual capital, and representation of multiple disciplines. Possible successful practices to enhance effectiveness in the grants space included offering incentives and rewards, creating support and infrastructure, and deploying appropriate human capital. Finally, ideas for future coordination between business as a discipline and funding agencies such as NSF included better alignment of resources and awareness as well as enhanced communication channels and venues. This report discussed a variety of specific ideas within each of these categories in an effort to advance insights and attention to these issues.

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**APPENDIX:
SUMMARY OF CHALLENGES, OPPORTUNITIES/STRENGTHS, POSSIBLE SUCCESSFUL PRACTICES, AND
IDEAS FOR FUTURE COORDINATION BETWEEN BUSINESS AND FUNDING AGENCIES SUCH AS NSF**

Challenges

Lack of Rewards and incentives within business

- Perception that only journal articles matter in business schools, not grants
- Perception that NSF-oriented research (e.g. science, technology, engineering, math, etc.) does not fit business journals
- Resources provided by grants already provided by the dean's office
- Risk-reward balance for grants vs. other sources of funds may be relatively unattractive
- Salary limitations (e.g. two month limit, rate caps, etc.) reduce attractiveness

Awareness/skill in grants not possessed by business faculty

- Business school faculty are not trained or oriented towards grant writing.
- Perception that lack of track record of grants a disadvantage in the review process

Infrastructure/support for grant proposal and administration lacking in business schools

- Business schools not set up to support grant-seeking, administering
- Opportunity to serve as a co-PI with investigators in other disciplines seems limited
- No acknowledgement (or "credit") to business faculty for multi-disciplinary project efforts

Perceived lack of alignment of funding agency priorities and policies with business school research

- Perception that NSF's priorities are aligned with STEM and not with business
- Review panels not comprised of business faculty and perceive reviewers not receptive
- Not large amounts of funding to pursue in business research
- Process of identifying relevant programs and funding priorities viewed to be daunting and difficult
- Faculty with existing summer support might prefer teaching relief during the academic year but some NSF programs may encourage summer support only
- "Real time" business research opportunities not aligned with normal proposal writing and review process cycle times
- Policy of valuing data sharing not aligned with corporate confidentiality and nondisclosure

Opportunities/Strengths

Strong orientation to business/industry

- Creates a unique scientific resource and source of partnership otherwise unavailable
- Business research offers unique economic value and impact on broader societal problems
- Research may be actionable and lead to new policies, processes, products or commercialization

Outstanding unique intellectual capital

- Analytical mindset to practical problems in non-laboratory settings and applied research
- Apply rigorous methods and invoke strong theoretical development

Representation of multiple disciplines

- Creates unique value for big societal and economic challenges
- Labor market dynamic in which strong scholars drawn from other disciplines
- Offers a unique entry point for STEM-related education and workforce entrants
- Enable science-business boundary spanning increasingly important in the coming decades

Possible Successful Practices

Offering Incentives and Rewards

- Rewards in promotion and tenure reviews, annual evaluations and merit salary adjustments
- Allow for extra summer funds as part of a grant budget
- Offer course release time (e.g. reduced teaching) as incentive for successful grant applications
- Allow for grants to hire more research assistants or post docs
- Share overhead funds with investigators/units
- Offer seed grants or support for generating proposals (cost share in risk of time investment)
- Celebrate and publicize effort and successes, evangelize wins

Create Support and Infrastructure

- Retain/develop staff for proposal preparation, post-award management
- Administrative faculty allocate time to facilitate and lead grants function
- Consultants and consulting agencies provide services in the grants space
- Deliver training/workshops to faculty on skills and knowledge related to grants
- Help/encourage faculty to align journal article writing with proposal writing
- Research center, department and unit leaders encouraged to support grants
- Regular communication and publicizing policies, resources and priorities

Deploy Appropriate Human Capital

- Consider which sub-disciplines have opportunity, invest accordingly
- Consider issue of seniority and tenure—senior faculty vs. junior vs. clinical seek grants
- Recruit faculty from related disciplines with greater emphasis on grants
- Acquire nontraditional research or clinical faculty with experience in grants
- Create centers with orientation to grants
- Encourage and support collaboration within colleges of business or with other disciplines
- Organize meetings and discussions among faculty around opportunities
- Provide for shared “credit” for co-investigator contributions to grant projects in other colleges
- Pursue cluster hires around a theme or area with promise of external funding

Ideas for Future Coordination Between Business Discipline and Funding Agencies (e.g. NSF)

Better Alignment of Resources and Awareness

- Create a joint task force or blue ribbon panel (NSF, business discipline, executives from business)
- Formally involve business faculty into the actual management of NSF programs (e.g., as rotators)
- Orient business discipline leaders and faculty to funding in business research, process of applying for and managing grants
- Business deans organized into a standing group that address funding issues for discipline
- Representatives from professional organizations (e.g. AACSB, Academy of Management) organized for discussion on sponsored research
- Special new programs at NSF in which business themes are explicit priorities
- Adjustments and/or greater awareness to funding agency processes of business challenges (e.g. cycle times, data management/sharing, salary policies)

Enhanced communication channels and venues

- Coordinate efforts in communication surrounding funded research with journals
 - Identify some business themes to develop special issues related to an NSF program
 - Competitive ideas receive seed funding or commitment to publish products
 - Convene journal editors to work with funding agencies in publicizing program announcements and shaping funding priorities in response to current trends
- Conferences/workshops offered by funding agency to convene NSF program managers and experts (e.g. prior panelists, successful PIs, etc.) to orient/train faculty researchers
- Create specific section within funding agency web site entirely devoted to identifying business-related program themes, parallels business school structure for navigation
- Professional organizations (e.g. AACSB, Academy of Management, American Marketing Association, AIS, INFORMS, etc.) web sites ensure relevant program links and information