FOSTERING INNOVATIVE CAPACITY VIA ORGANIZATIONAL REWARD SYSTEMS: THE CASE OF FACULTY COLLABORATION

A Dissertation

by

CARA BETH BARTEK

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2009

Major Subject: Educational Human Resource Development

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Approved by:

Chair of Committee,	Larry M. Dooley
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ABSTRACT

Fostering Innovative Capacity via Organizational Reward Systems: The Case of Faculty Collaboration. (August 2009)

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Chair of Advisory Committee: Dr. Larry M. Dooley

The purpose of this study is to reveal, through the use of case study methodology, how faculty collaboration may foster the development of intellectual capital and how organizational reward systems mediate this process. Collaboration has been chosen as the unit of analysis due to the collaborative nature of innovation. Innovation often produces a sustainable competitive advantage for organizations. The key in leveraging organizations' innovative capacity is through the development of intellectual capital. Human resource development is a viable method of fostering organizational resources such as intellectual capital. Due to economic, political, and organizational constraints upon traditional human resource development activities, intellectual capital may be best fostered via non-traditional methods. Organizational reward systems, as in the case of performance-based tenure and promotion, have been shown to both promote and hinder collaborative activities. A qualitative case study approach has been chosen due to contextual factors influencing collaboration. Semi-structured interviews, document and archival analysis served as the primary means of data collection. Faculty collaboration occurring at a large Texas university was examined via three main data sources: the college-level strategic plan, network analysis of interdepartmental collaboration, and targeted, semi-structured interviews. Data analysis revealed collaboration at the university often occurs via relationships, networks, and is fostered via resource allocation. Tenure and promotion as well as available resources seem

to have a mediating effect on the decisions faculty made relating to research collaborations. Data supported the theoretical variables derived from the Theory of the Learning Organization. Recommendations for fostering collaboration center upon administering rewards in close proximity of collaboration behaviors. Further research must be performed to better understand the outcomes of successful collaboration as well as the different context in which fostering collaboration may be beneficial to organizational outcomes.

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INTRODUCTION

The purpose of this section is to introduce the dissertation. First the purpose of the study is discussed. Second the background of the problem is discussed within a human resource development context. Finally the significance of the study is considered.

Purpose

The purpose of this study is to reveal, through the use of case study methodology, how faculty collaboration may foster the development of intellectual capital and how organizational reward systems mediate this process. Collaboration has been chosen as the unit of analysis due to the collaborative nature of innovation. Innovation often produces a sustainable competitive advantage for organizations. The key in leveraging organizational innovative capacity is through the development of intellectual capital (Edvinsson, 1997). Human resource development is a viable method of fostering organizational resources such as intellectual capital. Due to economic, political, and organizational constraints upon traditional human resource development activities, intellectual capital may be best fostered via non-traditional methods. (Non-traditional methods refer to developmental techniques executed exclusive of training and development).

Organizational reward systems, as in the case of performance-based tenure and promotion, have been shown to both promote and hinder collaborative activities. Understanding the impact of tenure and promotion upon faculty collaboration, human resource development professionals may glean an understanding of how organizational resources are impacted. Intervention upon processes and structures reveals a pathway to non-traditional developmental

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This dissertation follows the style of the *Human Resource Development Review*.

methods. These non-traditional approaches may also create strategic alliances between human resource development departments and overarching organizational strategy; thereby embedding their functions into the core business.

Background

A sustainable competitive advantage is important for the continuing and lasting success of organizations. Overall firm performance and sustainable competitive advantage are directly related (Calatone, Cavusgil, & Zhao, 2002). Broadly, a sustainable competitive advantage is created through the exploitation of core competencies (Black & Boal, 1994; Hall, 1993; Lubit, 2001; Oliver, 1997; Pfeffer, 2005). These competencies must be aligned with organizational strategy to properly leverage competitive advantage (Black & Boal, 1994). Strategic management principles provide a framework by which to realize these advantages. Specifically resource-based views of strategic management predict organizational success is dependent upon the unique resources and capabilities which are held within the firm (Oliver, 1997). The value of organizational resources is a function of the interaction between resources held and the path by which the firm leverages these resources (Black & Boal, 1994). A critical success factor for gaining a sustainable competitive advantage is the processes associated with the leverage of resources.

Linking Compensation and Strategy

Gaining and maintaining a sustainable competitive advantage may be encouraged through the administration of compensation (Pfeffer, 2005). Compensation strategies often signal indications of management's perception of employee performance. Employees may adjust working practices based upon these signals. Usually compensation structures are created to encourage employee activities which promote productivity and seek to discourage those

behaviors which hinder or suppress efficiency. Targeting key behaviors which promote high-quality performance requires explicit strategy.

Designing, executing, and supporting compensation strategies which are incentive or reward based directly foster employee behaviors contributing to high-quality performance (Balkin & Gomez-Mejia, 1990; Lothe, Myretveit & Trapani, 1999). Reward-based compensation systems also bridge profit and employee remuneration. Administering rewards based upon performance which meets strategic organizational goals will directly link employee behavior and firm performance.

The Role of Innovation and Intellectual Capital

Overall firm innovativeness has been shown to be directly related to firm performance (Calatone et al., 2002). Innovation is characterized by a firm's ability to create novel goods and services to meet the mission and vision requirements of the organization as well as satisfy high-demand customers and stakeholders (Petty & Guthrie, 2000). Innovative capacity is a valuable asset in the 'new economy'; an economy in which intangible assets have become critical to competitive advantage (Boudreau & Ramstad, 1997; Hall, 1993). Learning, a chief asset to innovation, explicitly contributes to sustained competitive advantage (Sadler-Smith, Gardiner, Badger, Chaston, & Stubberfield, 2000). Development of intellectual capital, as encouraged through learning processes, has been cited as the foremost conduit to nourishing innovative capacity and learning (Edvinsson, 1997; Lubit, 2001).

A key question to consider when examining the role of innovation development in a specified organization is,

> Given critical success factors in the organization's market niche or industry, what domains of employee expertise are crucial to achieving key business objectives in each operational area? That is, what skills must the organization make the most of to succeed? (Toracco & Swanson, 1995, p. 19)

Capitalizing upon an organization's innovative capacity requires impacting the processes and structures which foster the development of intellectual capital. As will be demonstrated in the following text, influencing collaboration as a key organizational resource in the development of intellectual capital may be influenced by the management of organizational reward systems. First the human resource development perspective is considered.

Defining Human Resource Development and the Strategic Role within Organizations

Human resource development (HRD) may be defined as a set of activities occurring within an organization which foster the development of "human and organisational [sic] skills and processes" (Cacioppe, Warren-Langford, & Bell, 1990, p. 56) for the purposes of "optimizing human and organizational growth and effectiveness" (Calofsky, 1992, p. 179). Often distinguished as the dependent variable in the measurement of HRD, *performance* is a central contributor to productivity within an organization.

> If HRD is to be a value-added activity of the firm, instead of a line item cost that is to be controlled and minimized, then HRD practitioners need to be concerned about performance and how it enables organizations to achieve their goals. (Swanson & Arnold, 1996, p. 15)

To demonstrate value to organizations by directly impacting performance, HRD must first align itself with the strategic goals of an organization (Toracco & Swanson, 1995).

Gaining a Sustainable Competitive Advantage through HRD Practices

HRD may be associated with activities which seek to foster and develop organizational resources for the purposes of gaining a sustainable competitive advantage (McClernon & Swanson, 1997; Torraco & Swanson, 1995). A sustainable competitive advantage may be achieved through HRD's participation in three strategic roles: strategy formulation, strategy implementation, and strategy results (McClernon & Swanson, 1997).

Strategy formulation entails the involvement of HRD in organizational strategic planning; inserting the functions of HRD into the broad vision and mission of the firm. Strategy implementation involves moving beyond intervention and providing support for strategic initiatives. This support requires fostering education and/or learning impacting the acquisition of knowledge regarding "strategic planning, systems thinking and process management" (McClernon & Swanson, 1997, p. 6) as well as participating in organizational strategic planning. Finally, strategy results refer to HRD practices as being "performance-based" (McClernon & Swanson, 1997, p. 5). Strategic leverage may be gained via defining the performance needs of an organization and creating initiatives to meet those needs.

HRD as a 'Value-Added' Organizational Activity

Historically, "HRD has been weak strategically" (Vince, 2003, p. 559). Scholars assert HRD departments must become equal partners in influencing and fashioning emergent strategy (McClernon & Swanson, 1997; Toracco & Swanson, 1995). While equal partnership is an ideal situation is an ideal environment; economic, political, and organizational constraints may not allow front-end participation by HRD partners in strategy formulation. Impact upon performance may perhaps occur more efficiently through manipulating existing organizational structures and processes, accomplishing organizational goals without 'reinventing the wheel'.

HRD activities within a firm may be seen as an unnecessary business function (McClernon & Swanson, 1997). Traditional developmental activities have previously served in a supportive capacity (Torraco & Swanson, 1995). Acting within a supportive role prohibits the expression of direct contribution to core business functioning. HRD departments may become vulnerable to threats such as outsourcing, reduction, and elimination.

Decisions related to outsourcing HRD functions originate in the perception that activities associated with HRD do not directly impact core business (Cooke, Shen, & McBride, 2005). Processes within the organization which are seen as peripheral often operate outside of the firm's core competencies (Gainey & Klass, 2003). Outsourcing, reduction, and elimination characteristically occur as a means of cost-reduction. HRD practitioners seeking strategic alignment with organizational goals and activities must strive to insert or embed HRD functions into core business.

Embedding HRD into Core Business Functions

To embed HRD as a core business function academics and practitioners alike must shift focus from people development (Vince, 2003) to organization processes and structures which impact development systemically (Lam, 1997; Swanson & Dobbs, 2006; Torraco & Swanson, 1995). Traditional practices such as training and development must be reexamined to find more efficient and subsequently 'leaner' processes (Swanson & Dobbs, 2006). Revealing HRD's direct contribution to core business functions will uncover a pathway to HRD becoming embedded into the foundation of organizations.

Strategic Intellectual Capital Development

Holton and Yamkovenko (2008) assert that issues of relevancy for HRD may be countered via organizing HRD practices around *strategic intellectual capital development*. As defined by the authors, strategic intellectual capital development is a "robust paradigm" (p. 287) in which the intellectual capital of an organization is leveraged through strategic HRD practices. Holton and Yamkovenko contend the strategic intellectual capital development paradigm allows HRD functions to "directly contribute to financial outcomes and competitive advantage or

organizational effectiveness" (p. 287). The authors call for "a move to fill this gap pushing for HRD to capitalize on the concept of SICD [strategic intellectual capital development]" (p. 287).

The management of intellectual capital has been discussed and examined empirically in organizational science and management literature for approximately 12 years (see Bontis, 1998 & 1999; Edvinsson & Sullivan, 1996). Management and administration practices impact the behaviors of employees, subsequently influencing organizational knowledge and intellectual capital (Edvinsson & Sullivan, 1996). HRD is traditionally organized within the firm as a formal segment separate from strategic decision makers and executive bands (McClernon & Swanson, 1997). This separation creates a partitioning between the notions of outcomes related to *management* and *development*. Often enhanced performance is the goal of both management and HRD. Understanding the connections between overarching goals and outcomes may inform the understanding of the management of intellectual capital and strategic intellectual capital development.

Why Faculty Collaboration

Faculty collaboration is an ideal environment to examine innovative capacity. This environment is distinguished as one which is untethered by the conventional constraints of industry such as those imposed by markets and hypercompetition. Faculty collaboration, while subsumed in its own context, may demonstrate 'pure innovation' (research which is untethered by traditional constraints of industry) through academic scholarship. Scholarship is often utilized as a barometer to industry practices and standards. Faculty members operate within relative 'academic freedom', allowing their own preferences and choices to drive research choices instead of imposed standards. Understanding how these individuals exploit collaborative

activities to impact academic productivity may demonstrate ways in which intellectual capital of a firm may be best developed and leveraged.

At the college and university level, a core competency of scholarship is innovation. Innovation is a critical success factor in the production of novel and revolutionary academic discourse. To gain a sustainable competitive advantage, core competencies must be exploited. With respect to academic institutions, innovative capacity must be fully utilized to realize a competitive advantage. The characteristics of an R1 university, as in the case of the target university, demonstrate the full development of their innovative capacity. Capturing how the core competency of innovation is fully exploited may reveal standards and practices for other contexts.

Innovation, a fundamentally collaborative activity (Subramaniam & Youndt, 2005), is influenced by the administration of organizational rewards. Tenure and promotion, a performance-based reward system, has a direct impact upon academic productivity. Understanding the impact of tenure and promotion may demonstrate both ‘best-practices’ and ‘lessons-learned’ regarding the administration of rewards. Broadly, knowledge of how to best foster and capitalize upon innovative capacity in other colleges, universities, and organizations may be gained.

Research Questions

Examining innovative capacity in the context of faculty collaboration brings about key questions which guided this study.

1. How does faculty collaboration occur and how is it negotiated at the target university’s selected college?

2. How does tenure and promotion impact operational activities associated with collaboration?
3. How does individual perception of the impact of tenure and promotion affect collaboration?

Significance

Understanding the impact of collaboration upon academic productivity will reveal a pathway to sustainable competitive advantage for organizations seeking to foster innovative capacity. Innovative capacity has been show to clearly connect with sustainable competitive advantage. For the purposes of leveraging such advantage, one must understand the activities which foster and develop these competencies. The interaction of faculty collaboration and organizational reward systems is a demonstration piece for deepening the understanding of managing and fostering innovation.

Through reexamining, appending, supporting, or perhaps transforming organizational process and structures which directly impact performance, HRD may become an embedded and fluid partner in organizational strategy. HRD has previously been a weak strategic organizational partner (Vince, 2003). Finding and creating alternative developmental methods may produce a simple and austere connection between HRD and core business.

The Need for Change in HRD

David Mankin (2001) offers an astute perspective of the future needs for the field of HRD.

> If HRD has a role to play in helping organizations develop in an era of rapid and continuous change, then there is a need for HRD professionals (from practitioners to academics) to accept that HRD itself is a continuously evolving, adaptive concept; and they need to embrace change and ambiguity. Perhaps less time should be devoted to debating the merits of different definitions and more to better understanding how HRD, as a fluid, amorphous concept, can contribute to organization change. The fact that

> today's analysis may be superseded by tomorrow's should be seen as an exciting and dynamic opportunity to be embraced rather than criticized as contradictory. If HRD has a role to play in challenging individuals and organizational norms, values, and beliefs through the process of learning… then HRD professionals have to accept that their role (and the role of HRD) should not only be challenged, but also should continuously challenge itself. Rather than build solid foundations in imitation of more traditional functions (such as production, sales, and, more recently, marketing), HRD professionals, and in particular practitioners, need to learn how to *ride the waves of change* and view HRD in process rather than functional terms. The HRD of tomorrow *will* be different from the HRD of today and it is this process of fluidity that most aptly captures the unique characteristic of the concept itself, and thus helps to identify its unique contribution to organization development. (p. 67-68)

Expanding upon the ideas put forth by Mankin (2001), HRD must not be bound by strict definitions, models, and conceptions of the field, but rather become a strategic partner in the sustained competence of organizations. This action requires a reconfiguration of the notions regarding what it means to *develop* and more substantially how *development* is mediated in the everyday bureaucracies of organizations. HRD does not exist only in the formal departments created for training and education. Largely, structures and processes associated with carrying out the duties of one's job significantly impacts and send messages associated with how their performance and productivity is perceived. Understanding this impact and intervening upon such influences may serve as a means by which to elicit superior and sustained performance. Furthermore, understanding this impact from an HRD perspective allows for a more advanced knowledge associated with organizational change.

With respect to the current economic situation, businesses will be forced to reexamine the roles of functional departments and their contribution to profit and success. The threat to HRD is apparent; HRD has been a weak strategic partner (Vince, 2003) and often seen as an extraneous expense. An opportunity resides within HRD's ability to create competitive organizations through the development of key resources such as intellectual capital. The task is now for HRD

professionals (practitioners and scholars alike) to position itself as a resourceful, fluid, efficient, and capable organizational partner which is vital to core business functioning.

LITERATURE REVIEW

The purpose of this section is to examine literature associated with three key areas: intellectual capital, faculty collaboration, and organizational reward systems. Literature has been systemically reviewed and described based upon criteria associated with the research questions (see *Introduction* and *Methods*). Convergence is gained by overlaying associated concepts of the three areas for the purposes of promoting understanding and creating a foundation on which the inquiry will occur.

Intellectual Capital

Intellectual capital is an organizational resource encompassing the human, social, and structural knowledge capital held within the organization (Bontis, 1998, 1999; Bontis & Fitz-enz, 2002; Edvinsson, 1997; Edvinsson & Sullivan, 1996; Petty & Guthrie, 2000; Subramaniam & Youndt, 2005). Knowledge residing in human capital refers to information held by the internal human resources of the organization as well as knowledge from external stakeholders such as customers and suppliers (Petty & Guthrie, 2000). Social capital exists in the relationships and networks created and maintained by the human capital of the organization wrought for knowledge acquisition and sharing (Edvinsson, 1997;Edvinsson & Sullivan, 1996). Structural or organizational knowledge capital is comprised of tangible items such as software systems, functional networks, and supply chains (Petty & Guthrie, 2000; Wiig, 1997) as well as intangibles in the form of institutionalized knowledge (Subramaniam & Youndt, 2005). Central to the understanding of intellectual capital is the capacity of this organizational resource to add value to a firm (Edvinsson & Sullivan, 1996).

As a means of corporate strategy, knowledge created through intellectual capital development enhances firm value (Petty & Guthrie, 2000). Value creation is achieved through

two core channels: innovation and the conversion of intangible assets into commodities (Edvinsson & Sullivan, 1996). Converting knowledge-based competencies into a commodity is readily apparent in service-based industries. The development of intellectual capital may also promote steep learning curves, shorten time from learning to application, support savings in cost and investments with respect to human development activities, and 'recycle' organizational knowledge capital (Edvinsson, 1997). Strategic development and leverage of organizational intellectual capital may present an opportunity for competitive advantage (Edvinsson & Sullivan, 1996).

Managing Intellectual Capital

Recommendations for the management of intellectual capital have leaned toward facilitation processes as a substitute for traditional rigid control methods (Edvinsson, 1997). Organizations may seek to disclose pertinent knowledge in the form of 'best-practice methods' or 'lessons-learned' (Quintas, Lefrere, & Jones, 1997). Correspondingly, organizations may choose knowledge be available in a location-specific manner. Therefore knowledge pertinent to particular arms of the firm is available without an abundance of unnecessary information. Organizations may also seek to support efficient development of new knowledge with respect to research and development activities. This support may include seeking external information and development sources. Finally, the creation of 'information maps' entailing the precise location of organizational knowledge may aid in the rapid and efficient use of information (Sanchez & Mahoney, 1996; Quintas, Lefrere, & Jones, 1997).

Collaboration as a Competitive Advantage

Intellectual capital has emerged as a key organizational resource in the 'new economy' (Petty & Guthrie, 2000). As the economy shifts from resources based in trade and physical goods

to information and services, an awareness of the intangible commodities of organizations has become paramount (Boudreau & Ramstad, 1997). This information-based economy compels organizational "speed, flexibility, and imagination" (Rastogi, 2000, p. 39). Assets such as size and property have been subsumed by the need for competencies, concepts, and connections (Rastogi, 2000). Knowledge is now seen as the "sole factor of production" (Boudreau & Ramstad, 1997, p. 349) rising above labor.

Firm knowledge is distributed via individuals, organizational structures or processes, and/or socially-bound relationships and networks (Subramaniam & Youndt, 2005). Knowledge associated with the individual is variable while organizational knowledge is static and tends to stay within the firm. Knowledge circulated amongst social networks is similar to organizational knowledge, often staying within the firm despite the movement of individual actors. This stability is mainly due to the principles upon which social capital is based: "collaboration, interaction and the sharing of ideas" (p. 451) thereby embedding knowledge within the organizational structure. Indeed, a firm's innovative success appears to fundamentally depend upon relationships and collaborations (Earl, 2001; Subramaniam & Youndt, 2005).

> An organization's efforts at hiring, training, work design, and other human resource management activities may need to focus not only on shoring up their employees' functional or specific technological skills/expertise, but also on developing their abilities to network, collaborate, and share information and knowledge. (Subramaniam & Youndt, 2005, p. 459)

The value of human capital contained within an organization as well as the innovative capability is directly linked to their social capital. "Given that innovation is fundamentally a collaborative effort" (Subramaniam & Youndt, 2005, p. 459), intellectual capital development must be fostered through the promotion of collaborative relationships.

Faculty Collaboration

Various reasons exist for the proliferation of research and emerging focus related to faculty collaboration within higher education scholarship. As subject-specific understanding and knowledge deepens and enriches, academics tend to become more specialized (Austin & Baldwin, 1991; Baldwin & Austin, 1995; Hafernik, Messerschmitt, & Vandrick, 1997). Field-specific specialization requires the participation of several experts within a discipline to offer broader perspectives (Austin & Baldwin, 1991). Sophisticated research equipment may similarly compel collaborative efforts as a means by which to pool resources (Baldwin & Austin, 1995). Increasing demands for productivity within the context of university tenure and promotion frameworks may coerce collaboration (Pittas, 2000; Quinlin & Aukerlin, 2000; Smart & Bayer, 1986). Junior faculty must 'publish or perish' in order to successfully engage in the tenure and promotion process. Corresponding to issues related to faculty productivity is accountability. Accountability related to faculty members centers upon authorships in peer-reviewed journals, again possibly compelling collaborative relationships (Quinlin & Aukerlind, 2000). Also emerging is an expanding need for scholars to connect with researchers in diverse fields in order to facilitate understanding of complex issues (Baldwin & Austin, 1995). In the case of applied fields, many fundamental disciplines contribute to the theoretical base, inducing interdisciplinary enterprise.

Faculty collaboration may be classified into two major categories: teaching and research (Austin & Baldwin, 1991). Teaching collaboration focuses upon relationships built and maintained for the purposes of education, such as in the case of STEM (Science, Technology, Engineering, and Math) collaborations fostered through the National Science Foundation (Hora, 2007). Research collaboration centers upon relationships created for empirical inquiry, academic

productivity, and scholarship (Baldwin & Austin, 1995), most readily identifiable in coauthored, published works. For the purposes of this study, collaborative research will serve as the sole focus due to the emerging issues related to faculty research collaboration and interdisplinary research (Austin & Baldwin, 1991; Baldwin & Austin, 1995; Bohen & Stiles, 1998; Carson, Chase, & Gibson, 1993; Hafernik, Messerschmitt, & Vandrick, 1997; John-Steiner, Weber, & Minnis, 1998; Pittas, 2000; Quinlan & Akerlind, 2000; Stevenson, Duran, Barrett, & Collarulli, 2005) and the implications within the contemporary higher education system.

Within the realm of faculty research collaborations, relationships exist in two forms: hierarchical and equal (Hafernik, Messerschmitt, & Vandrick, 1997). Hierarchical relationships are characterized by a chief scholar or researcher "mentoring" (p. 32) a subordinate or junior scholar. Germane to this type of relationship is an uneven distribution of some academic or institutionally-bound feature (expertise, experience, rank) which permits an unequal engagement. Equal relationships are distinguished as equivalent interactions amongst collaborators. Equal relationships "seem less common than hierarchical ones" (p. 32). The lower frequency of these relationships may be due to the nature of authorship sequence in peer-reviewed journals and the related perceptions of the author order. For example, readers may assume the first author on a coauthored piece signifies a greater contribution. This perception "may be connected to differences in disciplines, [or] the relationships of the authors (professor-student, senior professor-junior professor, or 'equal' colleagues, for example)" (p. 33).

Coupled with differences in disciplines is the frequency by which collaboration occurs based upon discipline (Baldwin & Austin, 1995; Hafernik, Messerschmitt, & Vandrick, 1997). "Collaboration is more common in mature fields with well-established conceptual paradigms, where the research can move from theory building to theory testing" (Baldwin & Austin, 1995,

p. 46). Bench sciences such as biology, chemistry, and math tend to experience collaborative research partnerships regularly. It should be noted Nobel prizes in chemistry, medicine, and physics awarded to two or more authors has increased significantly since the early 1900's (Hafernik, Messerschmitt, & Vandrick, 1997). Humanities and social sciences experience less frequent collaborations (Baldwin & Austin, 1995) with existing collaborative relationships being described as "devalued" (Hafernik, Messerschmitt, & Vandrick, 1997, p. 32) by existing administrative frameworks in colleges and universities.

Collaboration as an Embedded Developmental System

"Researching and writing with colleagues can be very productive and enjoyable in ways that single researching and authoring may not necessarily be" (Hafernik, Messerschmitt, & Vandrick, 1997, p. 31). The nature of collaborative work provides a "built-in support system" (p. 34), or embedded system, via the mechanisms of multiple edits and regular feedback, support and encouragement, and frequent recognition of achievements related to the project. Linked to the process of multiple edits and regular feedback, "working on projects in a group allows two or three editorial pairs of eyes rather than one, which promotes clearer and better writing" (p. 34). By having an expansive group of researchers contributing to a single project, multiple viewpoints and perceptions enrich the insight related to the project (Hafernik, Messerschmitt, & Vandrick, 1997; Whitley & Oddi, 1988). The nature of collaborative group work may be an "energizing" (Hafernik, Messerschmitt, & Vandrick, 1997, p. 35) exercise. Discussing ideas and generating knowledge amongst colleagues often stimulates excitement regarding the project. Group work and collaboration may also establish guidelines and a framework by which to approach the research issue (Bohen & Stiles, 1998; Gitlin, Lyons, & Kolodner, 1994; Hafernik, Messerschmitt, & Vandrick, 1997). Working with multiple persons involves the alignment of

schedules. Through this process benchmarks and deadlines must be established subsequently increasing motivation and incentive for individual contributors (Hafernik, Messerschmitt, & Vandrick, 1997).

Collaboration as a Key Contribution to Academic Productivity

Collaborative relationships have been shown to have a direct impact on academic productivity (Lee & Bozeman, 2005).

> Like so many cases in the social sciences, the research outcome is rife with complexity. In some cases, collaboration has a positive effect on productivity; in other cases, it has little discernable effect on weighted publications productivity; and, in still others, it may even have a suppressing effect. (p. 693)

When the total numbers of publications are pooled, collaboration is shown to be a strong predictor of productivity (p. 693), meaning there is a positive relationship with total number of collaborative projects and publication activity among faculty members (Smart & Bayer, 1986). However when numbers of publications total are examined as "fractions" (Lee & Bozeman, 2005, p. 693) (a product of dividing the published work/works by number of credited authors) collaboration and publishing activity are not significantly related. Furthermore, collaboration may have a "suppressing effect" (p. 693) on publication activity. The relationship between the suppressing action and collaboration is not clear, but may be related to the costs connected to group work involved with collaborative efforts. Generally, the total number of multiple-authored publications is significantly higher than the number of single-authored works (Smart & Bayer, 1986, p. 301). The extent to which productivity impacts successful or meaningful scholarship is unclear (Bozeman & Corley, 2004; Lee & Bozeman, 2005).

Defining, Identifying, and Understanding Successful Collaborations

Successful collaboration is a construct which may be observable, yet not readily quantifiable. "Successful collaboration involves increasing our understandings of one another's

worlds and roles through shared dialogue, as opposed to shared work" (Clark, Moss, Goering, Herter, Lamar, Leonard, et al., 1996, p. 227). Baldwin and Austin (1995) have identified six dynamics which characterize successful collaborative relationships. These dynamics move along a continuum in relation to the relative association of the specified relationship trait. Interestingly, variances related to the measurements of the continuum do not predict any degree of success. Instead the authors offer, "Each dimension does not have a positive or negative pole but rather suggests a range of possibilities for the ways in which the team may work and interact" (p. 62). Notions of collaborative success or failure depend largely on the perceptions embedded within the associated field of study (Stevenson, Duran, Barrett, & Colarulli, 2005).

Promoters of Faculty Collaboration

Numerous factors fostering collaboration have been identified in the literature (Austin & Baldwin, 1991; Baldwin & Austin, 1995; Bohen & Stiles, 1998; Carson, Chase, & Gibson, 1993; Derry, DuRussel, & O'Donnell, 1998; Galagher, 1988; Gardner & Johnson, 1988; Gitlin, Lyons, & Kolodner, 1994; Hafernik, Messerschmitt, & Vandrick, 1997; Lee & Bozenman, 2005; Quinlin & Aukerlind, 2000; Stevenson, Duran, Barrett, & Collarulli, 2005; Whitley & Oddi, 1988). Five distinct institutional factors contribute directly to fostering collaborative efforts: clear vision, leadership, institutional commitment, financial resources, and incentives and rewards systems (Bohen & Stiles, 1998). Creating a clear vision entails the creation of concrete goals and objectives related to the collaborative project (Carson, Chase, & Gibson, 1993). Marketing the clear vision both provides incentive and support for the collaboration while detailing a diagram by which to enact the project (Bohen & Stiles, 1998). Strong administrative leadership may afford collaborators resources and advocation supporting the project. Relevant to leadership is institutional commitment, the dedication of the system or systems facilitating the

project. “Bringing creativity and imagination to the administrative realm will offer administrators the opportunity to think in new ways and to reevaluate the success or failure of the administrative structures that are in place ostensibly to support the academic mission” (p. 54). Vested to institutional commitment is financial resources which support, through fiscal means, the collaboration. Finally incentive and reward systems such as tenure and promotion frameworks “encourage and reward faculty efforts in these [collaborative] endeavors” (p. 54).

Deterrents of Faculty Collaboration

“Working beyond the bounds of solitary scholarship represents a range of challenges” (Bohen & Stiles, 1998, p. 41). Three key areas which deter faculty collaboration are; the nature of academic training, academic reward structures, and administrative structures. Faculty members first experience scholarship and academic writing in graduate school. Graduate students are trained and rewarded based on individual efforts (Baldwin & Austin, 1995; Bohen & Stiles, 1998; Havernik, Messerchmitt, & Vandrick, 1997). The very nature of academic preparation for professors instills an individual-oriented production of scholarly work. As faculty are newly hired and work within college and university structures their academic productivity is driven through the process of tenure and promotion. Current procedures related to tenure and promotion assign greater reward to single-authored works over multiple-authored pieces (Bohen & Stiles, 1998). Through anecdotal examination, deans report single-authored articles are necessary for successful engagement in tenure and promotion (Havernik, Messerchmitt, & Vandrick, 1997). Germane to organizationally driven reward structures, administrative structures are constructed based upon departmental separation. This division “cement[s] these narrow ways of interacting and hinder the pursuit of cross-disciplinary work” (Bohen & Stiles, 1998, p. 43).

American society itself promotes a type of “rugged individualism” (Havernik, Messerchmitt, & Vandrick, 1997, p. 32) which further promotes individual effort, deterring collaboration.

Tenure and Promotion

As mentioned in the previous text, reward structures both foster and deter successful collaborative relationships. The institutionally-bound reward system significantly influencing academic productivity is tenure and promotion. Tenure and promotion is a system devised to evaluate faculty members based upon three core constructs of merit: teaching, research, and service (Ory, 2000). These three areas are quantified and evaluated at designated periods based on tenure rank. Evaluation results subsequently permit or prohibit faculty from moving along a series of promotions. The overarching goal of this activity is to become ‘tenured’ within your institution, thereby achieving the highest rank and level of scholar. “Faculty evaluation influences academic careers through decisions that seal the fate of individuals while also sending powerful messages about what exactly-in a particular environment-scholarship can mean” (Huber, 2002, p. 81). Institutional support of collaboration may be impelled through management of the tenure and promotion process thereby fostering collaborative relationships and collaboration.

Organizational Reward Systems

“[Organizational] reward systems are concerned with two major issues: performance and rewards” (Kerr & Slocum, 1987). Performance refers to the productivity of organizational members while rewards are the compensation given to the individual for performing the task or tasks. The notion of managing behavior or productivity based upon rewards has profound negative implications (Bartol & Srivastava, 2002). Rewarding an individual through external rewards such as salary and compensation may undermine a person’s internal motivation related

to work and work activities. Internal or intrinsic motivation is characterized by the incentive "to perform a task because of the inherent enjoyment derived from doing that task" (p. 66). In contrast, external or extrinsic motivation is contingent upon the external rewards gained from the performance of some task. Historically, scholars support intrinsic motivation as a more stable predictor of sustained performance. In the case of external reward systems, extrinsic rewards may "convey a signal affirming competence of the individual that has a favorable impact on intrinsic motivation" (p. 66), invoking a higher-order attribution style for the individual. Therefore external reward systems such as organizational reward systems may indirectly impact the intrinsic motivation of the individual, thus sustaining a desired level of performance.

Within the realm of reward systems, two chief variations exist; hierarchy-based systems and performance-based systems. In hierarchy-based reward system, "superiors [define] and [evaluate] the performance of subordinates" (Kerr & Slocum, 1987, p. 100) while performance-based systems "objectively [define] and [measure] performance and explicitly linked rewards to performance" (p. 102). Within a hierarchical-based reward system, performance and productivity are based upon subjective criteria. "Even in quantified areas, superiors [do] not hesitate to interpret numerical outcomes in the context of their own knowledge of the situation" (p. 100). Accordingly, mentoring relationships are typically born out of the "vulnerable" (p. 101) relationship between superior and subordinate due to the extensive interaction required for achievement of rewards. Compensation and tenure depend largely on the outcome of the organization, thereby creating an environment conducive to "cooperative" (p. 100) rather than "competitive" (p. 100) behavior. Performance-based reward systems generally ignore any subjective interpretation of subordinate performance. Evaluation within the performance-based system is commonly based upon a "formula" (p. 102), quantifying some aspect of performance

or productivity. “Accountability [is] primarily for results and not for the methods by which results [are] achieved” (p. 102). Performance-based systems deter a “sense of community” (p. 103) and encourage individualism. Departments may become further compartmentalized and communication stifled outside of work-based silos.

Tenure and Promotion as a Performance-Based System

In the case of faculty tenure and promotion, performance evaluations are based upon a quantified measurement of teaching, research and service; placing the reward system in the framework of a performance-based system. As previously discussed, performance-based systems such as tenure and promotion tend to ignore any subjective interpretation of performance. Evaluation of collaboration may lend itself to qualitative and subjective measurements to effectively evaluate outcomes (John-Steiner, Weber, & Minnis, 1998). Relevant to tenure and promotion, methods of achieving outcomes are repeatedly ignored and go unrewarded. The process of collaboration must be recognized and rewarded to stimulate and maintain collaborative relationships (Austin & Baldwin, 1991; Havernik, Messerchmitt, & Vandrick, 1997). Promotion of individualism, as in the case of tenure and promotion (Bohen & Stiles, 1998) works against the very nature of collaboration.

For successful and sustained collaborative partnerships, college and universities must reevaluate the framework by which faculty members are rewarded and often punished. Collaboration has been shown to have a positive impact upon productivity, innovation, and scholarship (Lee & Bozeman, 2005). It may be assumed the goals of any academic institution are that of promotion of inquiry, innovation, and scholarship. Successful alignment of these goals with an appropriate reward system will directly impact the academic productivity of that institution (Gomez-Mejia, 1992; Lawler, 2005).

Summary

Intellectual capital is an organizational resource encompassing the human, social, and structural knowledge capital held within the organization (Bontis, 1998; Bontis, 1999; Bontis & Fitz-enz, 2002; Edvinsson & Sullivan, 1996; Edvinsson, 1997; Petty & Guthrie, 2000; Subramaniam & Youndt, 2005). As a means of corporate strategy, knowledge created through intellectual capital development enhances firm value (Petty & Guthrie, 2000). Strategic development and leverage of organizational intellectual capital may present an opportunity for competitive advantage (Edvinsson & Sullivan, 1996). Recommendations for the management of intellectual capital have leaned toward facilitation processes as a substitute for traditional rigid control methods (Edvinsson, 1997). "Given that innovation is fundamentally a collaborative effort" (p. 459), intellectual capital development must be fostered through the promotion of collaborative relationships as a substitute for management-driven initiatives.

Faculty collaboration may be classified into two major categories: teaching and research (Austin & Baldwin, 1991). For the purposes of this inquiry, faculty research collaboration serves as the focus. The frequency of faculty collaboration appears to vary across disciplines (Baldwin & Austin, 1995; Hafernik, Messerschmitt, & Vandrick, 1997). Collaboration is more common in disciplines with well developed theoretical bases, while disciplines characterized by weaker conceptual paradigms demonstrate less frequent collaborations (Baldwin & Austin, 1995). Humanities and social sciences are such disciplines with weaker conceptual paradigms and thereby experience less frequent collaborations. Collaborative relationships have been shown to have a direct impact on academic productivity (Lee & Bozeman, 2005).

"[Organizational] reward systems are concerned with two major issues: performance and rewards" (Kerr & Slocum, 1987). Employee evaluation in a performance-based organizational

reward system is commonly executed via the quantification of some aspect of employee performance. In the case of faculty tenure and promotion, performance evaluations are based upon a quantified measurement of teaching, research and service. Performance-based systems such as tenure and promotion tend to ignore any subjective interpretation of performance, and often deter collaborative relationships.

Theoretical Framework

The theoretical framework provides a mean by which to articulate the data analysis to an existing idea or set of ideas. Often theories have been empirically examined in various ways which further inform understanding. The Theory of the Learning Organization (Senge, 1990) serves as the theoretical framework. The nature of the theory as well as related implications is discussed in the following text.

The Theory of the Learning Organization

The Theory of the Learning Organization (Senge, 1990) implies an organization develops through the acquisition, use, and sharing of knowledge in an environment which fosters learning and thus has the ability to adapt to an ever-changing environment. Specifically, organizational learning occurs through five mechanisms or disciplines: personal mastery, mental models, shared vision, team learning, and systems thinking. Vital to a meaningful understanding of the proceeding concepts is the differentiation between a learning organization and organizational learning (Levitt & March, 1988; Tsang, 1997). Organizational learning is the procedures and activities (namely the five disciplines) used to achieve an environment of learning, while a learning organization represents an organization which reflects and actively engages in organizational learning (Tsang, 1997). While the concepts are inextricably linked, basic differences exist.

Personal mastery involves private-analysis and self-reflection resulting in a more mature representation of reality (Senge, 1990). At the individual level, personal mastery involves one reflecting in a meaningful manner about the actions and behaviors which shape outcomes. Individual learning and self-awareness develop resulting in one becoming an active participant in shaping his or her future. Organizational learning does not result as an exercise of personal mastery alone, but contributes to the overall goal of becoming a learning organization.

Mental models are schemas which are deeply embedded and shape individual perspective (Senge, 1990). The exercise of mental models, an additional individual level device, prepares people to become more flexible in thought as well as receptive to new ideas. Examination of privately-held mental models allows for the understanding of alternative approaches and positions. Suppleness of thought deters organizational stagnation by promoting individual learning.

Shared vision refers to the process of uncovering collective ideas of the future of the organization, thus creating common goals and expectations (Senge, 1990). The exercise of shared vision is targeted at a group and/or organizational level; however this common vision should reflect personal ideas and values creating an individual investment in the broader organizational goals. The common vision should elicit focus and vigor as relating to organizational learning.

Team learning is the utilization of personal mastery and mental models to achieve authentic discourse and cooperatively acquire knowledge (Senge, 1990). Targeted to the group level, team learning provides a roadmap by which to navigate organizational goals. Through an open dialogue, team members begin to learn cooperatively and develop shared goals and results.

Systems thinking is the conception of examining a system (such as an organization) as a whole, disregarding compartmentalization and fragmentation as a means of understanding (Senge, 1990). The discipline of systems thinking is often referred to as the eventual objective of organizational learning. Within the concept of systems thinking an individual begins to view his or her organization as 'working machine' whose individual parts perform dutiful tasks while contributing to the overall operation of the mechanism; 'gears' and 'cogs' acting upon one another, interrelated and intertwined. Relationships between individual tasks, job functions, departments, and organizational outcomes as well as the interaction amongst those become visible to individuals practicing systems thinking.

The Theory of the Learning Organization (Senge, 1990) is a critical framework for this study due to the potential implications of the mastery of organizational learning. Organizational learning has been shown to directly influence innovation (Brown & Duguid, 1991; Holton & Kaiser, 2000), produced as a function of the interface between "organization and its environment" (Brown & Duguid, 1991, p. 51). Innovation, a fundamentally collaborative endeavor (Subramaniam & Youndt, 2005), thrives within through the exercise of the five disciplines (Dogson, 1993; Fiol & Lyles, 1985; Holton & Kaiser, 2000; Kim, 1993).

A firm which displays organizational learning, and can thereby be classified as a learning organization inherently fosters an environment which is conducive to collaboration, in this case faculty collaboration. As previously discussed, collaboration is a key activity associated with the development of organizational intellectual capital. Effective development of organizational intellectual capital is a vital strategy in affecting competitive advantage (Holton & Kaiser, 2000). Attaining and maintaining a competitive advantage in any organization can and will form a clear pathway to success. (For visual representation, see Figure 1)

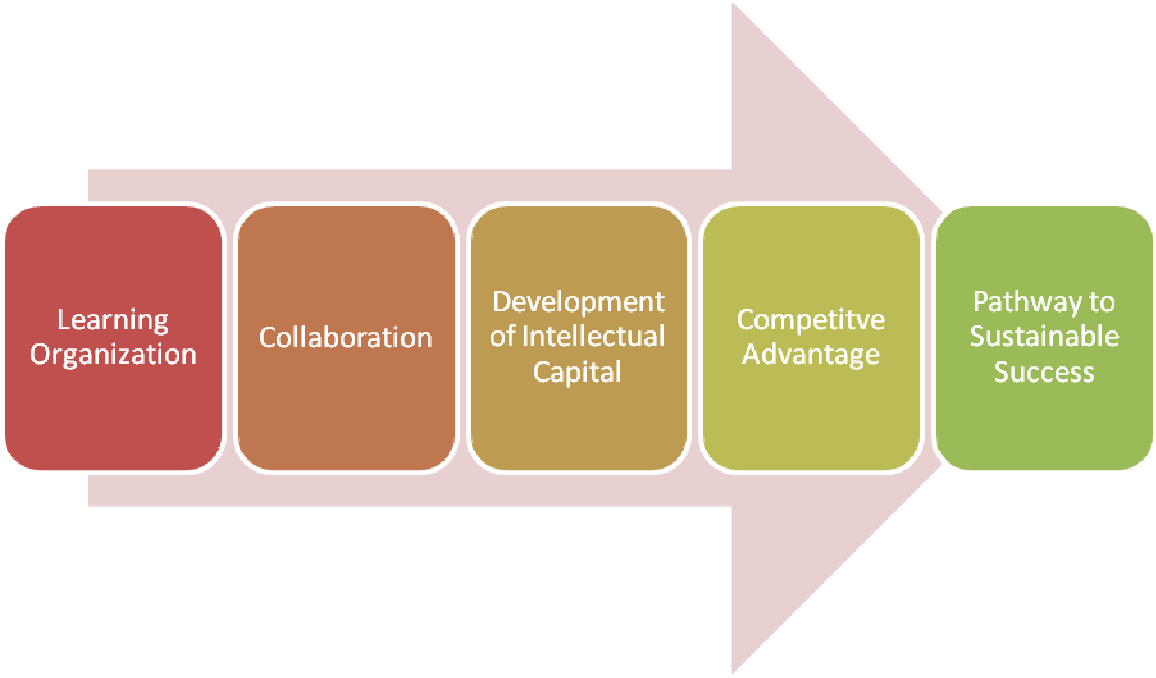

Figure 1: The Learning Organization as a Pathway to Sustainable Success

METHODS

The purpose of this section is to provide an in-depth understanding of the chosen case study methodology and the steps involved in the related inquiry. First the research questions which guide this study are outlined. Second the operational definitions of case study and the associated assumptions are defined. Third the unit of analysis, faculty collaboration occurring at the target university's selected college is discussed in depth. Fourth, the research questions are outlined. Fifth, data sources, data collection, and data analysis procedures are discussed in detail. Finally, the limitations of the study are described.

Research Questions

Examining innovative capacity in the context of faculty collaboration brings about key questions which guided this study.

1. How does faculty collaboration occur and how is it negotiated at the target university's selected college?
2. How does tenure and promotion impact operational activities associated with collaboration?
3. How does individual perception of the impact of tenure and promotion affect collaboration?

Case Study Definitions and Assumptions

Context is imperative in exploring issues where subjectivity contributes to foundational assumptions. Understanding context may elucidate complex issues, often social, through the negotiation of individual understanding or construction of one's own world view (Creswell, 2007). From a social constructivist's perspective reality is created socially; meaning individuals rely upon cultural norms and morays as well as history to create meaning. Within this context,

the “participants’ views of the situation” (p. 20) shape the overarching goals of research; leaning toward an understanding of individual perception rather than reducing constructs into narrow categories.

Within the context of this examination, a case study may be defined as methodology “in which the investigator explores a bounded system (a case)” (Creswell, 2007, p. 73) for the purposes of exploring a “phenomenon within its real-life context” (Yin, 2003, p. 13). Specifically, this methodology represents a single-case (Yin, 2003) or single-instrumental case (Creswell, 2007). The single-case methodology is predicated upon “the [focus] on an issue or concern” (p. 74) and subsequent selection of “one bounded case to illustrate this issue” (p. 74). By selecting a particular case one may be able to create a narrative representation or *description* of the interaction between the phenomenon and the context. This description seeks to satisfy the questions of ‘how’ and ‘why’ associated with the identified phenomenon (Yin, 2003).

A single-case design may be selected based upon the assumption that the case is a “*representative* or *typical* case” (Yin, 2003, p. 41). The typical or representative case assumption is utilized to “capture the circumstances and conditions of an everyday or commonplace situation” (p. 41). From this setting, the researcher may be able to assemble “lessons learned” (p. 41) for the purposes of informing similar experiences and context.

A *holistic approach* to case study design occurs when the study procedures rely upon examining “the global nature of an organization or of a program” (Yin, 2003, p. 43) resulting in one unit of analysis. This approach is in contrast to an *embedded* design where multiple units of analysis are utilized, often based upon a functional segregation. “The holistic design is advantageous when no logical subunits can be identified or when the relevant theory underlying the case study is itself of a holistic nature” (p. 45).

Single-Case Methodology from a Holistic Approach: The Case of Faculty Collaboration

Given the operational definition of a case study provided as well as the underlying assumptions, the single-case study methodology from a holistic approach is reasonable based upon these criteria as stated in Yin (2003): (1) a single-case design is justifiable when seeking description of an everyday or typical phenomenon for the purposes of informing similar context; and (2) a holistic approach is appropriate when no coherent partitions of the unit of analysis exist and when the theoretical framework is holistic. The single case identified is faculty collaboration which occurs at the target university's selected college. Understanding how faculty navigate collaboration as mediated by tenure and promotion processes may elucidate questions associated within similar contexts such as other colleges and universities as well as organizations whose core competency is fundamentally innovative. The unit of analysis, faculty collaboration, has no palpable subdivisions. In addition, the theoretical framework (the Theory of the Learning Organization (Senge, 1990)) approaches intervention from a systemic or organizational perspective (Marsick & Watkins, 1994). Consequently, a holistic approach was utilized.

Unit of Analysis

The unit of analysis has been identified as faculty collaboration occurring at the target university's selected college. Innovation has been shown to be a fundamentally collaborative endeavor (Subramaniam & Youndt, 2005). A sustainable competitive advantage is gained through the exploitation of core competencies (Black & Boal, 1994; Hall, 1993; Lubit, 2001; Oliver, 1997; Pfeffer, 2005). A core competency of college and university faculty members is scholarship which involves innovation of theories, ideas, and knowledge as allocated by discipline. Capitalizing upon the core competency of innovation requires fostering the organizational resources directly impacting innovative capacity. Intellectual capital has been

identified as the key organizational resource influencing innovative capacity (Edvinsson, 1997; Lubit, 2001). Organizational reward systems, as in the case of performance-based tenure and promotion, have been shown to both promote and hinder collaborative activities by sending powerful messages related to faculty members' perceived performance (Huber, 2002); thus acting upon resources in a mediating fashion. Faculty collaboration has been identified as a key activity associated with academic productivity (Lee & Bozeman, 2005). Understanding the mediating effect of tenure and promotion upon faculty collaboration may provide insight into the influence organizational reward systems have upon intellectual capital held within an organization.

Data Sources

Yin (2003) has identified six "sources of evidence" (p. 85-86) which create the data sources for a case study. These sources are documentation, archival records, interviews, direct observations, participant-observations, and physical artifacts. Each source is characterized by relevant strengths and weaknesses as discussed in the proceeding text (see *Data Collection* and *Limitations*).

Due to the nature of the unit of analysis, three of the six sources were deemed relevant. These three sources are documentation, archival records, and interviews. Documentation includes communiqués, written reports of meetings, administrative documents, formal evaluations, and/or items appearing in mass media (Yin, 2003). Archival records comprise service records, organizational records, maps/charts, listings, survey data, and/or personal records. Interviews may be open-ended, focused, or structured/formal.

The target university's selected college has been chosen as the central context due to the emphasis upon collaboration as revealed in the strategic goals created for the 2008-2013

academic years. Departmental focus groups exposed a desire for collaborative efforts to be recognized and fostered. Upon discussion regarding the data retrieved from these focus groups, an explicit college strategic goal of creating a collaborative environment was proposed, reviewed, and subsequently enacted.

The target university is the researcher's own academic setting and workplace. Approval was granted by the target university's Institutional Review Board to gain access to these data sources. Access into this context creates a convenience sample. Limitations regarding convenience samples and studying one's own environment will be discussed in the proceeding text (see *Limitations*).

Data Collection

Documentation data were collected due to the stable, unobtrusive, exacting, and broad nature characterized by this data (Yin, 2003). Strategic plans were utilized as a document. The college-level strategic plans outline the mission, vision, and strategic goals of the target university's selected college. From the strategic plans the researcher ascertained the administrative perception of collaboration and how the college plans to support this activity.

Archival records are similarly associated with a stable, unobtrusive, exacting, and broad nature (Yin, 2003). Additionally archival records are precise and quantitative. Publication records of faculty were examined to understand (a) where collaboration is occurring and (b) who is collaborating. A network analysis of collaborating faculty was used to visually represent collaboration occurring within each of the four departments. This network analysis was created through the examination of publication records by faculty members for the years 2005, 2006, and 2007. Publications were defined as scholarly works appearing in peer-reviewed journal and/or books and book chapters. The publication analysis was performed by members of the college's

administration (an assistant dean, data analyst, and the researcher) for the purposes of contributing knowledge to the strategic plan. This analysis occurred in the fall of 2008. Faculty members and departments were coded to protect privacy. From this understanding interview targets were identified and solicited for participation.

Interviews were conducted as a key source of data collection (Dooley, 2002). Participants were solicited via e-mail through purposeful sampling of individuals who were (a) less frequent collaborators (less than two collaborations per year), (b) more frequent collaborators (more than three collaborations per year) and (c) represented all four departments. Criteria for frequency of collaboration were determined on the basis of expert advice. Fourteen individuals meeting the above criteria participated.

A central interest of the interviews was upon the perceptions of faculty feeling compelled to collaborate or not due to the nature of tenure and promotion. Interviews were semi-structured and followed an open-ended format. The following questions guided the researcher's conversation with participants (also see *Appendix A*).

1. Do you collaborate for research projects?
2. How often do you collaborate?
3. Who do you typically collaborate with? Departmental peers? Colleagues within the college? Colleagues within the university? Colleagues at other universities?
4. Have you ever collaborated outside of your discipline? Can you explain that experience?
5. Would you ever collaborate with individuals outside of your discipline?
6. Do you feel collaboration adds value to your work?
7. Are there any issues with collaboration?
8. Is it difficult to work with other faculty due to their own demands?

9. Do you feel that the process of tenure and promotion facilitates collaboration? Why or why not?
10. Is there anything you perceive that could be done differently from an administrator's standpoint to facilitate collaboration?

After informed consent sheets were read by participants and signed, the interviews were audio-recorded. Interviews lasted between 45 and 55 minutes. The researcher transcribed and coded the interviews with participants being identified as P1, P2, through P14.

Data Analysis

"The unit of coding is the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, p. 63). A theory-driven analysis constructs the unit of coding from an existing theory. For the purposes of this study, the Theory of the Learning Organization (Senge, 1990) has been selected based upon criteria outlined by Boyatzis (1998). Through selecting an existing code based upon theory, one may "replicate, extend, or refute prior research discoveries" (p. 99). Attributes and activities associated with the Theory of the Learning Organization (Senge, 1990) were identified in the analysis of documents, archival records, and interviews for the purposes of understanding the role of the Theory of the Learning Organization in the development of intellectual capital.

Stage One: Sampling and Design

In stage one of data analysis, sampling and design issues were addressed (Boyatzis, 1998). The sample must reflect the theoretical framework. The targeted university's college was selected based upon the strategic goal of collaboration. Collaboration has been identified as a key activity in the Theory of the Learning Organization (Senge, 1990). Secondly, the unit of analysis must similarly find consistency with the theory. Faculty collaboration, the unit of analysis is

associated with attributes of The Theory of the Learning Organization based upon the nature of the activity.

Stage Two: Developing the Code

Stage two revolves around code development. The code was developed from "reading and contemplating the theory" (Boyatzis, 1998, p. 36) via literature review; allowing the researcher to create a rigorous meaning of the theory in relation to the sample and unit of analysis. Secondly code review and re-write occurred preceding data collection. The data impelled the reformation of the code through a process of rendering themes and subthemes (Miles & Huberman, 1994). Reliability of the code was ascertained as the final step in development by gaining convergence of themes across time and data sources.

Within-Case Analysis

Embedded within the second stage of data analysis are three within-case analysis procedures. As described by Miles and Huberman (1994) and Yin (2003), a within-case analysis was performed. Specifically the researcher compared the data gathered via the case to the theoretical variables of the Theory of The Learning Organization (Senge, 1990) resulting in a restricted and refined comparison. A within-case analysis focuses upon a deductive process (narrowing data into defined constructs) rather than an inductive method in which the researcher finds and describes emergent themes (Miles & Huberman, 1994). Miles and Huberman (1994) suggest this type of analysis occurs most effectively in three stages: (1) data reduction, (2) data display, and (3) conclusion drawing and verification.

Reliability

Boyatzis (1998) defines reliability as a "consistency of judgment that protects against or lessens the contamination of projection" (p. 146). The consistency of judgment is contingent

upon steadiness in reflection of various examiners or across “times, events, and settings” (p. 147). Due to the solitary nature of the study, reliability was achieved across time and events. The researcher sought to gain convergence amongst themes in two or more settings or times.

Stage Three: Validating the Code

The third and final stage is the “easiest” (Boyatzis, 1998, p. 36) in theory-driven data analysis. Validation is straightforward; either the theory will be corroborated or not. Results of this stage will inform the understanding of the Theory of the Learning Organization in the context of faculty collaboration and the development of intellectual capital. Critical to well-developed data analysis is the relative flexibility of the researcher in analyzing the codes. One must be willing to go beyond the rigid definitions prescribed by the theory and accept ‘looser’ connotations and understand the relative nuance. It is perhaps in the milky borders of theory where context and phenomenon expound upon important questions.

Ethical Considerations

Ethical standards for this study were established in several ways. First, the researcher informed each participant of the nature of the study during e-mail solicitation (see *Appendix B*). Within this e-mail correspondence the researcher informed participants the study had been approved by the target university’s Institutional Review Board (IRB). Before interviewing had begun, the researcher spoke candidly about the research objectives and what would be discussed during the interview. Each participant received an information sheet as required by the IRB (see *Appendix C*). Additionally each participant signed an informed consent sheet which was kept by the researcher (see *Appendix D*). Guidelines were established related to the handling of the audio tapes and transcripts of the interviews before the start of the study. Audio tapes and transcripts

will be retained securely by the researcher for a period of three years as defined by the target university's IRB and access is restricted solely to the researcher.

Limitations

The identified data sources, while strong in particular areas may be weak and present potential limitations to the study. First, documents and archival records may be plagued by selectivity bias (Yin, 2003); meaning the document or documents can be incomplete and are not representative of the unit of analysis. These documents and archival records may also be subjected to reporting bias. Reporting bias occurs when the author of the document fails to include pertinent data.

Interviews may also introduce bias. Questions may be poorly constructed or communicated in an efficient manner thereby omitting data which may be applicable (Yin, 2003). Secondly, interviewees may institute bias. Social confirmation bias occurs when an interviewee responds in a manner in which he or she believes the interviewer wants to hear. This bias distorts the true nature of responses.

Convenience sampling is characterized by accessing data in an unstructured manner in an effort to conserve resources (Creswell, 2007). This type of sampling is often associated with studying one's own workplace. While research questions may be born out of issues related to one's own job, other data sources may not have been fully examined. Additionally, studying one's own workplace presents issues related to power imbalance.

FINDINGS

The purpose of this section is to present the data gathered via the case study methodology as well as the associated analyses. First, the three data sources comprising the case are discussed. Second, the theory-driven data analysis is described. Finally, the results of the analysis relating to the research questions and theoretical propositions are discussed and summarized.

Analysis Procedures

For the purposes of this study, the Theory of the Learning Organization (Senge, 1990) has been selected based upon criteria outlined by Boyatzis (1998). Through selecting an existing code based upon theory, one may "replicate, extend, or refute prior research discoveries" (p. 99). Attributes and activities associated with the Theory of the Learning Organization (Senge, 1990) were identified in the analysis of documents, archival records, and interviews for the purposes of understanding the role of the Theory of the Learning Organization in the development of intellectual capital.

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Data Reduction

The process of data reduction consists of the researcher sorting then arranging data in a manner in which data may be examined against the theoretical variables (Miles & Huberman, 1994). Data reduction is most frequently performed through the selection and summarization of pertinent data. The proceeding text focuses on the selection and summarization of data related to the three main data sources.

Documentation Data: Strategic Plan

The target university's selected college strategic planning committee utilized an inductive approach to creating the college-level, 2008-2013 strategic plan. The strategic planning committee was comprised of a college-level administrator, a communications specialist representing the Dean's office, a data analyst representing the Dean's office, and the researcher as a qualitative data analyst.

Initiatives and goals were to be developed as a result of soliciting faculty and staff for their opinions concerning the direction of the college. All four departments comprising the College had meetings with the strategic planning committee in which pertinent issues were discussed. These meetings occurred during the spring of 2008.

Qualitative data were collected at each meeting by the researcher. Upon completion of each meeting and the subsequent organization of the data, the strategic planning committee met to discuss the outcomes. Each meeting shaped the direction of the strategic plan. Data were compiled to reflect the relevant issues expressed. A graphic representation of this data was created is shown below (see Figures 2,3,4,5, and 6).

Discussion of the data in the preceding text centers upon the reported need for collaboration and incentives related to collaboration. Additional data from the meetings are

included but not discussed. These data were included to better inform the understanding of the final strategic plan as well as demonstrate the context in which the data were gathered. Issues related to collaboration emerged after all data were compared.

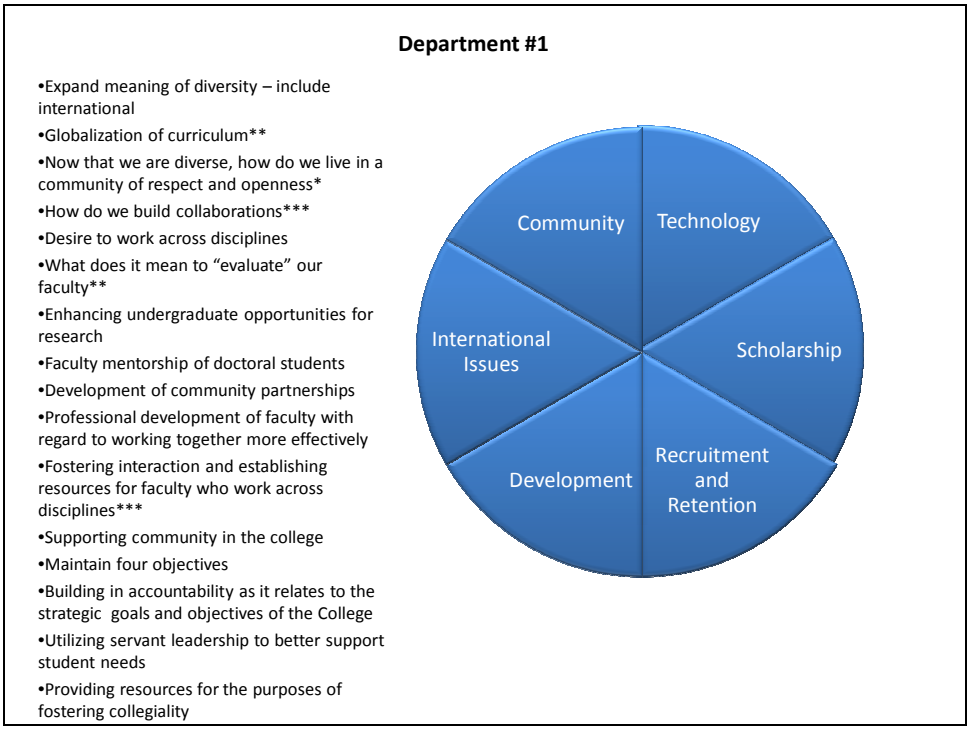

Figure 2: Data Derived from Department #1

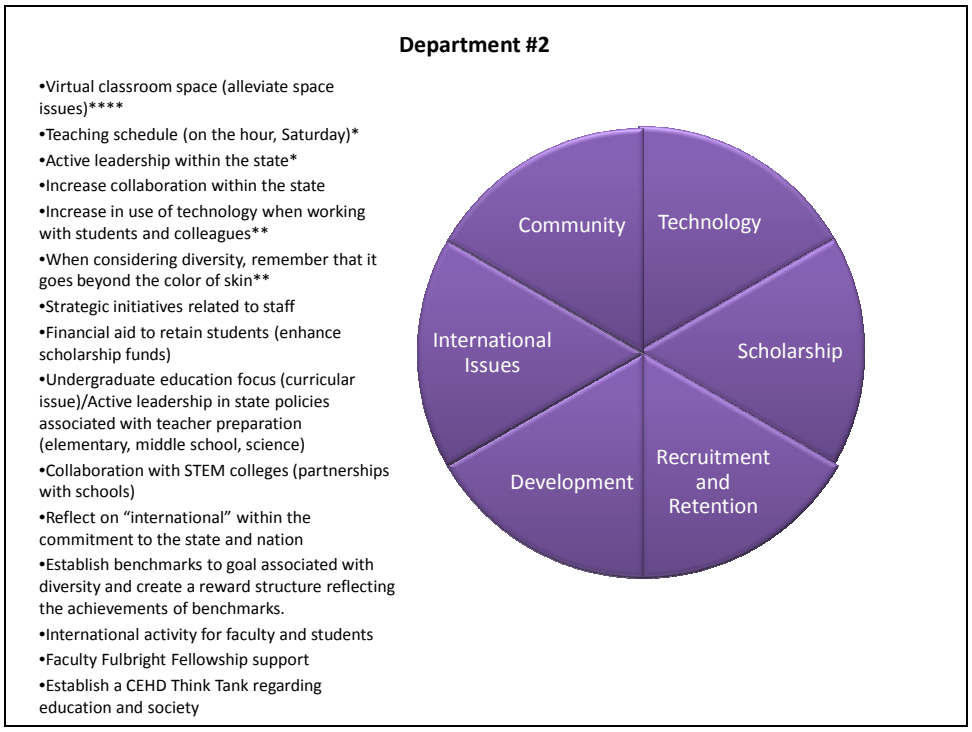

Figure 3: Data Derived from Department #2

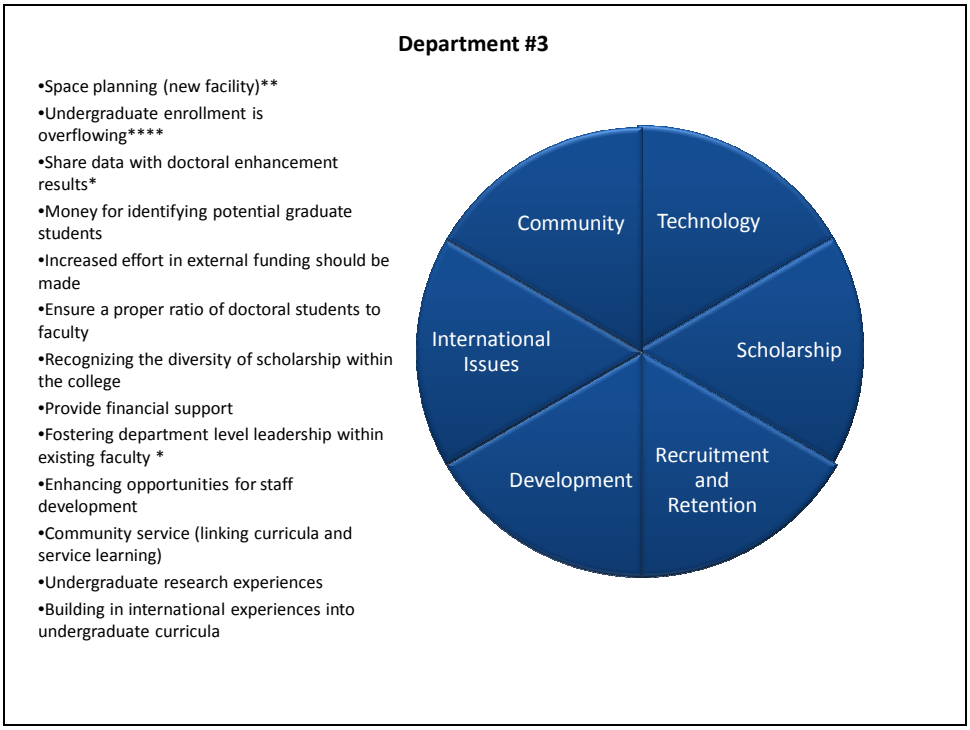

Figure 4: Data Derived from Department #3

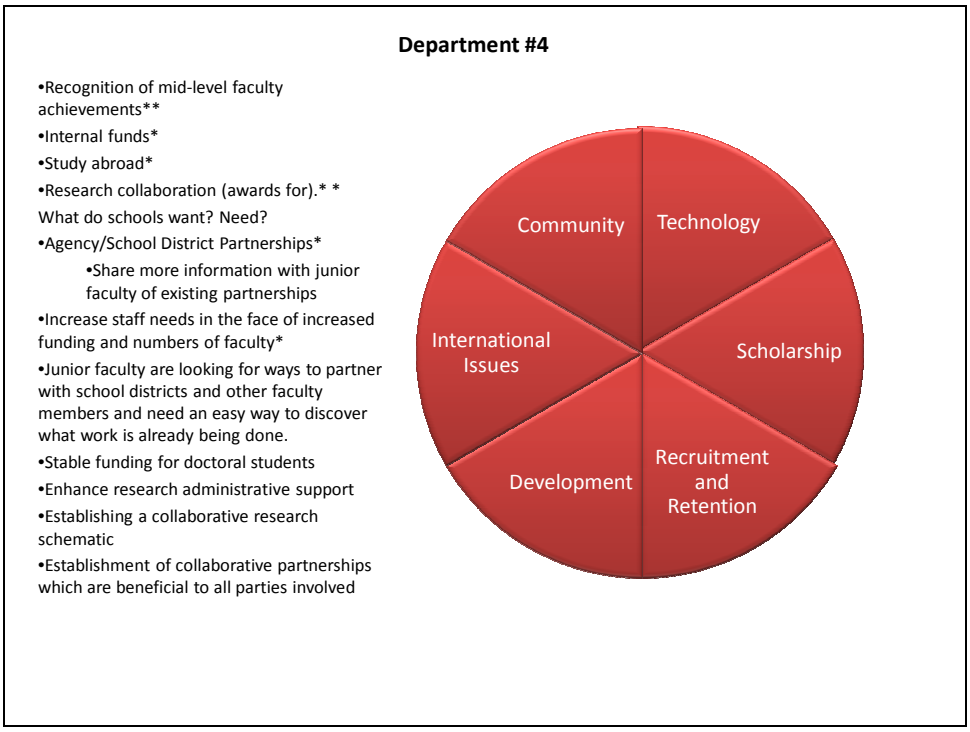

Figure 5: Data Derived from Department #4

As represented by Figure 2, Department #1 expressed many strategic concerns related to collaboration (multiple mentions of bulleted strategic concerns are indicated by an asterisk). In particular, members from Department #1 discussed the need for creating a schema by which faculty may navigate successful collaborations. As demonstrated by an expert of one faculty member, “I believe that we [faculty of Department #1] need to create partnerships for research. These partnerships will not only create permanent linkages, but may foster long-term goals.” The same individuals expressed concern over the lack of incentives to collaborate with departmental peers, making mention of the lack of value created by the College for collaborations. No specific mention of incentives related to tenure and promotion were discussed, but financial resources were mentioned as the most effective way to foster collaboration. Participants of this meeting similarly expressed a need to work across disciplines.

Department #2 similarly expressed the need for creating collaborations. Specifically, this department referenced the need for external collaborations. This department was concerned with external collaborations as a means by which to prepare their undergraduate students. Department #2 discussed the need for fostering collaborations less frequently than their counterparts.

Department #3 discussed collaboration as it occurs between students and faculty members. As illustrated in the following quote,

> [Graduate] advisors need to adequately prepare doctoral students for academic careers. I know we have done it in the past, but there needs to be a heaver emphasis on dissertation to publication. Didn't we used to keep track of that? Even so, graduate students are not the only ones that need to have research exposure. We should create more opportunities for 489s (number code for undergraduate research courses).

Financial resources were the primary method discussed to foster these opportunities. A small grant, described as "seed grants", given by the college-level administration was an idea offered by faculty members of this department. The contributor of this idea suggested that an amount of $500 or less could provide the resources necessary to be able to seek out larger, external funding sources.

Department #4, similar to Department #1, suggested the need for creating a collaborative schematic for researcher to utilize when creating such relationships. Specifically mentioned was the imbalance of power created when a larger institution collaborates with smaller organizations with fewer resources. As reported by the participant, "The needs of others has a tendency to go by the wayside". Department #4 similarly echoed the need for incentives when collaborating. Participants mentioned the possible use of awards for creating action toward a collaborative academic environment.

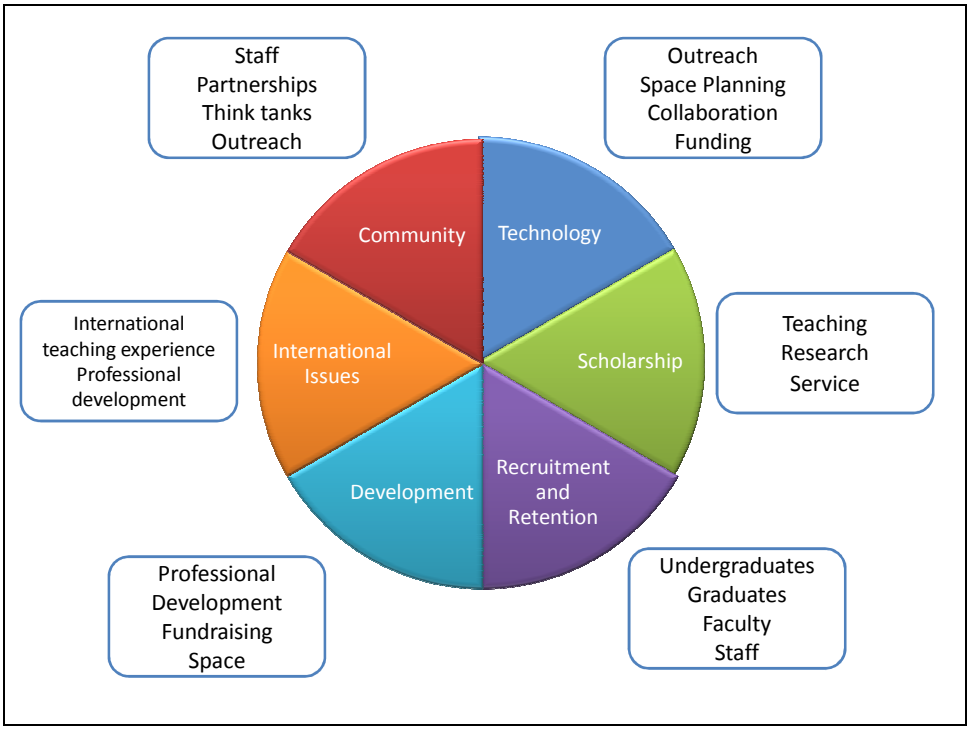

Figure 6: Compiled Data from All Departments

Subsequent to the data analysis within each department, a preliminary model was developed to represent the key contributions by faculty. This model was developed by the committee and represented recurring themes. As seen in this representation (see Figure 6), collaboration is characterized as a strategic initiative of relative importance. Interestingly collaboration was distinguished as a need related to resources (listed by technology and with space planning and funding). The recognition of the need for collaboration to be fostered through the use of resource allocation was important in accurately reflecting the opinions expressed in the strategic planning meetings.

This data model was created to assist in the creation of the 2008-2013, selected college's strategic plan (see Figure 7). The strategic planning committee conveyed the need for data retrieved from the planning meetings to be incorporated to the larger strategic plan. The model was sent back out to each department to establish the accuracy of information.

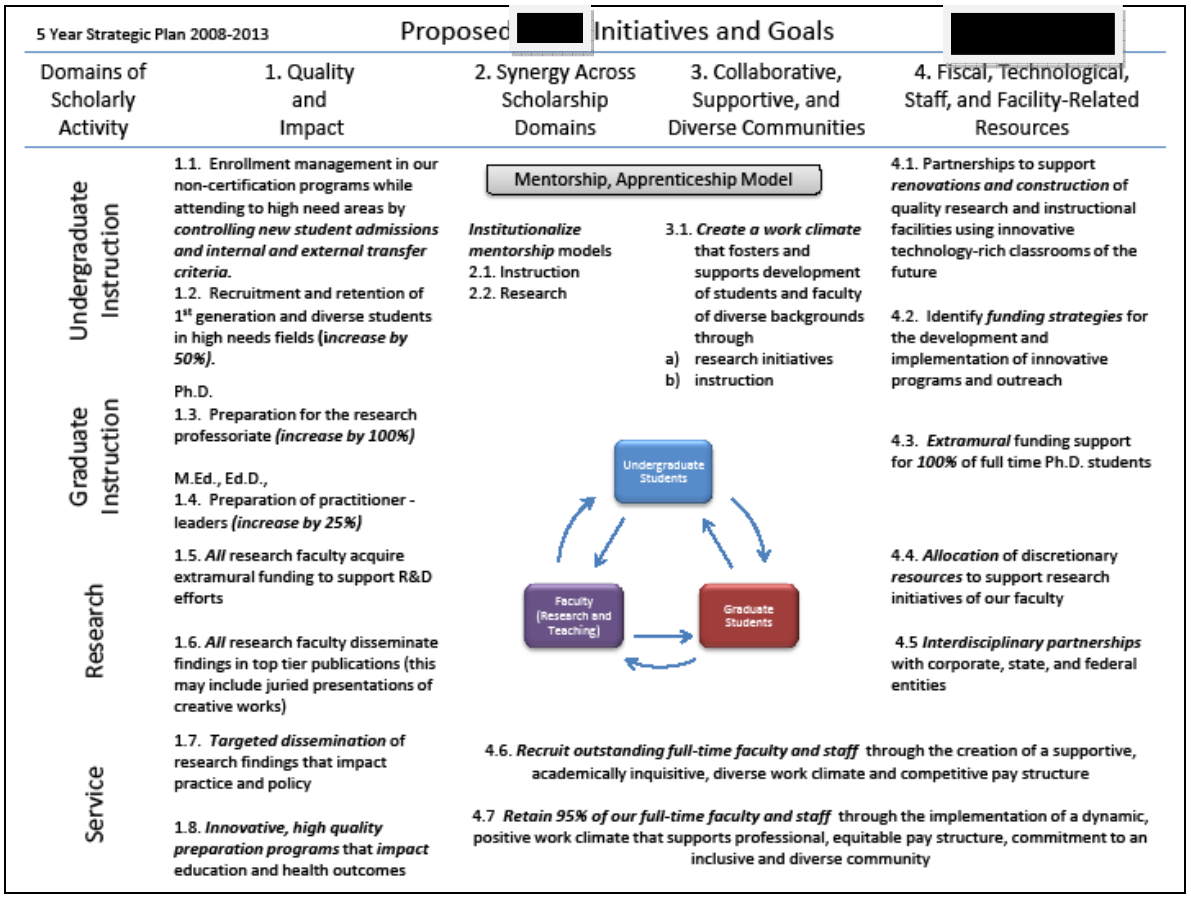

Figure 7: Proposed Strategic Plan

Upon completion of the preliminary data model created from data based upon the strategic planning meetings, the model was presented to department-level and college-level administration at the annual leadership retreat held August, 2008. This data was presented to not only communicate the expressed needs of faculty from each department, but to also assist in creating the final strategic plan of the College.

Strategic initiative #3 centers upon collaborative initiatives. This initiative proposes to create and sustain, “Collaborative, supportive, and diverse relationships”. The subordinate goals do not mention fostering, extending, or supporting collaborative relationship and/or partnerships. Additionally missing is any initiative or goal related to resource allocation to directly support collaborations.

Analysis of Data

The support of the theoretical variables as identified within the theoretical framework centered upon a single variable: shared vision. Shared vision refers to the process of uncovering collective ideas of the future of the organization, thus creating common goals and expectations (Senge, 1990). Shared vision was identified by analysis of the strategic plan. Across every department an expressed need for creating, supporting, and fostering collaborations was identified; supporting the classification of the variable of shared vision.

Archival Records: Faculty Network Analysis

The faculty network analysis was created to visually represent the inter-departmental collaboration occurring at the target university’s selected college. Publication records were examined from 2005, 2006, and 2007 of faculty members. Publications selected for this analysis were limited to those created with a departmental colleague appearing in a peer-reviewed journal and/or book or book chapter. Occurrences of inter-departmental collaborations were recorded in a spreadsheet later used to create the network illustration.

The network is comprised of the four college departments. Within each department faculty members are represented by a box and segregated by program area. Names of faculty members do not appear to ensure privacy. Program names and areas have similarly been coded to prevent identification.

Occurrences of collaborations are indicated via a red, connecting line (see Figure 8). This line represents a relationship which has been utilized to create a co-authored publication. These lines do not represent multiple collaborations or publications rather the single occasion of collaboration during the period of 2005-2007; meaning multiple publications may have been recorded via the vita examination but were only represented once. It is important to note these relationships only represent co-authored publications with an inter-departmental colleague; the following networks exclude any external partnerships to the department or collaboration not resulting in publications. This analysis also excludes publications prior to 2005 or later than 2007.

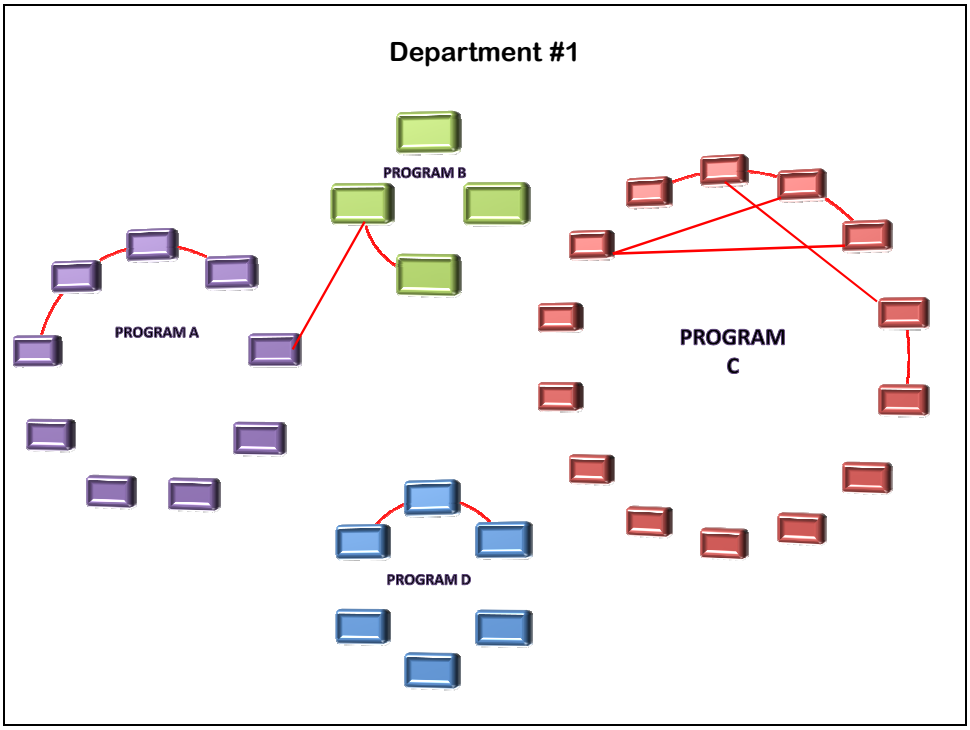

Figure 8: Interdepartmental Collaboration Occurring in Department #1

Department #1 is characterized by little interdepartmental collaboration. All collaborations are restricted to program area with the exception of one relationship. As recorded

at the strategic planning meeting for Department #1, a need for establishing collaborations was identified.

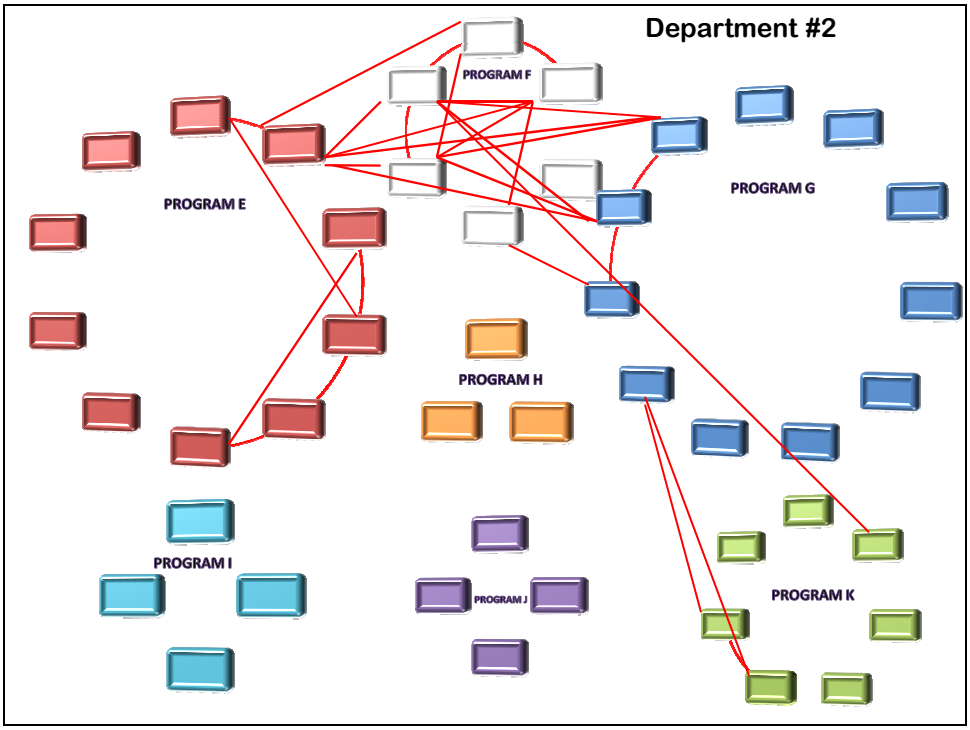

Figure 9: Interdepartmental Collaboration Occurring in Department #2

Department #2 is characterized by frequent interdepartmental collaboration (see Figure 9). These collaborations are not restricted by program area, but extend across areas. Department #2 mentioned less frequently, as compared to other departments, the need for research collaborations. This department stated the need for external partnership within the state and across institutions.

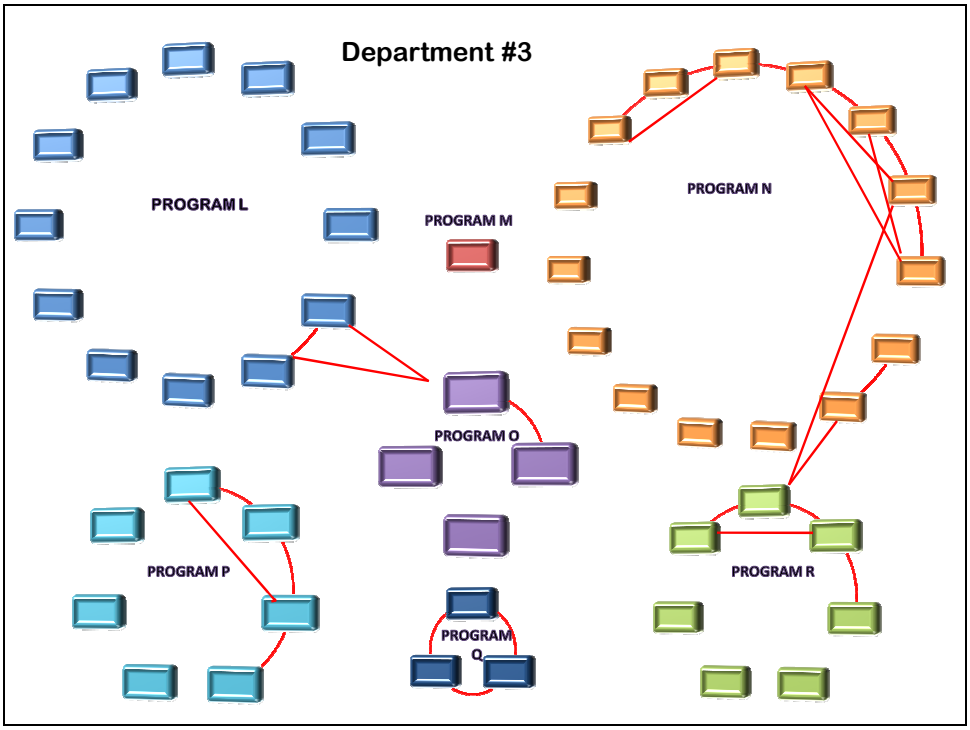

Figure 10: Interdepartmental Collaboration Occurring in Department #3

Department #3 is characterized by an intermediate amount of interdepartmental collaborations, as compared to the other departments (see Figure 10). The collaborations tend to exist within program area, excluding four collaborations. As reported via the findings of Department #3's strategic planning meeting, faculty members expressed a need to foster and promote research collaborations.

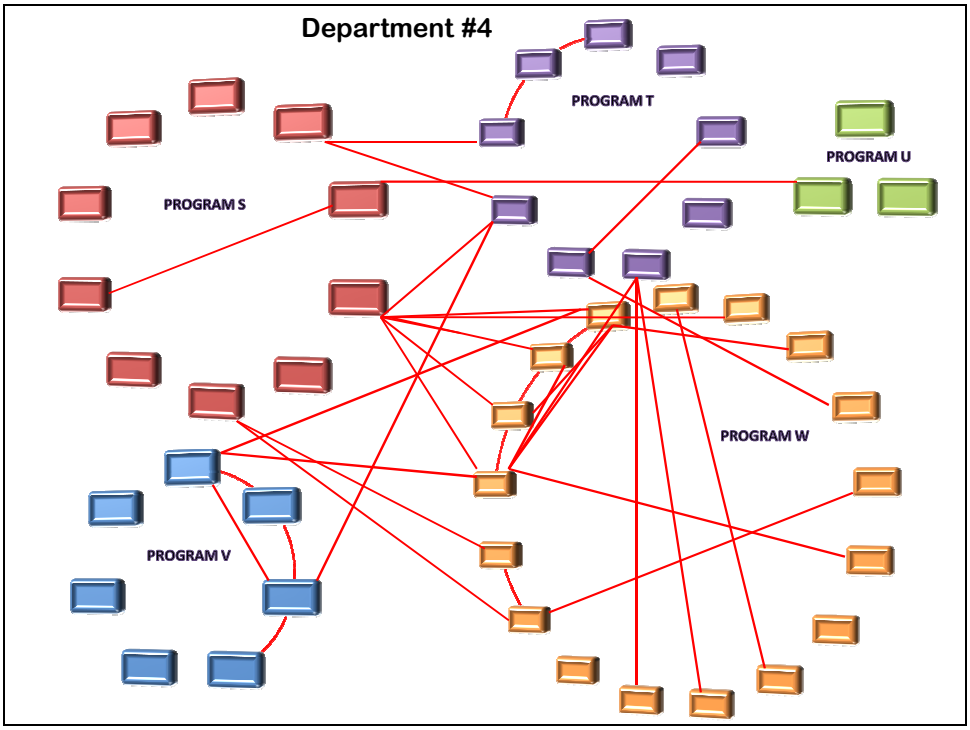

Figure 11: Interdepartmental Collaboration Occurring in Department #4

Department #4 experienced the greatest amount of interdepartmental collaborations. Collaborations not only happened within program area, but also amongst areas (see Figure 11). This department also expressed the need to build collaborations with a particular emphasis on the power relationships as well as resource allocation.

Analysis of Data

Analysis of the network analysis uncovered indirect support of the theoretical variable of team learning. Team learning is the utilization of personal mastery and mental models to achieve authentic discourse and cooperatively acquire knowledge (Senge, 1990). Collaborations and networks can be clearly identified within each department. The assumption being by creating and

navigating such relationships, one must create a schematic for maintaining these relationships. Accordingly, team learning may be identified indirectly by the establishment of these relationships.

Interviews

From for a period of three months (December, 2008 through February, 2009) interviews were conducted with the selected college's faculty members. The total number of faculty participants was 14. Faculty members were solicited via e-mail (see *Appendix B*). Purposeful sampling of faculty members was utilized in order to represent all four departments as well as faculty who collaborate less frequently (less than twice a year) and those who collaborate more frequently (more than three times per year). Collaboration frequency criteria were established via expert advice.

Interviews took place in participants' offices. After the nature of the study was described by the researcher, informed consent was signed and retained. All participants agreed to have their interviews audio-recorded. The interview was guided via the broad protocol mentioned in *Methods* and *Appendix A*. The researcher transcribed the recordings and coded each participant P1 through P14. Audio-recording and transcripts will be retained by the research for a period of three years (as requested by the target university's Institutional Review Board (IRB)), with access restricted solely to the researcher.

Findings from the interviews presented the largest amount of data as well as the most insightful for the purposes of this inquiry. Personal perceptions and experiences of research collaborations were expressed. Additionally expressed were the perceptions of the process of tenure and promotion relating to the ability to create and sustain collaborations.

Participants

Participants were coded P1 through P14 to ensure privacy. Each participant is a current tenure track faculty member representing assistant, associate, or a full time faculty position. Participants were candid and exhibited openness to many questions of a personal and private nature. In an effort to maintain privacy, actual positions, departments, areas of interest, and demographics are not disclosed.

Personal Mastery

Personal mastery involves private-analysis and self-reflection resulting in a more mature representation of reality (Senge, 1990). At the individual level, personal mastery involves one reflecting in a meaningful manner about the actions and behaviors which shape outcomes. Individual learning and self-awareness develop resulting in one becoming an active participant in shaping his or her future.

Analysis of Data

Through transcript analysis, the researcher sought to identify instances of personal mastery. The researcher established support of personal mastery by identifying instances where a participant had consciously altered his/her behavior in an effort to augment or enhance collaborative activities related to increasing academic productivity. Correspondingly, instances were identified where a participant reported an effort to modify collaborators behaviors in a similar effort to increase or enhance academic productivity. The following instances supported the identification of personal mastery occurring as reported via participants.

P7 cites experiences occurring during post-graduate training as formative.

> I did a three year post-doc… I knew that if I was applying for an academic position I needed more papers. That's where I learned to collaborate and I walked out with 13 papers after three years. I collaborated on three grants. I ran one grant, collaborated on the others, and got my own.

This individual was not only motivated by the need to promote personal academic productivity, but was working on ‘soft-funding’; meaning P7’s post-doctoral position was completely funded by grant monies. This participant collaborated due to the need to promote publications, but had financial rewards directly tied to the outcomes of research grants.

P7 described learning how to become a productive academic as an “apprenticeship”. This description is most often associated with traditional organization culture and is not often connected with academic training. Nonetheless, this individual stated that learning by doing was formative in gaining knowledge and skills related to becoming a successful academic. For instance, during the years of post-doctoral training P7 wrote grants which were edited by senior faculty members. P7 reports the senior faculty as being very candid in their responses to the grant writing, even verging on “brutal honesty”. The honest recommendations were taken and utilized by P7, making this individual successful in gaining grant funding. While the process of learning how to become a better grant writer was difficult, the results were critical to becoming a successful grant writer.

P7 did not report graduate advising or graduate training as influencing collaborative behavior. Corroborating previous research, P7 reported graduate work to be independent and solitary with little collaboration. Accordingly this individual reported only one publication resulting from dissertation work.

Participant #4 was focused upon the work needed to promote publication activity. This participant examined how a graduate adviser, during doctoral work at another university, shaped thoughts related to everyday work. As expressed by P4,

> My [graduate] advisor taught me that I should be working toward publication every day. You can’t always do that with people that you are working with. You have to push them. Everyday I am working on an article, book, book chapter, something.

P4 reported the graduate advisor as being a considerable influence on the decisions related to collaboration. Collaborations were reported as occurring frequently between the advisor and this participant.

> P4 continued by speaking about a recent project related to a book publication occurred.
>
> This book (holding up a copy of a newly published book) had to be pushed. What I did was send out reminders everyday. I would say things like 'how is this chapter coming', 'can I edit'. It can be frustrating working with others who do not have the same work ethic I do. If I did not push, this book may still be unfinished.

Pertinent to the variable of personal mastery, this individual demonstrated a shaping and reformation of actions as well as the influence of others to meet deadlines and goals. P4 reported the utilization of various tools and methods to increase productivity. P4 often creates a schedule relative to a research project. This schedule is shared with the collaborators in the project and is written on a large board in P4's office. P4 stated this schedule is crucial is establishing dates, deadlines, and benchmarks relative to each project.

P4 also utilized communication tools for collaborating at a distance. Skype, a communication tool which uses webcams for face-to-face distance communication was cited by P4 as being useful. P4 often utilized Skype to discuss research objectives and findings with collaborators.

Participant #9 spoke of seeking out academics outside of their discipline to inform more complex issues.

> There has been a big push for interdisciplinary research recently. But I started this early in my career. Since I work in [teacher education] my expertise is limited to my subject... There are the bench scientists and those people who teach science.

P9 often met and developed relationships with bench scientist at conferences. These relationships occasionally developed into research collaborations. P9 claims these collaborations were critical

in moving their research agenda forward. The bench scientists often served as subject matter experts while P9 utilized pedagogical expertise to create multifaceted research. Interdisciplinary collaboration has become critical in teacher education and preparation.

Mental Models

Mental models are schemas which are deeply embedded and shape individual perspective (Senge, 1990). The exercise of mental models, an additional individual level device, prepares people to become more flexible in thought as well as receptive to new ideas. Examination of privately-held mental models allows for the understanding of alternative approaches and positions.

Analysis of Data

The instance of mental models was identified by the researcher through transcript analysis. The researcher sought out reports of reexamination of the previously held ideas about collaborations and the reformation of those ideas. Support of the variable of mental models was more difficult to identify. Accordingly the findings often allude to changing ideas or perspectives, but may not directly identify changes. The following instances support the identification of mental models.

Participant #1, a newly hired faculty member, stated the very nature of their research was independent and did not warrant frequent collaborations. P1's research projects (hidden to protect privacy) often involve a single-case due to the uncommon nature and rare incidence. "My dissertation was a single-case study. That is what I most often do." Upon arrival at the University, P1 has been associated with a research center on campus. This center has brought about new collaborations.

> Since I have been involved in [the center], I have been exposed to a lot of different types of researchers. They are differently out of my field, but it has been interesting. They often

> provide prospective to my area of interest that is unique in the literature. There are many different ways to frame a problem. I can now look at [my research interest] from an administrative, state, university, whatever perspective.

Collaborating has brought new insight into the area of interest for P1. P1 additionally reported collaborating has brought about more frequent publications.

P1 elaborated on the new experiences of collaborations. “This has really made me change the way that I work”. P1 reports collaborating often prohibits a flexible work schedule. “I not only have my own deadlines, but those of others. Let me tell you, we don’t always agree.” Different work habits may introduce conflict related to personal schedules. P1 added through these conflicts learning has occurred to collaborating successfully. “You just have to be open about your goals upfront.”

Participant #11 similarly came from a background where collaborating occurred infrequently. P11 did not have a PhD as many of the participants, but a professional degree. “In [professional] school students did work together, but not with the professors.” P11 worked for many years in a traditional organizational setting as well as published articles independently for professional journals before working at the University. In prior work experiences, P11 stated frequent collaborations occurred to perform job duties, but not for research or writing. In a discussion of transitioning between an organizational to an academic setting P11 offered the following.

> This was the first time I had ever been a [tenure-track] professor. Teaching was not new, but researching the way [my department] does was. When I got here I spoke with the administration and figured out what I needed to do to meet the standards of tenure and promotion. I knew I had to write and publish often. I have written many [professional] articles and still do. These do not meet the standards of tenure. So I knew I had to publish in [my discipline]. I got some articles from [my discipline] and used them as a model. I spoke to more senior faculty and got tips and advice. Then I started publishing. This was all done by myself.

P11 sought out the expectations held by administrators to be a successful professor. Collaboration or the need to articulate with others in the discipline was never communicated as a method of increasing publication activity.

P11 expanded upon the experiences of a new faculty member becoming a part of the university setting. This individual expressed the frustration of university hierarchy by stating, "Private industry sets you up to succeed, universities set you up to fail." Upon further discussion P11 stated often universities have stale expectations which are not vested to any objective measure of success.

> It is publish or perish (referring to the need to publish often in order to attain tenure). There is no quality measure. In [professional] journals these articles are 30 to 40 pages while hundred of citations. You have to provide evidence of where you are getting the information. In [my discipline] the articles are 8 page with very few citations.

P11 stated while faculty-members would publish and the numbers meet expectations, there is little to no regard for the quality of publications. This participant believes there is a need to appraise faculty based upon quality not quantity.

As mentioned earlier, P11 had written many times for professional publications but not for purely academic ones. When P11 began to write in academic journals the work was done independently. "There are pros and cons to working by yourself." A relative con, P11 reported, was the relative decrease in frequency of publication activity. "My colleagues who were collaborating were pumping out 4, 5, maybe even 8 articles a year." P11, whose area of interest as reported by the participant is relatively narrow, began to seek out individuals who have similar interests. "I really began to look at conferences. I met a few folks and after that things started rolling." Through the contacts gained at these conferences, P11 was able to begin collaborating. This participant reports that publication activity has subsequently increased.

Shared Vision

Shared vision refers to the process of uncovering collective ideas of the future of the organization, thus creating common goals and expectations (Senge, 1990). The exercise of shared vision is targeted at a group and/or organizational level; however this common vision should reflect personal ideas and values creating an individual investment in the broader organizational goals. The common vision should elicit focus and vigor as relating to organizational learning.

Analysis of Data

The theoretical variable of shared vision was identified by the researcher through transcript analysis. Instances of shared vision were indentified in the reported understanding and acknowledgement of shared departmental or college-level goals. The following excerpts support the variable of shared vision.

Participant #10 shared experiences relating to creating a shared vision by being a significant contributor to the departmental mission and vision statements.

> I was asked to work with a couple of colleagues to evaluate our old mission statement and try to tweak it. Well, eventually we ended up scrapping it and starting from scratch. We have many programs in [this department] and need create a common goal or connection. The difficulty is our old statement was so broad that no one cared. It was on a website somewhere… We created the statement we thought would work and got some buy-in from the department. I was surprised how much feedback we got… I would have to say it made an impact.

P10 continued by elaborating on the outcomes of the revised mission statement. “I think it fired some folks up. The looked at it and went ‘I don’t want to do this’ or ‘That is exactly what I do’. It became very personal. People began to care.” By seeking out buy-in from the faculty, P10 communicated the mission statement. Many respondents gave praise and some negative feedback. Eventually a mission statement was developed that a majority of the department

agreed upon. The faculty was familiar with the goals and had taken part in developing the direction.

Participant #12 is a former administrator in their department. Therefore the perspectives gained by interviewing this individual were interesting from an administrative and faculty point-of-view. P12 stated that collaboration is necessary to be successful faculty member. “You have to collaborate! Otherwise you develop silos.” Silos, as described by P12, are narrow pockets of research which have little practical use. “Eventually you get so narrow the only person you are talking to is yourself.” By collaborating, P12 believes researchers gain more fruitful and practical perspectives.

Involving the creation of a shared vision, P12 believes through research collaborations the goals of the departments, colleges, and universities can be met. Many times P12 referred to former and current college-level initiatives aimed at increasing collaborative activities.

“At a higher level (referring to the college-level) you can understand what the goals are. Decisions that we make as faculty members should really be in line with those goals. Once you understand that it is obvious you have to collaborate.”

P12 spoke of personal collaborative experiences where common goals were established. “When you work on a grant you have outcomes that are required. Those you cannot get around. Everyone has to be on board.” Grants and funded projects have built-in deadlines, benchmarks, goals and objectives. As echoed by P9, “Collaborating on grants does not allow the usual distractions with normal collaborations. You have to adhere to dates or you lose funding.”

Participant #2 spoke about developing a shared vision through collaborations as a member of a departmentally-based center. “At the [center] we have common goals. Everyone works toward them in some way. Usually it is by developing research agenda relating to our

goals of [solving a research issue]. Everyone does their own part." P2 stated collaborations at the center were not only used to increase productivity but were part of the community-based approach used. "We put a large emphasis on community. We not only emphasize this out in the field, but with our graduate students." As a result, P2 stated most members of the center collaborated frequently and naturally.

P2 spoke of the frequent collaborations occurring at the center and how these collaborations were influenced by the mission and vision.

> At [the center] we have a very specific mission… We have gotten funding because of this mission, so our research decisions are closely tied to the grant, and the mission. We do not have to talk about it everyday, at every meeting or anything like that. We all have similar interests and backgrounds…. We have recently gained some national attention. I really think it is because of our focus on the mission. We have never lost sight of that.

P2 acknowledges the importance of a mission and vision statement in creating a shared vision. This shared vision influenced the center's success by creating focus and vigor relating to the research goals and objectives.

Team Learning

Team learning is the utilization of personal mastery and mental models to achieve authentic discourse and cooperatively acquire knowledge (Senge, 1990). Targeted to the group level, team learning provides a roadmap by which to navigate organizational goals. Through an open dialogue, team members begin to learn cooperatively and develop shared goals and results.

Analysis of Data

Team learning was identified via transcript analysis by the reported occurrences of co-operational learning related to establishing, supporting, and successfully collaborating. Often these instances were reported as negotiations related to executing research objectives and overall goals. The following illustrations support the variables of team learning.

Participant #13, a newer faculty member, described how their first experiences with collaborating on a grant brought about many lessons.

> The first meeting I went into everyone was talking. Everyone had a very strong opinion… I have gotten used to that being in such a large university. It was really hard for me to insert my opinion. By the second meeting I was ready. I had a list of items I wanted to discuss. I was polite and never interrupted anyone, but I got through my list. I just had to jump in there.

P13 cited the early experiences as being demonstrative. This individual chose to watch and reflect. Upon reflection P13 made changes to their behavior. This allowed the participant to become more effective in communicating with the group.

P13 recounted an experience of working closely with one individual associated with the grant. “Working with [Jane] (name coded) taught me a lot. She is a full professor and renowned in the field.” P13 stated Jane was able to guide her to useful resources, create connections with others well-versed in the field, as well as simply editing manuscripts.

Participant #6 reported learning which occurred while working in a consortium organized for undergraduate preparation.

> When I first began [working in the consortium] I was fresh out of graduate school. I was used to working by myself. It was an interesting process to learn how to work with all the other people… I was shocked how much feedback was given. Not that it was not helpful, I just didn’t ask for it. Sometimes these helpful hints (making hand gestures to symbolize quotations) were a little offensive. Maybe I was just taking it personal. But sometimes they hurt!

P6 transitioned from independent study of graduate work to the collective effort of the consortium. This participant demonstrated the often coarse introduction to working in a group with diverse views and methods.

Participant #14 had a different experience as being the principal investigator on a grant. P14 reported their experiences on leading a team of individual with divergent views.

> At the beginning of the grant work it was impossible to get everyone together and agree upon anything. I really blame myself though. I wanted to approach the work in a way that was convenient for everyone involved. I finally had to tell myself that pandering to everyone's needs was not going to accomplish squat. This was my first time leading a grant. I just got tough. Kind of white-knuckling it for a while. Not too many people were happy with me. But I have to say the grant was a success and we got four good publications out of it.

P14 used various methods to gain buy-in from the group. After a few unsuccessful meetings, P14 gave everyone a personalized set of expectations with deadlines attached. Not surprisingly there were a few individuals who were unhappy by the forthright nature of the documents. After some small concessions, members of the grant team began to work productively and on schedule. Before becoming a more cohesive group, learning had to occur to establish boundaries and create expectations related to the group work.

Systems Thinking

Systems thinking is the conception of examining a system (such as an organization) as a whole, disregarding compartmentalization and fragmentation as a means of understanding (Senge, 1990). The discipline of systems thinking is often referred to as the eventual objective of organizational learning. Within the concept of systems thinking an individual begins to view his or her organization as 'working machine' whose individual parts perform dutiful tasks while contributing to the overall operation of the mechanism; 'gears' and 'cogs' acting upon one another, interrelated and intertwined. Relationships between individual tasks, job functions, departments, and organizational outcomes as well as the interaction amongst those become visible to individuals practicing systems thinking.

Analysis of Data

Establishing the support of systems thinking was the most difficult variable to identify. Similar to the previous theoretical findings, the variable of systems thinking was identified by

the researcher through transcript analysis. Systems thinking was most often indicated by participants as a understanding of the role he or she played in the collaborative activity. The following examples support the variable of systems thinking.

Participant #5 recounted a period in which, by participating in frequent collaborations, they had become over-extended. “I was working on three grants, two outside projects, and working with thee advisees.” P5 stated the role they held within each collaboration had become a leadership one despite the fact there was no formal leadership title. “I was acting as PI (primary investigator) in every grant.” The role which P5 held had to be reevaluated as to “maintain sanity and limit grey hair growth”. P5 felt the role in the grants was the most difficult and time consuming. This participant approached the primary investigators of the grants and expressed the concern. “I just had to tell them enough is enough.” After discussion an agreement was reached between the primary investigators and P5. P5 had to reevaluate their role in the overall grant. Negotiating how much work was feasible was necessary for this individual to be successful researcher.

Participant #8 reported a time when understanding their role in the department was critical to being a successful faculty member. P8 states,

> Interdisciplinary research became huge a few years ago. There were certain funding agencies that made interdisciplinary work a top priority… I was not doing it at the time. I had collaborated in the past, but mostly with people in the same field. I finally thought one day, ‘you know I just need to get on board’. So I did.

P8 demonstrated thinking related to the trends in the field. More important than the trends was the ability to gain funding from source that made interdisciplinary research paramount to being awarded monies.

Participant #3 similarly recounts the beginning to the interdisciplinary research trend. “I had done interdisciplinary work in the past. It was just natural for what I did.” Collaborating with colleagues was not new to P3, but was new to many colleagues.

> When it was obvious interdisciplinary issues was on the rise there we many people in the department that began to scramble. They want to get on the trend and be successful at it. Many of my peers came to me because I was more senior and experienced. I had other project going on, but I knew how important it was to be a mentor and share my experiences. I just developed an open-door policy. People came in we chatted. Sometimes for a couple of minutes. Sometimes for an hour.

P3 recognized how important sharing experiences and knowledge would be for junior faculty. Even though mentoring warranted a significant time investment, P3 wanted to assist departmental peers in becoming successful collaborators.

Data Display

Data display involves exhibiting reduced data in a way the researcher can analyze the data against the theoretical variables (Miles & Huberman, 1994). A secondary purpose of this process is to allow the reader to examine the data against the variables in an organized fashion. The following tables demonstrate the data display of the findings from the case study.

Each table is characterized by a horizontal axis representing data sources and a vertical axis representing theoretical variables (see Tables 1,2, and 3). The data sources are the strategic plan, network analysis, and interviews. The theoretical variables retrieved from the theoretical framework as personal master, mental models, shared vision, team learning, and systems thinking. These data sources have been analyzed and support or non-support of variables is indicated in the subsequent boxes. A comprehensive table (Table 4) was created to examine all data sources against the variables.

Table 1: Strategic Plan Data

Theoretical Variables	Strategic Plan
Personal Mastery	No direct support identified
Mental Models	No direct support identified
Shared Vision	Support was indicated by the cross-departmental findings related to the expressed need for collaboration
Team Learning	No direct support identified
Systems Thinking	No direct support identified

Table 2: Network Analysis Data

Theoretical Variables	Network Analysis
Personal Mastery	No direct support identified
Mental Models	No direct support identified
Shared Vision	No direct support identified
Team Learning	Support was indirectly identified through the instances of collaboration
Systems Thinking	No direct support identified

Table 3: Interview Data

Theoretical Variables	Interview Data
Personal Mastery	Support was indicated by the self-reported reflection of working habits related to research collaborations
Mental Models	Support was indicated by the self-reported understanding different ways of collaborating
Shared Vision	Support was indicated by the self-reported understanding of successful engagement in tenure and promotion in relation to collaborating with peers
Team Learning	Support was indicated by the self-reported conversations and subsequent learning with occurring with and by collaborators; Support was also indicated by the self-reported understanding of how administration perceive collaboration (a necessary step in receiving rewards)
Systems Thinking	Support was indicated by the by the self-reported understanding of the attributes required to become/maintain R1 university status and how academic productivity relates

Table 4: The Case of Faculty Collaboration Data

Theoretical Variables	Strategic Plan	Network Analysis	Interviews
Personal Mastery	No direct support identified	No direct support identified	Support was indicated by the self-reported reflection of working habits related to research collaborations
Mental Models	No direct support identified	No direct support identified	Support was indicated by the self-reported understanding different ways of collaborating
Shared Vision	Support was indicated by the cross-departmental findings related to the expressed need for collaboration	No direct support identified	Support was indicated by the self-reported understanding of successful engagement in tenure and promotion in relation to collaborating with peers
Team Learning	No direct support identified	Support was indirectly identified through the instances of collaboration	Support was indicated by the self-reported conversations and subsequent learning with occurring with and by collaborators; Support was also indicated by the self-reported understanding of how administration perceive collaboration (a necessary step in receiving rewards)
Systems Thinking	No direct support identified	No direct support identified	Support was indicated by the by the self-reported understanding of the attributes required to become/maintain R1 university status and how academic productivity relates

Results

The following text is a discussion of the findings in relationship to the research questions.

Research Question #1

Collaborations appeared to be negotiated via relationships and networks. Most often these collaborations occurred as an extension of funded research. Research collaborations were also reported to be created by networks built at professional conferences and seminars. These venues often allowed faculty members to recognize others working in similar disciplines or areas of interest they held. Accordingly faculty members were able to be display their own work and were often contacted to collaborate with others.

Financial rewards were often directly linked to decision related to establishing collaborations. Additionally, goals and outcomes related to successfully engaging in tenure and promotion were perceived as being closely linked to decisions relating to research collaborations as reported by faculty participants. Closely linking outcomes to decisions regarding collaboration appear to increase the frequency of collaborative activities.

Research Question #2

Tenure and promotion was not shown to have any direct impact upon collaborative activities. No direct evidence was found to support or refute previous research. Further investigation must be done to establish causal links.

Research Question #3

Individual perceptions of the outcomes relating to tenure and promotion did affect decisions relating to collaborations. As discussed previously discussed, participants reported decisions relating to engaging in research collaborations often believed this activity would assist in achieving tenure. Participants reported collaboration almost always increased academic

productivity. All participants indicated research collaboration is a necessary activity associated with attaining tenure at this University.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to demonstrate, through the use of case study methodology, how faculty collaboration may foster the development of intellectual capital and how organizational reward systems mediate this process. A qualitative case study was chosen due to contextual factors influencing collaboration. The following text summarizes the study, outlines the conclusions, limitations, and recommendations.

Summary

Innovation often produces a sustainable competitive advantage for organizations. The key in leveraging firm innovative capacity is through the development of intellectual capital. Human resource development is a viable method of fostering organizational resources such as intellectual capital. Due to economic, political, and organizational constraints upon traditional human resource development activities, intellectual capital may be best fostered via non-traditional methods. Organizational reward systems, as in the case of performance-based tenure and promotion, have been shown to both promote and hinder collaborative activities.

Understanding the impact of tenure and promotion upon faculty collaboration, human resource development professionals may glean an understanding of how organizational resources are impacted. Intervention upon processes and structures reveals a pathway to non-traditional developmental methods. These non-traditional approaches may also create strategic alliances between human resource development departments and overarching firm strategy; thereby embedding their functions into the core business.

Intellectual capital is an organizational resource encompassing the human, social, and structural knowledge capital held within the organization (Bontis, 1998; Bontis, 1999; Bontis & Fitz-enz, 2002; Edvinsson & Sullivan, 1996; Edvinsson, 1997; Petty & Guthrie, 2000;

Subramaniam & Youndt, 2005). As a means of corporate strategy, knowledge created through intellectual capital development enhances firm value (Petty & Guthrie, 2000). Strategic development and leverage of organizational intellectual capital may present an opportunity for competitive advantage (Edvinsson & Sullivan, 1996). Recommendations for the management of intellectual capital have leaned toward facilitation processes as a substitute for traditional rigid control methods (Edvinsson, 1997). "Given that innovation is fundamentally a collaborative effort" (p. 459), intellectual capital development must be fostered through the promotion of collaborative relationships as a substitute for management-driven initiatives.

Faculty collaboration may be classified into two major categories: teaching and research (Austin & Baldwin, 1991). For the purposes of this inquiry, faculty research collaboration serves as the focus. The frequency of faculty collaboration appears to vary across disciplines (Baldwin & Austin, 1995; Hafernik, Messerschmitt, & Vandrick, 1997). Collaboration is more common in disciplines with well developed theoretical bases, while disciplines characterized by weaker conceptual paradigms demonstrate less frequent collaborations (Baldwin & Austin, 1995). Humanities and social sciences are such disciplines with weaker conceptual paradigms and thereby experience less frequent collaborations. Collaborative relationships have been shown to have a direct impact on academic productivity (Lee & Bozeman, 2005).

"[Organizational] reward systems are concerned with two major issues: performance and rewards" (Kerr & Slocum, 1987). Employee evaluation in a performance-based organizational reward system is commonly executed via the quantification of some aspect of employee performance. In the case of faculty tenure and promotion, performance evaluations are based upon a quantified measurement of teaching, research and service. Performance-based systems

such as tenure and promotion tend to ignore any subjective interpretation of performance, and often deter collaborative relationships.

Three main research questions were defined which guided this study.

1. How does faculty collaboration occur and how is it negotiated at the target university's selected college?
2. How does tenure and promotion impact these operational activities associated with collaboration?
3. How does individual perception of the impact of tenure and promotion affect collaboration?

Collaboration was chosen as the unit of analysis due to the collaborative nature of innovation. Organizational reward systems, as in the case of performance-based tenure and promotion, have been shown to both promote and hinder collaborative activities. Understanding the impact of tenure and promotion upon faculty collaboration, human resource development professionals may glean an understanding of how organizational resources are impacted.

Data were gathered from three main sources of evidence: (1) documentation data gathered via the selected college's strategic plan, (2) archival data from departmental network analyses examining inter-departmental collaboration, and (3) interview data from 14 participants. These three sources of evidence comprised the case. Data collection occurred over a one-year period.

Data analysis was performed in a theory-driven manner (Boyatzis, 1998) contiguous to a within-case analytic procedures utilized for preparation, analysis, and presentation of data (Miles & Huberman, 1994; Yin, 2003). The theory-driven, qualitative data analysis occurred in an

inductive manner with the theoretical variables guiding the organization of data. This type of analysis warranted a three-stage procedure (see Figure 12).

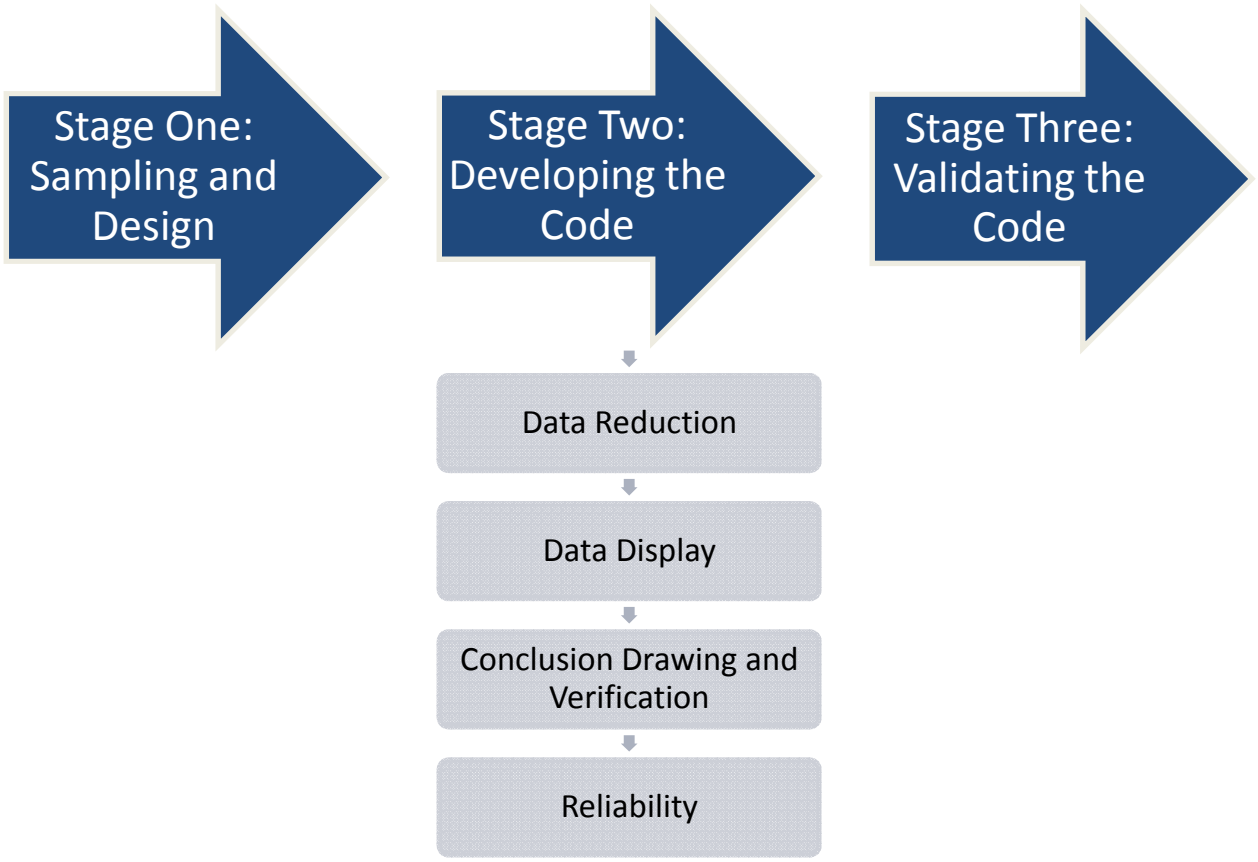

Figure 12: Visual Representation of Data Analytic Procedures

Stage one centered upon sampling and design issues (Boyatzis, 1998). Boyatzis (1998) states the sample and unit of analysis must reflect the theoretical framework. The sample was selected based upon the strategic goal of collaboration. Collaboration has been identified as a key activity in the Theory of the Learning Organization (Senge, 1990). Faculty collaboration, the unit of analysis is associated with attributes of The Theory of the Learning Organization based upon the nature of the activity.

Stage two involves the development of the code (Boyatzis, 1998). Code development occurred via review and contemplation of the theory allowing the research to gain a rigorous

meaning of the theory within the context of the study. Nested within stage two, a within-case analysis was utilized for the purposes of examining the raw data. The within-case analysis began with data reduction (Miles & Huberman; Yin, 2003). The data reduction involved compiling and arranging data. Following data reduction, data were arranged as to exhibit the findings. After the data were displayed, conclusions were drawn and verified. Establishing reliability by gaining convergence of data across time and settings (Boyatzis, 1998) was performed throughout the within-case analysis.

The final stage of data analysis was the validation of the previously developed code (Boyatzis, 1998). Verifying the code was performed by examining the theoretical variables as established by the theoretical framework. Findings related to the data collection and analyses were examined by the researcher in relation to the theoretical variables and propositions.

Conclusions

The following text discusses the findings of the study in relation to the specific questions.

Research Question #1

Collaborations appeared to be negotiated via relationships and networks. Most often these collaborations occurred as an extension of funded research. Research collaborations were also reported to be created by networks built at professional conferences and seminars. These venues often allowed faculty members to recognize others working in similar disciplines or areas of interest they held. Accordingly faculty members were able to be display their own work and were often contacted to collaborate with others.

Financial rewards were often directly linked to decision related to establishing collaborations. Additionally, goals and outcomes related to successfully engaging in tenure and

promotion were perceived as being closely linked to decisions relating to research collaborations as reported by faculty participants. Closely linking outcomes to decisions regarding collaboration appear to increase the frequency of collaborative activities.

As previously discussed, the administrative structure dictating the distribution of compensation sends message to employees about perceived competence. Closely linking desired behaviors to administrative structures can elicit desired behaviors which promote productivity and positively affect organizations. Specifically organizations with a core competency of innovation should promote behaviors which encourage risk-taking, creativity, and teamwork.

Research Question #2

Tenure and promotion was not shown to have any direct impact upon collaborative activities. No direct evidence was found to support or refute previous research. Further investigation must be done to establish causal links.

Research Question #3

Individual perceptions of the outcomes relating to tenure and promotion did affect decisions relating to collaborations. As discussed previously discussed, participants reported decisions relating to engaging in research collaborations often believed this activity would assist in achieving tenure. Participants reported collaboration almost always increased academic productivity. All participants indicated research collaboration is a necessary activity associated with attaining tenure at this University.

Limitations

The identified data sources, while strong in particular areas may be weak and present potential limitations to the study. First, documents and archival records may be plagued by selectivity bias (Yin, 2003); meaning the document or documents can be incomplete and not

representative of the unit of analysis. These documents and archival records may also be subjected to reporting bias. Reporting bias occurs when the author of the document fails to include pertinent data.

Interviews may also introduce bias. Questions may be poorly constructed or communicated in an efficient manner thereby omitting data which may be applicable (Yin, 2003). Secondly, interviewees may institute bias. Social confirmation bias occurs when an interviewee responds in a manner in which he or she believes the interviewer wants to hear. This bias distorts the true nature of responses.

Convenience sampling is characterized by accessing data in an unstructured manner in an effort to conserve resources (Creswell, 2007). This type of sampling is often associated with studying one's own workplace. While research questions may be born out of issues related to one's own job, other data sources may not have been fully examined. Additionally, studying one's own workplace presents issues related to power imbalance.

Discussion

A sustainable competitive advantage is important for the continuing and lasting success of organizations. Resource-based views of strategic management predict organizational success is dependent upon the unique resources and capabilities which are held within the firm (Oliver, 1997). A critical success factor for gaining a sustainable competitive advantage is the processes associated with the leverage of resources. HRD may be associated with those activities which seek to foster and develop organizational resources for the purposes of gaining a sustainable competitive advantage (McClernon & Swanson, 1997; Torraco & Swanson, 1995).

Historically, "HRD has been weak strategically" (Vince, 2003, p. 559). HRD activities within a firm may be seen as an unnecessary business function (McClernon & Swanson, 1997).

Traditional developmental activities have previously served in a supportive capacity (Torraco & Swanson, 1995). Acting within a supportive role prohibits the expression of direct contribution to core business functioning. HRD departments may become vulnerable to threats such as outsourcing, reduction, and elimination.

To embed HRD as a core business function academics and practitioners alike must shift focus from people development (Vince, 2003) to organization processes and structures which impact development systemically (Lam, 1997; Swanson & Dobbs, 2006; Torraco & Swanson, 1995). Traditional practices such as training and development must be reexamined to find more efficient and subsequently 'leaner' processes (Swanson & Dobbs, 2006). Through reexamining, appending, supporting, or perhaps transforming organizational process and structures which directly impact performance, HRD may become an embedded and fluid partner in organizational strategy.

Fostering innovation via non-traditional is one method HRD professionals may utilize to gain and maintain a sustainable competitive advantage. Overall firm innovativeness has been shown to be directly related to firm performance (Calatone, Cavusgil, & Zhao, 2002). Capitalizing upon an organization's innovative capacity requires impacting the processes and structures which foster the development of intellectual capital. "Given that innovation is fundamentally a collaborative effort" (Subramaniam & Youndt, 2005, p. 459), intellectual capital development must be fostered through the promotion of collaborative relationships.

For successful and sustained collaborative partnerships, college and universities must reevaluate the framework by which faculty members are rewarded and often punished. Collaboration has been shown to have a positive impact upon productivity, innovation, and scholarship (Lee & Bozeman, 2005). It may be assumed the goals of any academic institution are

that of promotion of inquiry, innovation, and scholarship. Successful alignment of these goals with an appropriate reward system will directly impact the academic productivity of that institution (Gomez-Mejia, 1992; Lawler, 2005).

As demonstrated by this study, collaboration is cited as a method in which faculty have utilized organically to promote academic productivity. Collaborative relationships were reported to occur as a byproduct of navigating one's academic duties. Attending conferences, working with departmental colleagues, and communicating with peers within ones' discipline promoted the establishment of these relationships. Similarly, working on externally funded projects created partnerships and collaborations. Various methods were cited by faculty participants to utilize these relationships to promote productivity.

HRD professionals may learn from the natural occurrences of organizational learning. Within the context of this study, faculty reported instances of organizational learning associated with collaborating. Collaborations not only foster these learning processes, but support overall innovation as demonstrated by the literature. By fostering collaboration, HRD professionals may impact the development of intellectual capital as well as organizational strategy. Utilizing non-traditional methods of development such as fostering collaboration may allow HRD to become efficient, fluid, and embedded organizational partners.

Recommendations

The findings of this study may assist in clarifying how HRD professionals can sustain activities associated with functions supporting organizational innovative capacity. Faculty collaboration, in the context of this study, occurred organically and without the coercion of administration. HRD professionals may support collaborative relationships by providing resources related to interactions and meetings. These may be technology resources such a

scheduling or communications software. Collaborative partnerships have been shown to be mediated by resource allocation. It is important to provide resources, especially financial, in close proximity to the occurrence of collaboration.

Further research must be done to understand different context in which supporting collaborations may be use in supporting organizational innovative capacity. Different study populations should be used. These populations should represent different workplaces and job type. Further research should also be conducted to examine the negative effects of collaborations. Collaborative relationships may not be the best method to foster innovative capacity. Alternative methods should be focused upon such as impacting administrative structures for the purposes of impacting organizational behavior.

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APPENDIX A

SAMPLE INTERVIEW PROTOCOL

1. Do you collaborate for research projects?
2. How often do you collaborate?
3. Who do you typically collaborate with? Departmental peers? Colleagues within the college? Colleagues within the university? Colleagues at other universities?
4. Have you ever collaborated outside of your discipline? Can you explain that experience?
5. Would you ever collaborate with individuals outside of your discipline?
6. Do you feel collaboration adds value to your work?
7. Are there any issues with collaboration?
8. Is it difficult to work with other faculty due to their own demands?
9. Do you feel that the process of tenure and promotion facilitates collaboration? Why or why not?
10. Is there anything you perceive that could be done differently from an administrator's standpoint to facilitate collaboration?

APPENDIX B

SAMPLE RECRUITMENT E-MAIL

Dr. [insert name],

My name is Cara Bartek and I am a graduate student in the College of Education and Human Development. I am conducting a study, as part of my dissertation, to understand how and why faculty members participate in collaborative research and how tenure and promotion mediates this process.

I have contacted you to participate in this study because you have participated in research collaboration as indicated on your vita found on the college's website. As a participant you will be asked to answer questions regarding your experiences with collaboration as well as questions regarding your perception of the affect the tenure and promotion process has on your ability to collaborate. The interview may last between 45 and 60 minutes. The interview may or may not be audio recorded, based upon your preference.

The risks associated with this study are minimal and are no different than those encountered in daily life. Accordingly there are no direct benefits associated with this study; however through understanding your experiences you may inform how to better manage collaboration in the college and/or university setting as well as how collaboration may be facilitated in industry. This study has been approved by the Texas A&M Office of Research Compliance.

If you are willing to participate in this research please respond back to this e-mail with any availability you might have. If you have any question you may contact me, Cara Bartek (krueger@neo.tamu.edu or (979) 845-4978) or my committee chair Dr. Larry Dooley (l-dooley@tamu.edu or (979) 845-5300).

Thank you for your time,

Cara Bartek

APPENDIX C

INFORMATION SHEET

INFORMATION SHEET
Fostering Innovative Capacity via Organizational Reward Systems: The Case of Faculty Collaboration

Introduction

The purpose of this form is to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research.

You have been asked to participate in a research study to understand the nature of faculty collaboration in the college. The purpose of this study is to understand how faculty members collaborate in the college and how this process may be mediated by tenure and promotion. You were selected to be a possible participant because you are an individual who has or does currently collaborate.

What will I be asked to do?

If you agree to participate in this study, you will be asked to answer questions related to your experiences with collaboration and your perceptions regarding how you feel the tenure and promotion process with fosters or hinders collaborative research. This study will take between 40 and 60 minutes.

Your participation will be audio recorded.

What are the risks involved in this study?

The risks associated with this study are minimal, and are not greater than risks ordinarily encountered in daily life.

What are the possible benefits of this study?

You will receive no direct benefit from participating in this study; however, through understanding your experiences you may inform how to better manage collaboration in the college and/or university setting as well as how collaboration may be facilitated in industry.

Do I have to participate?

No. Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with the university or college.

Who will know about my participation in this research study?

This study is confidential. The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only the primary investigator, Cara Bartek, will have access to the records.

If you choose to participate in this study, you will be audio recorded. Any audio recordings will be stored securely and only the primary investigator, Cara Bartek will have access to the recordings. Any recordings will be kept for six months and then erased.

Whom do I contact with questions about the research?
If you have questions regarding this study, you may contact Cara Bartek at krueger@neo.tamu.edu or at (979)845-4978.

Whom do I contact about my rights as a research participant?
This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For research-related problems or questions regarding your rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

Participation
Please be sure you have read the above information, asked questions and received answers to your satisfaction. If you would like to be in the study, please contact the primary investigator at krueger@neo.tamu.edu or at (979)845-4978.

APPENDIX D

INFORMED CONSENT

CONSENT FORM
Fostering Innovative Capacity via Organizational Reward Systems: The Case of Faculty Collaboration

Introduction

The purpose of this form is to provide you information that may affect your decision as to whether or not to participate in this research study. If you decide to participate in this study, this form will also be used to record your consent.

You have been asked to participate in a research study to understand the nature of faculty collaboration in the college. The purpose of this study is to understand how faculty members collaborate in the college and how this process may be mediated by tenure and promotion. You were selected to be a possible participant because you are an individual who has or does currently collaborate.

What will I be asked to do?

If you agree to participate in this study, you will be asked to answer questions related to your experiences with collaboration and your perceptions regarding how you feel the tenure and promotion process with fosters or hinders collaborative research. This study will take between 40 and 60 minutes.

Your participation will be audio recorded.

What are the risks involved in this study?

The risks associated with this study are minimal, and are not greater than risks ordinarily encountered in daily life.

What are the possible benefits of this study?

You will receive no direct benefit from participating in this study; however, through understanding your experiences you may inform how to better manage collaboration in the college and/or university setting as well as how collaboration may be facilitated in industry.

Do I have to participate?

No. Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with the university or college being affected.

Who will know about my participation in this research study?

This study is confidential. The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only the primary investigator, Cara Bartek, will have access to the records.

If you choose to participate in this study, you will be audio recorded. Any audio recordings will be stored securely and only the primary investigator, Cara Bartek will have access to the recordings. Any recordings will be kept for six months and then erased.

Whom do I contact with questions about the research?
If you have questions regarding this study, you may contact Cara Bartek at krueger@neo.tamu.edu or at (979)845-4978.

Whom do I contact about my rights as a research participant?
This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For research-related problems or questions regarding your rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

Signature
Please be sure you have read the above information, asked questions and received answers to your satisfaction. You will be given a copy of the consent form for your records. By signing this document, you consent to participate in this study.

_____ I agree to be audio recorded.
_____ I do not want to be audio recorded.

Signature of Participant: _____ **Date:** _____

Printed Name: _____

Signature of Person Obtaining Consent: _____ **Date:** _____

Printed Name: _____

VITA

Candidate: Cara Beth Bartek

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