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Leadership traits, divergent thinking, and innovation in higher education

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Leadership Traits, Divergent Thinking, and Innovation in Higher Education

by

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Dedication

I dedicate this work to my loving husband, Thomas James Marini; my wonderful children,

Thomas James Marini II and Martha Anne Marini; my family; in loving memory of Mary H.

Marini; and to my dear friend Laura Jury.

Acknowledgments

Abstract

The topic of leadership is critical today as leaders' decision-making processes affect political, social, and economic conditions globally. Considering market fluctuations and shifts, political uncertainty, environmental threats, and global societal issues, the question of leadership is at the heart of issues faced today as leaders impact people at all levels of society. The discussion regarding leadership has centered on the need for high-level critical and creative thinkers and has shifted towards academia as a source for innovation. Educational institutions are under a high level of scrutiny and pressure to prepare graduates effectively for a volatile and unpredictable global market, yet the educational model has been slow to change and adapt to market conditions.

This study identified the relationship between the institutional environment, leader's traits, and divergent thinking to provide insight into the characteristics that drive innovation in the academic setting. The research involved a large-scale national study of college and university leaders and focused on leadership traits, divergent thinking, and innovation. Findings indicated negative relationships between the demographic attributes of gender and level of education, and innovation. Leaders with the traits of "Conscientiousness" and "Lack of Emotional Stability" negatively impacted innovation and institutional characteristics of location and type negatively affected organizational creativity. There was a significantly positive relationship between the institutional environment and three measured levels of innovation.

Key words: leadership, creativity, divergent thinking, innovation, and higher education

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Chapter 1: Introduction

Background

The twenty-first century is experiencing dramatic, unprecedented change that has had global impact on the economy, financial institutions, governments, and the environment. Technological advances, demographic changes, worldwide markets, political unrest, and an evolving knowledge base are among the factors that have forced a shift in organizations and their leadership (Peterson, Walumbwa, Byron, & Myrowitz, 2009). It is widely held that organizations must address critical social issues, develop creative initiatives, and strategically plan for the future (DiLiello & Houghton, 2006). Globally, the world has shifted from a knowledge-based economy into a new evolving "creative economy" (Oke, Munshi, & Walumbwa, 2009, p. 64) in which conventional thinking no longer provides the answers to highly complex issues facing leaders today.

Indicators suggest that issues unparalleled in the past will continue to affect organizations. According to March (2007), global factors including economic, political, and cultural linkages; expansion of information and biological technologies; redistribution of wealth; rise of fundamentalist religious beliefs; and the earth's declining resources are among the greatest influences. Glynn (1996) and Hage (1999) maintained that to address such challenges, a paradigm shift in current business models, organizational problem solving, and leadership needed. These trends continue to influence and shape the political, business, and socio-economic climate and broadly impact educational systems.

Creating an environment that is adaptable and receptive to change is critical in today's market as "life in organizations is permeated by the ethos of change" (Levine, 1999, p. 225). Matthew (2009) held that because change is integral in organizations today,

creativity is a key predictor in the ability to lead change. Leaders' effectiveness depends on

the organization's proclivity for change, response to creative leadership, and the ability to

adopt new, innovative solutions (Drazin, Glynn, & Kazanjian, 1999; Matthew, 2009; Sahin,

2006; Sternberg, 2005). Glynn (1996) suggested individual leader "innovative genius" and

creative thinking is linked to organizational innovation.

Rollins (1993) and Rogers (2003) maintained that understanding the traits, behaviors,

and characteristics of creative leaders is critical in understanding change. Creative leadership

is manifested in descriptive traits of personality disposition, psychological types, preferred

behavioral patterns, and individual characteristics that are domain specific, yet subject to

environmental influence (Goldberg, 1993; Gustafson & Mumford, 1995; Puccio & Grivas,

2009). The focus on leadership and creativity has centered primarily on the business

environment, but more recent attention has shifted towards the academic environment in the

context of globalization and change (Cameron, 1984; Lewis, 2003; Sandeen & Hutchinson,

2010; Silver, 1999).

Leaders drive innovation through divergent thinking (Runco & Mraz, 1992; Matthew,

2009; Puce & Graves, 2009). Drain et al. (1999), Peterson et al. (2009), and Puce and Graves

(2009) found divergent thinking and creativity essential components of transformative

leadership. Transformative leaders with specific personality traits and divergent thinking

abilities lead institutional change through innovation (Gumusluoglu & Ilsev, 2007; Jung,

2000). The ability to *diffuse* innovation is reflected in successful change in behaviors, beliefs,

or attitudes and actions of individuals or groups. Because institutions are traditionally slow to

change, yet have the potential to be "drivers" of change, it is imperative to consider

leadership in the context of institutional innovation. The research explored leadership traits

of educational leaders, divergent thinking, and their ability to diffuse institutional innovation.

Problem Statement

The extent to which organizations respond to changing times depends upon creative leadership (Matthew, 2009). Educational leaders have the ability and potential to act as agents of change, yet change in academia is difficult (DiLiello, 2006; Pandit, 2009). Institutions are slow to evolve, and they are challenged with complex structure, bureaucracy, and cultural issues (Cameron, 1984; Gioia & Thomas, 1996; Ostroff and Rothhausen, 1997). Until now, creativity within the framework of leadership has not been studied in the academic setting but focused on the business world (Basham, 2012; Hackett & Hortman, 2008; Healey, 2008). However, there is a critical need and opportunity to be more innovative in higher education and understanding academic leaders in the context of innovation for the future is important (DeHoogh, DenHartog, & Kooman, 2005).

Justification

Scholars maintain that structure, management, and the environment influence leaders' decision-making and change strategies (DiLiello & Houghton, 2006; Schein, 1990). Organizations that have evolved in spite of such turmoil have focused on creating environments that demonstrate openness, collaboration, and embrace change. The business model of leading innovation has not made its way into the academia, which is characteristically a closed system (Chance, 2008). The relationship between innovation, divergent thinking, and institutional leadership in the academic environment has not been considered in the context of globalization and change.

Gioia and Thomas (1996) and Ostroff and Rothausen (1997) suggested that because educational institutions are highly structured, slow to change, and challenged by environmental constructs, there is a lack of cultural indoctrination and high turnover. Increased governmental policies and regulation add complexity to a restrictive system that

has historically been resistant to innovation or reform (Cameron, 1984). Traditionally

burdensome and complex bureaucracies, budget constraints, limited resources, and external

influences (demographic, political, and economic) present challenges for many institutions.

(Chance, 2010).

The increased emphasis on quality of education, student satisfaction, image,

perception, demonstration of student learning and accountability has forced institutions into a

rapidly evolving and competitive marketplace that represents an unfamiliar territory for many

(Gioia & Thomas, 1996; Simsek & Louis, 1994). Educational institutions are diverse in type,

mission, and demographics that reflect and are guided by leadership, yet each responds to

market conditions differently to remain competitive and relevant. Applying a business model

in the context of leadership traits and creativity provide a means to consider the academic

environment and view of innovation in higher education (Hackett & Hortman, 2008).

Purpose of the Study

Rapidly changing times have impacted institutions at all levels, but change in

academia remains slow compared to more resilient organizations. It has been suggested that

educational institutions are in need of change, yet defining change per se is difficult (Gioia &

Thomas, 1996; Tierney, 1998). Tierney (1988) and Simsek and Louis (1994) found

educational institutions generally resistant to change and cumbered with hierarchy but

dependent upon leadership for new ideas. Since creative potential of leaders is a predictor of

innovation and contributes to institutional success, understanding these traits is important.

Institutional mission, tradition, and environment influence leader behaviors and decision-

making and contribute to a culture of innovation (Livingston, Nelson, & Barr, 1997; Puccio

& Grivas, 2009; Rollins, 1993). In addition, the institution's ability to attract, recruit, and

retain creative leaders is associated with dynamic academic environments that embrace new ideas and innovation (deHoogh et al., 2005).

Studies confirm that creative behavior is an intrinsic motivator for followers and related to leader's personality traits, characteristics, and influences organizational effectiveness (Damanpour & Schneider, 2008, Greenwood & Hinings, 1996, Marques, 2007, Puccio & Grivas, 2009). Educational research, however, has not focused on leaders' traits and innovation, and it is timely and relevant to consider leadership traits and creativity at the institutional level (Basham, 2012; Geering, 1980; Marron & Cummiff, 2014; Van Duessen, 2013). Globalization and market trends have changed the educational landscape and positioned institutions competitively in the sense of a unique business model of innovation; therefore, it is important to consider the characteristics of leadership in the academic setting.

Research Questions

The evolution of education from a matter of "flat earth" discourse to a competitive global market has impacted educational institutions all over the world and resulted in a need for creative leadership (Pandit, 2009). These dynamics have forced a shift in academia that requires a multi-dimensional approach in the activities, competencies, cultural values, and processes of institutions today (Qiang, 2003). The study examined educational leaders' personality traits and innovation to answer the following questions:

Question 1: To what extent is there a relationship between "leadership traits" and "innovation" and specifically what is the relationship between institutional "innovation" and leaders with the traits of "openness to experience" and "divergent thinking?"

Question 2: To what extent does institutional environment influence "innovation?"

Conceptual Framework

Diffusion of innovations. The diffusion of innovations theory (Rogers, 1959) explains how innovative ideas are adopted into an organization and is based on the premise that leaders transfer new ideas through a phased process of "knowledge, persuasion, and decision (making) implementation and confirmation" (Sahin, 2006, p. 14). Within this framework are the attributes or predictors of successful innovation, including relative advantage, compatibility, complexity, trialability, and observability (Sahin, 2006). Individuals or followers' perceptions of these attributes are indicators of the rate of adoption and guided by leaders' ability to influence the group or individuals towards acceptance.

Rogers' diffusion of innovations theory provides the framework for the decision-making processes of individuals and organizations based on behavior-intention as well as contextual-environmental factors (Scott, Plotnikoff, Karunamuni, Bize, & Rogers, 2008). Factors that influence organizations' innovation are dependent on leadership and acceptance for implementing "change/behavior adoption" strategies (Scott et al., 2008, p. 42). Interpersonal relationships, culture, values, and beliefs are contributors in terms of the proclivity of an organization to adopt innovative ideas (deHoogh et al., 2005).

Changes in attitudes, behaviors, and beliefs result as innovations are adopted and the environment modified. In educational institutions, change is represented by a shift in policies, procedures, and governance that allows innovations to be adopted. A dynamic environment must either be in place or evolve in order to perpetuate the cycle of innovation (Gruber, & Niles, 1972; Silver, 1999).

Divergent thinking. The study of creativity includes divergent thinking and yet the two are not synonymous (Badasur, Graen, & Scandura, 1986). Divergent thinking refers to fluency, flexibility, originality, and the elaboration of novel or new ideas (McCrae, 1987;

Runco & Mraz, 2008). According to Runco and Acar (2012) "originality is the central feature

of creativity" and is a required for innovation (p. 66). Creativity is also part of a cognitive

domain-centered process, linked to personality traits and creative potential (Feist, 2004;

Piffer, 2012). Since creative problem-solving requires that ideas be "novel, useful/adaptive,

and …gain social acceptance" (Matthew, 2009, p. 5), an outcome or "divergent production"

must occur (Guilford, 1968). A convergent or evaluative process is required to transform an

original (creative) idea into an outcome that is both original and effective and reflects

divergent thinking.

Divergent thinking is presumed to be indicator of creative talent and potential (Runco

& Acar, 2012). Coupled with leadership traits, divergent thinking is essential to driving

innovation in organizations as creative leaders influence outcomes (Damanpour & Schneider,

2008). The ability to construct innovative solutions is predicated on leaders' ability to apply

divergent thinking with flexible and varied results (Mumford, Marks, Connelly, & Zaccaro,

2000).

Leadership traits. There has been an increased interest in understanding personality

traits and characteristics of leaders today, beyond the cognitive types initially identified by

Jung (1993) and later expressed in the MBTI (Meyers-Briggs Type Indicator). Cattell (1943)

first explored personality based on an analytical cluster of descriptive "terms" or adjectives

that defined behaviors and characteristics as traits of individuals, rather than a conscious type

of thinker. Goldberg (1990) later developed the five-factor model (FFM), known as "the Big

Five," an accepted framework for understanding the psychology of personality traits and

preferred behaviors (John & Naumann, 2010). The Big Five identified broad yet

comprehensive categories or dimensions of behavior into which personality constructs are

assigned. It is considered a reliable personality methodology, effective in understanding

characteristics and traits of leadership, and has broad application for relevance in the educational setting (Zhao, Seibert, & Lumpkin, 2010).

The Big Five (FFM) defined the five behavioral dimensions in terms of extraversion, (lack of) neuroticism, openness, agreeableness, and conscientiousness that may depend on demographics such as those listed in Figure 1 (DeFruyt 2002; Gustafson et al., 1995; Jansen & Kristof-Brown, 2006). In the five-factor model, openness is a predictor of leaders who "pursue creative vision even in the face of overwhelming resistance from more conventional thinkers" (Zhao et al., 2010, p. 385). Openness to experience is reflected in one who "seeks out new ideas...alternate views and aesthetic standards" (Zhao et al., 2010, p. 385) and is observed in those who demonstrate creative leadership (McCrae & Costa, 1987).

The Big Five (FFM) is a person-centered approach to understanding individual traits in the environment in which they exist. These broad dimensions of personality influence and are influenced by the environment as leaders and followers evolve (MacDonald, 1998). The FFM provides a framework for understanding personality that paralleled organizational fit theories, in that both are person-centered, fundamentally related to a cultural affect, and represent an important part of understanding leader behavior and effectiveness (deHoogh et al., 2005; Gustafson et al., 1995).

Institutional environment and demographics. The environment, culture, and social norms may critically influence the expression of certain leadership traits and impact leader effectiveness in any situation. Given the nature of faculty experience, traditional institutional norms, and established policies, a "static" hierarchical academic environment may limit creative behaviors. The environment in which such behaviors occur contributes to leader effectiveness, as individuals behave in situations that are "relevant to the given trait" (Gustafson & Mumford, 1995, p. 842) and "personality traits manifest in behaviors and

responses that vary from situation to situation" (Lievens, Chasteen, Day & Christiansen, 2006, p. 248). The type of institution, geographical location, size (enrollment), and the dynamic or static condition of the environment may also influence leader behaviors.

Leaders who exhibit "charismatic" vs. "transactional" behaviors are deemed to be more effective and emerge in organizations that support innovation and change. Charismatic and transformative leadership is likely to occur in dynamic environments as they represent greater opportunities for change and allow for a range in behaviors. Traits observed in charismatic leaders reflect creativity in that they are "open to experience" and exhibit influential social behavior (Lievens et al., 2006). Leader demographics such as age, gender, ethnicity, education, experience, and position may also affect creativity and innovation.

The conceptual model for the study is illustrated in Figure 1.

- IE_1 Geographical
  location
- IE_2 Enrollment/size
- IE_3 Type
- IE_4 Dynamic/static

(IE)
INSTITUTIONAL
ENVIRONMENT

- D_1 Age
- D_2 Gender
- D_3 Ethnicity
- D_4 Education
- D_5 Experience
- D_6 Position

(D)

DEMOGRAPHICS

(DT)
DIVERGENT
THINKING

(IN)
INNOVATION

- DT_1 Valuing new ideas
- DT_2 Creativity is not restrictive
- DT_3 Time for new ideas

FIVE FACTOR MODEL
- LT_1 Extraversion
- LT_2 Agreeableness
- LT_3 Conscientiousness
- LT_4 Emotional Stability
- LT_5 Openness to Experience

(LT)
LEADERSHIP
TRAITS

- IN_1 Curricula and
  interdisciplinary studies
- IN_2 Entering new markets
- IN_3 Information and
  technology

Figure 1. Conceptual model of institutional innovation

Definition of Terms

For the purposes of the study, the variables are defined and coded as follows:

Innovation. (IN)

Innovation is "an idea, practice, or project that is perceived as new by an individual
or other unit of adoption" (Rogers 2003, p. 12).   For the purpose of the study,
innovation is defined as follows:

Curricula and interdisciplinary studies (IN_1): an exchange of knowledge that
results in the discovery of new insights, including a national and international

perspective, new programs in interdisciplinary, creativity or innovation studies (Godemann, 2006; Qiang, 2003; Yudess, 2010)

Entering new markets (IN_2): recruitment of foreign students, economic competitiveness and advantage, increased diversity, student/faculty exchange, curriculum, visiting lectures/scholars/ collaborative projects (Qiang, 2003; Pandit, 2009).

Information and technology (IN_3): IT infrastructure including supports NEW initiatives including but not limited to cloud, e-book, e-learning, virtual learning, open source networks, advanced communication systems (Grummon, 2010)

Divergent thinking. (DT_1)

Divergent thinking is based on Badasur's "Improving the Measurement of Divergent Thinking Attitudes in Organizations" (Badasur, Taggar, & Pringle, 1999).

> *Valuing new ideas (DT_1):* willingness and ability to be creative and bring new ideas forward (Badasur et al., 1999).
>
> *Belief that creativity is not only for a select few (DT_2):* view of creative potential at the institution (Badasur et al., 1999).
>
> *Not feeling too busy for new ideas (DT_3):* investment of (personal and institutional) time and resources for new ideas (Badasur et al., 1999).

Leadership traits. (LT)

Leadership traits are defined in the context of the five-factor model (FFM) or the Big Five developed by Lewis Goldberg (1990).

> *Extraversion (LT_1):* "people who are gregarious, outgoing, warm and friendly; they are energetic, active, assertive, and dominant in social situations; they experience more positive emotions and are optimistic; and the seek excitement and stimulation" (Zhou et al., 2010, p. 387).

Agreeableness (LT_2): one's attitude and behavior toward others that can be "characterized as trusting, altruistic, cooperative and modest" (Zhou et al., 2010, p. 387); shows concern for others and avoids conflict.

Conscientiousness (LT_3): "a personality dimension that describes and individual's level of achievement, work motivation, organization and planning, self-control and acceptance of traditional norms, and virtue and responsibility toward others" (Zhou et al., 2010, p. 10).

Emotional Stability (LT_4): (vs. neuroticism) "calm, stable, even-tempered, and handy" (Zhou et al., 2010, p. 386); optimistic in times of stress, not easily discouraged, overcome setbacks and challenges, and take on additional tasks.

Openness to experience (LT_5): having imagination, curiosity and creativity; measured risk taking, seeks current information, new ideas (Goldberg, 1990).

Institutional environment. (IE)

The institutional environment data will be gathered based on the following criteria:

Geographical location (IE_1): " a position or site occupied or available for occupancy or marked by some feature; a tract of land designated for a purpose." (Retrieved from http://merriam-webster.com; February 15, 2016).

Enrollment/size (IE_2): "the act of becoming a member or being made a member; the number of members." (Retrieved from http://merriam-webster.com; February 15, 2016).

Institutional type (IE_3): "qualities common to a number of individuals that distinguish them as an identifiable class." (Retrieved from http://merriam-webster.com; February 15, 2016).

Institutional environment (IE_4): "the circumstances, objects, or conditions by which one is surrounded." (Retrieved from http://merriam-webster.com; February 15, 2016).

Demographics. (D_1)

Leader demographics is based on the following criteria:

Age: (D_1) "the time of life at which some particular qualification, power, or capacity arises or rests" (Retrieved from http://merriam-webster.com; February 15, 2016).

Gender: (D_2) "the state of being male or female" (Retrieved from http://merriam-webster.com; February 15, 2016).

Ethnicity: (D_3) "ethnic quality or affiliation or a particular ethnic affiliation or group" (Retrieved from http://merriam-webster.com; February 15, 2016).

Education: (D_4) "the knowledge, skill, and understanding that you get from attending a school, college, or university (Retrieved from http://merriam-webster.com; February 15, 2016).

Experience: (D_5) "skill or knowledge that you get by doing something; the length of time you have spent doing something (such as a particular job) (Retrieved from http://merriam-webster.com; February 15, 2016).

Position: (D_6) "social or official rank or status; an employment for which one has been hired" (Retrieved from http://merriam-webster.com; February 15, 2016).

Significance of the Study

Educational institutions pride themselves in a long-standing tradition of academic integrity while promoting leadership and innovation. Current college rankings now include

"most innovative schools" and specialized curricula have been developed (Morse, 2016). Colleges have adopted slogans like "leaders and the best" while others focused on innovation, business strategy, and design thinking. Recently degrees have emerged in the areas of "Innovative Business Management," "Strategic Design Thinking," and "Design Management" (Yudess, 2010) and reflect a need and focus on new, differentiated programs.

Colleges compete for students based on reputation, institutional data, prestigious faculty, and employability, yet it has been suggested that educational institutions are not producing the "right kind of graduate" and are not focused on the needs of the future (Chance, 2010; Neelankavil, 1994). Morley (2001) held that colleges must work towards understanding academic outcomes from a broad societal perspective and future view. Van Gyn and Schuerholz-Lehr (2009) maintained that educating for "world mindedness" was imperative and understanding a cross-cultural level of connectedness represented a shift in thinking about education.

Educational institutions are complex organizations in the midst of dealing with political, regulatory, and technological changes that challenge their traditional existence. The emergence of alternative institutions, technology, and on-line learning has resulted in a competitive, fast-paced, open environment that conflict with historically slow-paced incremental educational processes (Gioia & Thomas, 1996). Simsek and Louis (1994) suggested that market dynamics have forced a shift in higher education that required responses to such issues and emphasized the role of leadership in the process. Parkhurst (1999) found, in a study of business leaders, educators, and college students, that "creativity" was deemed to be most critical in defining leadership for the future.

The topic of innovation is relevant and of interest among educators, business leaders, and employers and merits further study from an institutional perspective. Those in leadership

positions have direct influence over direction setting and the processes, strategies, and methods that drive educational outcomes (Wang & Wang, 2011). Current models of education may not have adapted well or quickly enough in response to recent developments (Gioia & Thomas, 1996), and there is greater accountability for institutions to prepare graduates differently for a global economy (Lewis, 2003).

Research in the area of divergent thinking and innovation has not focused on academic leadership in the institutional environment; however, given the demands on education today it is important to understand these relationships. The study explored current leadership in higher education to identify the traits, divergent thinking, and propensity for institutional innovation. Characteristics of the environment provided an additional perspective of institutional innovation today.

Figure 1 represents the conceptual model for the study. As the environment and demographics influence leaders traits (selected or in place), there is an effect on divergent thinking and ultimately, innovation. When all is in sync, innovation contributes to the institution and more creative leaders proliferate, thus contributing to the cycle.

Limitations

The present study is based on the premise that leadership traits and creativity affect the institution's innovation. The study further assumes that leaders have control of academic decisions, such as budgeting, finance, and strategic direction. Since there may be a discrepancy in access to certain types of decision, and policy-making among institutions, relationships between leadership and innovation may not be as clearly evidenced as assumed.

The study may be limited in terms of identifying the institution as "<u>dynamic</u> or <u>static</u>" as responses are based on individual perceptions and may be biased. At the institutional level, leaders may be more focused on isolated issues rather than specific programmatic goals

(Glynn, 1996; Westphal & Fredrickson, 2001). This may affect one's view of the environment.

The definition of innovation for the purpose of the study is limited to curricula and interdisciplinary studies, entering new markets, and information technology, and there is no ranking of "innovation" in the study by definition. Moreover, the definition of innovation is not intended to fully address the internationalization or global education in its entirety, nor does it imply a single definition of innovation in academia exists (Grummon, 2010; Stevens & Miller-Idriss, 2009; Van Gyn et al., 2009). The study does not measure the success of any innovation effort from a financial, institutional, or outcomes perspective; it only acknowledges that innovation has been implemented or executed in various ways.

Finally, the ranking criteria itself among regional colleges and universities includes religious, community, and liberal arts colleges resulting in a wide variance in major, size, and institutional mission that may influence the outcome. In addition, unranked performing arts, business and engineering institutions and for-profit educational institutions are not included in the study, yet some of these programs may be recognized as "innovative or creative" (Yudess, 2010). Only those whose data were available have been considered in the study.

Summary

Chapter 1 provided the background and purpose for the study and proposed a model of institutional innovation based on leadership. As creative leaders diffuse innovation, it is important to consider divergent thinking in the process and to define the variables in the context of those who are largely responsible for institutional innovation. Previous studies on divergent thinking have relied on a "ranking" of ideas, which places value on the responses by others. In this study, the leaders' propensity for divergent thinking is associated with personality traits and related to the institutional environment.

Chapter 2 presents a review of literature and background on innovation, divergent thinking, and leadership, to frame the study. The background of "creativity" revealed significant theories in creativity studies that led to the theoretical framework. The review of literature was coded ( ) alpha-numerically to follow the conceptual model. As innovation and divergent thinking have broad application and interpretation in the academic setting, the review of literature provided the rationale for understanding specific variable definitions in the study.

Chapter 2: Review of Literature

Introduction

Understanding leadership in organizations today is complex, with environmental, political, and global influences and pressures to innovate. Academic institutions are not unique in these challenges and further study provided insight into leadership and institutional innovation. An historical perspective provided background for innovation, and more importantly, theories of creativity helped to define and understand divergent thinking. The review of literature introduces innovation in academia in terms of information and technology initiatives, entering new markets, curricula, and interdisciplinary studies. The link between creative and divergent thinking was explored and critical theories traced; divergent thinking variables were identified and discussed. The academic environment and demographics were discussed and personality traits presented (Goldberg, 1990).

The sequence of this chapter begins with the desired outcome, innovation, and back to the source of innovation, institution and leader traits. Each variable was coded to follow the conceptual model presented in Figure 1 and represented by a letter and number of the variable studied.   A "code" of DT_1, indicated "Divergent Thinking: Valuing New Ideas." Codes used in the study and literature review included the following: "IN" for innovation, "DT" for divergent thinking, "IE" for institutional environment, "D" for demographics, and "LT" for leadership traits.

Background

The 1990s represented an explosive time of economic growth stimulated by technology, emerging global markets, and change in the culture of organizations (Simsek & Louis, 1994; Xu & Rickards, 2007). The changing dynamics of the workforce triggered a shift in thinking about the functionality and structure of organizations and businesses that

demanded different skills to keep pace with new competition. Academic institutions,

historically known as sources for innovation, were scrutinized as "not keeping up" with

workforce demands and viewed as "traditional" political, economic, and sociological entities

(Gioia & Thomas, 1996). The focus on culture, technology, and leadership that diffused

innovation in the business environment shifted towards academia as the result of

globalization and technology (Cameron, 1984; Simsek & Louis, 1994). The National

Commission of Excellence in Education (1984) called for innovation in educational

institutions in response to "perceived mediocrity and lack of commitment for change"

(Cameron, 1984, p. 122).

The college and university model has been considered "stable" over time and slow to

adapt to environmental and global influences. Change in educational institutions in the last

twenty years has been minimal and politicized based on leadership and generally accepted

frameworks (Simsek & Louis, 1994). A high level of external influence, turmoil, and

conflict has resulted in the need for institutions to respond more quickly to change. In

addition, because the environment, global market, and technology have had such a dramatic

impact on academia, innovation has become a focus and challenge for educational leaders.

Grummon (2010) maintained that understanding demographic shifts, global economy,

environmental issues, and political conditions, are critical for institutional planning for the

future.

Simsek and Louis (1994) held institutional change contingent upon large-scale shifts

in values and meaning rather than organizational restructuring. Silver (1999) maintained that

change through innovation is ambiguous as definitions, priorities, and management varied

between institutions. As agents of change, universities themselves are traditionally

structured and focused on departmental disciplines rather than institutional goals, presenting

challenges for administration (Elton, 2003).

Educational institutions as highly social systems have been considered neither

adaptive nor innovative in dealing with change (Cameron, 1984; Chance, 2010; Gioia &

Thomas, 1996; Simsek & Louis, 1994; Tierney, 1988). Because the adaption of innovative

ideas slow and institutions generally resistant to change, a paradigm shift in higher education

has been suggested (Simsek & Louis, 1994). Gioia and Thomas (1996) found institutional

identity, image, and issue interpretation significant in the decision-making process of college

and university leaders, suggesting conflict between image, strategic change, and leadership.

As highly complex organizational systems, the inability to respond quickly to environmental

influences challenges institutional advancement and is perceived as threatening (Chance,

2010).

Innovation (IN)

Innovation is defined as "an idea, practice, or project that is perceived as new by an

individual or other unit of adoption" (Rogers, 2003, p. 12). Innovation has been associated

with the commercialization of ideas and represents discovery resulting in a change of "status

quo" (Oke et al., 2009). Amabile, Conti, Coon, Lazenby, and Herron (1996) initially defined

innovation as the "successful implementation of creative ideas within an organization" (p.

1155). Damanpour and Schneider (2008) later defined innovation as the development or

generation and/or use (adoption) of new ideas or behaviors.   Innovation or innovative acts

are associated with organizations, while creativity" is described on a more personal or

individual level (Amabile et al., 1999; Jaussi & Dionne, 2003; Oke et al., 2009).

Leader or manager characteristics such as liberal thinking and openness are positive

indicators on whether or not organizations will adopt innovative practices and ideas

(Damanpour & Schneider, 2008; Matthew 2009). Amabile et al. (1996) and DiLiello and

Houghton (2006) determined individual and team creativity were the basis of organizational

innovation and important in leading change. Oke et al. (2009) found a relationship between

leadership and innovative processes and viewed innovation as both a process and activity.

The connection between personal characteristics of leaders most likely to implement change

is reflected in the organization's innovation processes and commitment (Matthew, 2009).

In fast-paced environments, understanding innovation and the rate of adoption is

important for individuals and groups (Kaufman & Sternberg, 2007). An organization's

innovative characteristics and its ability or desire to adopt innovation depends on leadership.

Damanpour and Schneider (2008) found a relationship between manager innovation

characteristics and the adoption of innovation. DiLiello and Houghton (2006) determined that

individuals who possessed creativity potential were more likely to diffuse innovation when

support from colleagues was perceived. Oke et al. (2009) found leadership to be vital in not

only stimulating innovation but also successful implementation.

Peters (1997) suggested that the only way for organizations and individuals to

succeed in the future is through innovation, influenced by leaders. In the most "winning"

companies, best practices were exemplified because innovation was led by "visionary,

champions of change" who created cultures focused on good communications, teamwork,

and training (Roffe, 1999, p. 228). Institutions that included innovation, as part of the culture

and structure were better prepared for change, more resilient, and equipped to plan for the

future (Silver, 1999).

Information and technology. (IN_3) Innovation in higher education today is

centered on technology (IN_3) at the core, as it allows stakeholders to engage at multiple

levels, impacts curricula (IN_1), and drives global efforts (IN_2). In the college and

university setting, innovation has been associated with the diffusion of technology in terms of instructional strategies, advanced student learning, and the internationalization of education, viewed as a critical component for the future (Silver, 1999; Healey, 2008; Qiang, 2003; Pandit, 2009). Grummon's 2010 forecast considered changing demographics, global economics, the environment, global education, learning, politics, and technology as key variables impacting higher education. Global education and technology are fundamental in adopting innovation as educating for a "world-mindedness" goes beyond traditional approaches (Van Gyn et al., 2009).

The diffusion of technology is critical to academic innovation, as autonomous, self-directed learning continues to be a trend (Howell, Williams, & Lindsay, 2003). In a study of distance learning trends, Howell et al. (2003) found institutional infrastructure, flexibility, and versatility in technological devices among variables that impacted teaching and learning. Shea, Pickett, and Li (2005) found institutional support and faculty development significant in the success of on-line learning and class interactions.

There has been growing demand to increase distance education efforts as students seek flexible learning opportunities, yet funding IT initiatives continues to be challenging for institutions. Howell et al. (2003) found a need for broad-based institutional planning to address the challenges associated with on-line learning from the student, faculty, institution, and technological perspective. Cost containment, financial investment, cyber-attacks, and threats to student data systems continue to be of concern to those in leadership as decisions about MOOCS (Massive Open On-Line Courses), on-line, delivery, distance, and global education continue. Grummon (2010) suggested that institutions would increase cloud computing, open-source architecture, and geospatial technologies in the future as part of cost containment strategies. Keohane (2012) determined internationalization efforts were heavily

influenced by technology as unique systems of delivery created competition and demands grew, requiring institutional commitment at multiple levels.

The increasing use of technology represented a change in traditional educational models and has been a critical component in the conversation of institutional innovation (Elton, 2003). Hage (1999) and Anderson (1997) found that organizations that adapted early tended to have a high level of technological expertise and investment yet concerns over implementation, curricula, assessment, and personal competencies existed. The global landscape has forced a paradigm shift in educational strategies, in which technology, internationalization, and curricula are not mutually exclusive and continue to drive the future.

Entering new markets. (IN_2) The roots of internationalization can be traced to Post-War World War II as the U.S. engaged in many aspects of re-building in war-torn countries and embraced a rationale of "understanding" across the globe that was linked to political interests and security (Pandit, 2009). Political initiatives such as the Fulbright Act of 1946, Title VI of the Higher Education Act, were launched to increase the flow of international students to the U.S. and promote a world-view of the United States as a resource for technology and learning. The technology explosion of the 1990s, led largely by Chinese and Indian students recruited by U.S. companies, created a high-tech economy that changed the world (Pandit, 2009). The link between "innovation, economic development, and international talent" (Qiang, 2003, p. 647) was established through educational opportunities and set the stage for current initiatives.

The American Council on Education defined internationalization as "a strategic, coordinated process" (ACE, 2012, p. 3) that aligned and integrated international policies, programs, and initiatives and positioned colleges and universities more globally oriented and internationally connected (IN_1, IN_2, IN_3). Transnational opportunities (IN_2) provided

strategies for disciplinary education, interdisciplinary education, and cross-cultural education, and represented areas of growth for colleges and universities (Godemann, 2006; Morton & Mojowski, 1991; Silver, 1999). Elton (2003) suggested the growing initiative to "internationalize" education prepared students to live and work in a global society, enhanced scholarly activity, and was part of larger strategic institutional initiatives. The multi-dimensional aspect of education has had an economic and institutional benefit as college rankings include international data and students consider globalization important in the selection process (Pandit, 2009).

The view of global education is diverse and difficult to define. Global education and internationalization of education (or transnational) are often used interchangeably (Van Gyn et al., 2009) yet may be institutionally specific in terms of goals, level of commitment, and financial support. Scholars concur that internationalization will increase in importance, driven by an unrelenting global economy (IN_2) and new information technologies (IN_3); (Grummon, 2010; Healey, 2008; Qiang, 2003). Studies have indicated that international students play an important economic role nationally and that education is considered an "export" on several levels as well (CIE, 56, 2010).

Morton and Mojowski (1991) presented a global education model (GEM) based on cultural differences, interdisciplinary studies, global curriculum, powerful communications, and telecommunications. Qiang (2003) rationalized four distinct approaches that included activities, competencies, ethos, and process to conceptualize a framework focused on political, economic, academic, and cultural/social affect. Pandit (2009) suggested a comprehensive internationalization strategy that involved "international content of the curriculum, study abroad, international student recruitment and integration, and overseas partnerships and international branch campuses" (p. 648).

Other research suggested a business perspective that included a process of (a) exporting, (b) licensing production, (c) joint ventures, and (d) sole ventures with education as a commodity or product (Healey, 2008). Healey, (2008) further maintained that universities are "inherently international, in terms of exchange of research, pedagogies and faculty" (p. 354). The American Council on Education, held a more diverse view that included range of programs and services; defined national and international competencies; and established broad-based relationships, collaboration, and institutional commitment (ACE, 2012, p. 3).

According to a 2011 survey (ACE, 2012), 55% of institutions had initiatives to develop international curricula at the undergraduate level, and 28% of all institutions required courses in global trends and issues. Opportunities to participate in co-curricular courses (non-credit bearing) that supplemented the curriculum have increased, and 55% of institutions across all sectors report articulation agreements or "Institutional Commitments" with international colleges (ACE, 2012). Some colleges and universities, whose missions are largely to educate domestic students and research, may perceive globalization as commoditizing and be less engaged (Healey, 2008).

The influence of technology is an important variable as educators seek new approaches to instruction and students seek new global learning opportunities. Howell et al. (2003) found technology and international programming fundamental in the rapid changing dynamics of higher education from curriculum to instruction. Yet unlike the business model, the total costs affiliated with such global programs has been undocumented (ACE, 2012). While U.S. students struggle with the cost of education, making travel abroad difficult, a cross-cultural population emerges from the more advantaged sectors internationally, leaving

the question as to whether or not the educational system is truly "internationalizing" unanswered (Healey, 2008).

  Curricula and interdisciplinary studies. (IN_1) Van Gyn et al., (2009) held that the knowledge, skills, and abilities needed in a dynamic world are interconnected and reflected a shift from the positivist Western academic model. Traditional education systems are based on segmented, compartmentalized areas of study, yet current thinking is more interdisciplinary in nature. Elton (2003) suggested that university departmentalism and academic hierarchy presented challenges for interdisciplinary education due to discipline specific bodies of knowledge. It has been suggested, however, that a more interdisciplinary approach to education is needed for innovation (ACE, 2012; Godemann, 2006; Sandeen & Hutchinson, 2010).

  As knowledge and information increases, lines between disciplines overlap and blur; academic emphasis shifts from course completion to competency-based learning, and curricula shifts are likely to occur (Howell et al., 2003). According to Godeman (2006), "In interdisciplinary work context, experts with different qualities, varying knowledge-based and disciplinary perspectives come together," presenting opportunities for new learning (p. 51). Godemann (2006) further maintained that the "central goal of an interdisciplinary dialogue is to achieve an exchange of expert knowledge and to reach and understanding" (p. 53).

  One (international) view of curriculum suggests a transformative view of education is needed that is both "systematic and logical, but also allows for creative and intuitive ways of thinking" (Van Gyn et al., 2009, p. 30). In the context of global education, "structured interdisciplinary approaches" (Morton & Mojowski, 1990, p. 5) and projects extending beyond the boundaries of traditional subjects are critical to success. Moreover, it was suggested that educating for a world mindedness required the inclusion of diverse pedagogies

and cross-cultural understanding best achieved through interdisciplinary studies (Van Gyn et al., 2009). Sandeen and Hutchinson (2010) maintained the evolution in higher education is driven by innovation and creativity and addressed the "innovation deficit" (p. 81). New concepts in curricula focused on interdisciplinary studies in addition to creativity, leadership, innovation, and "design thinking" (Cooperrider, 2010).

Creative processes traditionally associated with art and design programs have emerged as new models for education and curricular development. In a survey of UPCEA (University Professional and Continuing Education Association; 2011) member institutions, 37% of colleges have developed creativity and innovation studies with 14% planning to add them in the future. These programs range from management and leadership development to engineering and technology. Lafferty (2004) found 75 universities offering courses in creativity and/or problem solving, and Yudess (2010) determined that 54 programs launched new certificates or degrees in creativity or innovation. Bajada and Traylor (2013) suggested that the most effective and transformative curricular models are both disciplinary and interdisciplinary and included courses in creativity and innovation, technology, global perspective, and social responsibility embedded throughout the curriculum.

Creativity and Divergent Thinking

A framework for creativity. The wide range of definitions for creativity include creative as an individual and creativity as a process or behavior. Defining creativity is difficult in that there are many intangible aspects to consider that are impacted by confusing variability (Kaufman & Baer, 2009). Lack of clarity exists as to whether creativity is the result of an individual, a particular process, or defines particular acts (Parkhurst, 1999). Understanding the dimensions of creativity is critical from both an individual and leader perspective.

Simonton (2009) suggested that creativity was a one-dimensional phenomenon and differences existed between artistic and scientific creativity. Sternberg and Lubart (1996) associated creativity with leading change in organizations and suggested that the ability to generate new, high-quality ideas is not only domain specific but reflected a relationship between organizational processes and personal characteristics or traits. Sosik, Kahal, and Avolio (1998) found group creativity a holistic production of divergent ideas important in establishing team dynamics.

Matthew (2009) determined that creativity is central to leading change, establishing a vision, motivating, and inspiring followers to attain set goals. Amabile et al. (1996) defined innovation as "the successful implementation of creative ideas within an organization" whereas creativity "is the seed of all innovation" (p. 1155). However, the ability to generate alternative thoughts and ideas is dependent not only upon psychological domains, preference for creative thinking, and propensity for alternative thought, but the environment in which such actions occur (Amabile et. al., 1988; Basadur, 1999).

Creativity has been seen as a key characteristic in leadership effectiveness, and it influences the ability to motivate, inspire, and lead change (DiLello & Houghton, 2006; Jung, 2000; Marques, 2007). Organizationally, "creativity means deliberately changing those well established procedures to make new, superior levels of quantity, quality, cost, and customer satisfaction possible" (Basadur et al., 1999, p. 75). Amabile (1988) maintained that the creative process may be similar at all levels of the organization, yet not all stakeholders possess the same propensity for creativity.

Creative characteristics and actions have been linked to divergent thinking, and the ability to generate original, flexible, and fluent solutions necessary components for organizational effectiveness (Basadur et. al, 1999). Badasur et al. (1986), Badasur et al.

(1999), and Runco and Acar (2012) found divergent thinking to be an indicator of creative

potential and a measure of creative behaviors across disciplines in organizations. Since

creativity is the "generation of a valuable, useful new product, service, idea, procedure, or

process by individuals working together in a complex social system" (Drazian et al., 1999, p.

288), it has been considered interdisciplinary in nature with multi-level applications in

organizations.

        Divergent thinking. (DT1-3) Divergent thinking, considered part of an evaluative

process necessary to implement creative ideas, has been more accurately described as

"creative personality" or "creative potential" (Runco & Mraz, 2008). Consistent in the

literature is a consensus that divergent thinking involves novelty, appropriateness, and

"product" of value (Amabile et al., 1996; Csikszentmihalyi, 1996; Isaaksen & Puccio, 1988;

Puccio & Grivas, 2009, Runco & Mraz, 2008). It is largely maintained that creativity is not

synonymous with divergent thinking but represents a necessary element of divergent

thinking, which is originality (Runco et al., 2012). Divergent thinking resulted in "novel

ideas and unusual answers to questions" (Parkhurst, 1999, p. 5), but creativity (potential) is

required for this to occur.

        Cognitive studies of divergent thinking have typically measured as many original

possible answers to a given problem while assessing flexibility and fluency. The generated

responses were measured and ranked for creative potential (deHoogh et. al., 2005; Runco &

Acar, 2012). Divergent thinking has been positively correlated with the personality trait

"openness to experience" based on the FFM and considered the trait that best describes

creativity (DeRue, Nahrgan, Wellman, & Humphrey, 2011; McCrae, 1987; Runco & Mraz,

2008, Runco & Acar, 2012).

Divergent thinking involves a process that leads in multiple directions and includes an evaluative process that ranks ideas (Isaksen & Puccio, 1988). While intelligence and experience have been shown to be important in terms of problem-solving, divergent thinking has unique effects on creative problem-solving that are not attributed to either intelligence or experience (Vincent, Decker, & Mumford, 2013). "Correct" solutions, however, do not necessarily imply creativity or innovative outcome (Runco et al., 2012). Because divergent thinking tests relied on the subjectivity of scoring measures, they have been under scrutiny and challenged in the field (Badusur et al., 1999; Pfiffer, 2012).

More accurate measures of divergent thinking have been developed that relate individuals to organizations and consider the personal, social, and environmental influence. These attitudes were developed "as a result of field research… that represent an improvement over three scales" previously identified (Badasur et al., 1999, p. 75). The scales represent a culmination of considerations that reflect one's ability and desire to generate new and innovative solutions based on the environment in which they occur. "Valuing new ideas" (Creative value DT_1), "Belief that creativity is not for only a select few" (Creative restrictions DT_2), and "Not too busy for new ideas" (Time for new ideas DT_3); (Badasur et al., 1999, p. 75) are individual measures of creativity and do not rely on others' assessment. The new scales have no subjective ranking of responses but are based on one's propensity for divergent thinking in an organization, thereby linking the environment to leaders' creative potential.

Leadership Traits

Background. There has been an unprecedented interest in understanding leadership today that reflects the tenuous state of organizations and world market. The current interest in leadership began in the 1980s when a dramatic shift from a production management to a

knowledge-based economy occurred (Drucker, 1993; Xu & Rickards, 2007). Peters (1997) maintained that the competitive business world is in a constant state of flux and requires new leadership skills to deal with rapid change, technology, and globalization. Reliable predictors of leadership capabilities in the past focused on demographic, intellect, and education level, but understanding behaviors and environmental affect of leadership has set a new precedent (Matthew, 2009). Roffe (1999) held that organizational survival and success depended upon a leadership base grounded in intelligence, knowledge, and creative potential "at every level of the organization" (p. 224).

The emerging creative economy requires that leaders encourage the adoption of innovative ideas and lead change (Baez & Abolafia, 2002; Damanpour & Schneider, 2008; Matthew, 2009). Amabile et al., (1996) maintained that creativity is the process of achieving different solutions to existing problems and is an imperative trait for effective leadership. Isaksen, Puccio, and Treffinger (1993), Jaussi and Dionne (2003), and Xu and Rickards (2007) agreed that creativity is an important component of leadership. Leadership research has considered personality traits, physical characteristics, and unique abilities but more recently has focused on innovation and creative leadership skills (Gratias, 2008; Magnusson & Torestad, 1993).

The five-factor model (FFM). The Big Five model or the five-factor model (FFM) is a structural model of personality traits organized into five domains that incorporate hundreds of descriptors for human behavior. The five-factor model developed by Goldberg (1990) has been used extensively to understand the personality traits and leaders' effectiveness, and includes a component of creativity. Through factor analysis of terms, a preference for a particular behavior or personality emerged that incorporated five broad areas of "surgency or extraversion, agreeableness or pleasantness, conscientiousness or dependability, emotional

stability or neuroticism and intellect or openness" (Goldberg, 1993, p. 27). In that some characteristics may be preferred over others, the Big Five (FFM) represents a hierarchy of traits in a sense, but is not intended to represent every possible human behavior.

Hogan, Curphy, and Hogan (1994) examined leadership traits through the five-factor model of personality to determine the traits of effective leaders, leader emergence, and team performance. Zhao and Seibert (2006) found four of the five dimensions of FFM personality traits related to innovation and entrepreneurial performance. John and Naumann (2010) determined that creativity was manifested in the factor of "openness," described as a curiousness and exploratory nature, good imagination, creative in the way one thinks or works, and daydreams. McCrae and Costa (1987) found a positive correlation between openness to experience and creative or divergent thinking. MacDonald (1998) held the five-factor model as a means through which individuals evolved within environments and provided a rationale for personality-based decision-making. Puccio and Grivas (2009) found a further relationship between personality traits and preference for creative processes.

The Big Five has been recognized as a reliable indicator of leader characteristics that from an organizational perspective impacts attrition and person-organization fit. Leader-follower congruence (Giberson, Resick, & Dickson, 2005) was evidenced in a large-scale study of organizations in which agreeableness, extraversion, and emotional stability were significantly correlated. In a study of group dynamics, those ranking high in terms of conscientiousness were viewed as more trustworthy and dependable, resulting in leadership effectiveness (MacDonald, 1998). Livingstone et al., (1997) maintained that leaders who ranked high in terms of the five-factor model were more likely to instill creative behavior in followers.

Academic institutions have been challenged with a need for change and are guided by leaders. Tierney (1988) suggested that cultural norms are at the heart of the educational leadership problem, as colleges and universities are faced with "increase(ed) complexity and fragmentation" (p. 5) that resulted in ineffectual decision-making and lack of cultural understanding. Gioia and Thomas (1996) maintained that identity, image, and interpretation of issues are key in decision-making process, yet the ability to generate new ideas and diffuse innovation is the result of creative processes. Because one's personality influenced behaviors, the FFM has social implication for group dynamics, organizational attrition, and leadership. Based on the interconnectedness of leadership, creativity, and divergent thinking, the five-factor model is an appropriate way in which to gain insight into the personality traits of academic leaders.

Institutional Environment (IE_1-4)

Background. The ability to lead creatively is influenced by an environment receptive to innovation. Jansen and Kristof-Brown (2006) presented a multi-dimensional approach to understanding organizational and individual outcomes based on the relationship of leaders' traits identified in the five-factor model and the environment. Studies reveal that creative leaders are more likely to produce innovative results, and also established a favorable organizational climate that fostered creativity in the process (Isaksen, Puccio, & Trefinger, 1993; Livingston et al., 1997). Rogers (2003) held that the ability to diffuse innovation at an early stage in organizations was guided by the environment, type or level of innovation, and the social system in which the innovation is communicated. Environmental attributes of socialization and culture represented the values and shared belief systems of the organization that are transmitted through interpersonal relationships and influenced by leaders (Caplan, 1987; Morley, 2007).

Schneider (1990) found that positive relationships between persons and their work environment are critical to attrition and job satisfaction. The environmental affect has received significant attention in terms of creativity and innovation from both a leadership and cultural perspective in a review of group and team behaviors (Amabile et al., 1998; Rickards & Moger, 2000). Giberson et al. (2009) suggested that recruiting and hiring practices of top management results in homogeneity of organizations and is perceived or interpreted as "fit." The adaption and socialization process is influenced by institutional culture and the degree of compatibility between participants; in educational institutions, this can be impacted by other variables such as size and type of institution.

Institutions are influenced by "powerful, external factors such as demographic, economic, and political conditions, yet they are shaped by strong forces from within" (Tierney, 1988, p. 3). Relevant symbolism, myths, and social systems require individuals to be intrinsically engaged in a belief system in which they may have had minimal contribution that impacts attrition decisions. Olson et al. (1995) found the degree of fit with institutional values and goals "as much a product of perceptions of fit (influenced by factors like gender and race) as it is a convergence of institutional and individual goals and values" (p. 285).

Simsek and Louis (1988) found, in a large-scale university study, that institutional change in structure and procedures resulted in no change of behaviors, unless a shift in core values and assumptions occurred. Schneider (1990) maintained that individuals join "whole organizations" (p. 764) and subsequently leave them due to conflict with organizational structures, processes, and culture they experience. The influence of interpersonal relationships and personality emerged as critical in understanding institutions (Schneider, 1995) particularly in times of change.

Geographical location (IE_1) Enrollment/size (IE_2) Type (IE_3) The

characteristics of an institution are important as colleges and universities have unique

qualities, missions, and goals. The Carnegie Foundation for the Advancement of Teaching

classification is a recognized resource to identify and understand differences in academic

institutions (IE_1, IE_2, IE_3) and has been used in educational research since 1970. The

U.S. News and World Report lists all colleges that provide data by type and region, including

specialty colleges (Table 1). USNWR collapses the 12 Carnegie classifications (Table 2) into

four main types (IE_3) of National Universities, National Liberal Arts Colleges, Regional

Universities, and Regional Colleges. In addition to the general classifications, "public,

private, and proprietary" further helped to identify colleges and universities in terms of

"type."

Geographical regions (IE_1) of North, South, Midwest, and West were identified

based on the *U.S. News and World Report* regions (Table 3). Location is one of the variables

students consider when selecting a college and the institutions ability to recruit faculty can be

associated with location as well, based on environmental characteristics (Chapman, 1981;

Schneider, Goldstein, & Smith, 1995). Institutional size may impact its ability to adapt to

change, and be more innovative as smaller organizations are considered more flexible

(Rogers, 2003). Institutional size is based on student enrollment, in keeping with the

USNWR data gathering process, in which all students are included based on of full or part

time enrollment, on-line or other distance learning engagements, and students who study

abroad (Table 4).

Table 1

2016 U.S. News World Report College Categories

Category	Total Number of Schools	Total Number of Public Schools	Total Number of Private Schools	Total Number of Proprietary Schools	Number in Category That Were Unranked
1. National Liberal Arts Colleges	245	217	27	1	10
2. National Universities	280	100	173	7	12
3. Regional Universities–South	132	59	71	2	5
4. Regional Universities–North	193	121	70	2	10
5. Regional Universities–West	135	68	63	4	17
6. Regional Universities–Midwest	158	98	56	4	9
7. Regional Colleges–South	116	85	28	3	18
8. Regional Colleges–North	73	45	21	7	12
9. Regional Colleges–West	67	37	28	2	26
10. Regional Colleges–Midwest	107	86	17	4	11
11. Art	62	42	2	18	62
12. Business	13	9	0	4	13
13. Engineering	6	5	1	0	6
Total	1587	972	557	58	211
Regional Universities (total)	618	346	260	12	41
Regional Colleges (total)	363	253	94	16	67

Table 2

Carnegie Classifications

U.S. News category	Carnegie classifications
National Universities	Research Universities (very high research activity), Research Universities (high research activity), and Doctoral/Research Universities
Regional Universities: North, South, Midwest, and West	Master's Colleges and Universities (larger programs), Master's Colleges and Universities (medium programs), and Master's Colleges and Universities (smaller programs)
National Liberal Arts Colleges	Baccalaureate Colleges—Arts and Sciences
Regional Colleges: North, South, Midwest, and West	Baccalaureate Colleges—Diverse Fields; Baccalaureate/Associate's Colleges; Associate's—Public 4-year, Primarily Associate's; Associate's Private Not-for-profit 4-year, Primarily Associate's; and Associate's Private For-profit 4-year, Primarily Associate's

Table 3

Geographical Region

Region	Number of States	States
North	11	Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Washington DC.
South	12	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia
Midwest	12	Illinois, Iowa, and Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
West	15	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming

Table 4

Institutional Size/Enrollment

Includes all students full or part time, distance learning, study abroad, etc. Includes multiple campuses and locations.	Less than 1,000 students
	1000–5000 students
	5001–7500 students
	7501–10,000 students
	More than 10,000 students

Dynamic/static. (IE_4)

Open environments foster and innovation contributes to creativity, and it is in the work of Rogers (1959) that the concept of the innovator was developed. Sosik et al. (1998) found that creative leadership behaviors impact group dynamics and performance. Other studies have linked effective leadership with unconventional behavior evidenced in higher levels of group cohesion, motivation, and creative performance (Jaussi & Dionne, 2003). They reflect dynamic organizational environments from a socio-cultural perspective.

Rickards and Moger (2000) found that dynamic environments focus on teamwork and innovative outputs, while Perry-Smith and Shalley (2003) consider interpersonal communication and interaction important characteristics. Dynamic and flexible environments have been found to be key indicators of leaders' ability to develop creative strategies, embrace change, and adopt innovation (Greenwood & Hinings, 1996; Oke, et al., 2009). Crossan, Vera, and Njad (2008) described dynamic environments as those that are "fast-changing, and disruptive, demanding novel approaches…and more flexibility" (p. 571). Static environments are less likely to be adaptive and fail to demonstrate flexibility across the

institution; they tend to be more conservative, with more formal management conservative in nature (Amabile et al., 1996). Academic institutions have been perceived as culturally grounded in strong structural ties with conformity to norms, attitudes, and established beliefs and slow to change (Chance, 2009; Healey, 2008; Simsek & Louis, 1994).

Demographics. (D_1-6) The institutional environment represents a culture, attitude, and propensity for innovation reflected in the characteristics of the institution from hiring practices to leadership, and resiliency may be reflected in institutional demographics. According to Schneider (1990), the relationship between persons and the environment is determined by time within the organization. Orstroff and Rothausen (1997) found a moderating effect between longer tenured faculty and the institution compared to colleagues with less tenure, suggesting a relationship between tenure and fit.

The demographics of "fit" affect the organization and gender (D_2), ethnicity (D_3), and background have been identified as variables in studies on organizational fit (Olsen, Maple, and Stage, 1995). Stereotypes and assumptions have limited women's advancement in upper management positions and influenced attrition within organizations (Olsen et al., 1995). In addition, there is evidence to support that gender-related behavior affects career success in terms of work outcomes (Young & Hurlic, 2007), and studies on salary and promotion confirm the "glass ceiling" that exists in many organizations.

Damanpour and Schneider (2008) found level of education (D_4) positively correlated with innovation, and yet tenure (DT_6), age (DT_1), gender (DT_2), and unionization did not have a significant effect on innovation of managers in the public sector. In a study of educational organizations, Ostroff and Rothausen (1997) found tenure to have an impact at the aggregate level of the organization, suggesting that tenure has a moderating effect on persons and their environment. That is, as tenure increases, persons tend to fit the

values of the organization and become more similar. As a result, age, gender, ethnicity, education, experience (DT_5), and position (DT_6) are important variables in the analysis of leadership and innovation.

Demographically, the academic environment has been described as "chilly and alienating" for women and minority faculty (D_2, D_3); (Aguirre, 2000, p. 2). Efforts have been made to recruit women and minorities, yet the results of such efforts are mixed. Studies have found an inverse relationship between gender, race, and rank (Olsen et al., 1995). The importance of gender cannot be minimized as "gender is institutionalized and impacts how we think about all aspects of our lives and how members of society develop ideas and values about appropriate gender-related behavior, jobs, and activities" (Young & Hurlic, 2007). Leader demographics in terms of gender and ethnicity provide additional insight into institutional characteristics, culture, the environment, and broad thinking that occurs in diverse groups.

Even though women are perceived as less effective leaders, they tend to be more transformational as leaders who are more likely encourage creative thinking and innovation (Eagly & Johannesen-Schmidt, 2003; Jung, 2000). Women also are more adaptive in terms of environmental fit that may reflect congruence with institutional goals, or represent attitudes of compliance (Ostroff & Rothausen, 1997). Group and individual dynamics are affected by the process of "gendereering" that diminished the role of the female leaders in the workplace (Young & Hurlic, 2007, p. 172). This is reflected in the lack of diversity within organizations (Aguirre, 2000; Ostroff & Rothausen, 1997).

Studies have identified the lack of opportunity for leadership positions for minorities as well as women, in spite of the increased number of graduates (Aguirre, 2000; Olsen et al., 1995). Minorities are often indoctrinated into a pre-existing culture with which they have

little in common, forced into lesser positions, and have less job satisfaction as a result (Olsen

et al. 1995). Minorities' fit within the environment, both individually and in the group sense,

may be a predictor for career growth within the institution since attitudes, demographics, and

personal experiences intrinsically differ from others (Caplan, 1987; DeFruyt, 2002;

Gustafson & Mumford, 1995). The limited ability of minorities and women to succeed in

such environments suggests that mobility is possible only after an extended tenure (Olsen, et

al., 1995; Ostroff & Rothausen, 1997).

In 25 years of recording the demographics of college presidents, the profiles have not

significantly changed; the majority (approximately 75%) are White male, age 61, (D_1) and

have earned doctorate degrees (D_5); (ACE, 2012). Between 1986 and 2011 the racial

makeup of college presidents increased slightly from 8 to 13%, and in spite of an increase of

female presidents (from 10 to 26%), progress is slow in baccalaureate institutions (ACE,

2012). The path to the presidency has evolved primarily from teaching experience (70%), but

the increased interest in hiring outside of academia, from 13% in 2006 to 20% in 2011 (ACE,

2012), has not improved diversity.

Institutional hiring practices and culture have resulted in what has been defined as

homogeneity of the organization (Caplan, 1987; Giberson et al., 2005; Jansen & Kristof-

Brown, 2006). Considering that lack of change and diversity in leadership positions, it is

important to understand current demographics in the context of the study. Tenure and

experience may not reflect divergent thinking and innovation may not be related to

experience in one's position.

Summary

The literature review reflected a relationship between innovation, divergent thinking, and leadership traits, yet a great deal of this research is derived from the business environment. Creative behavior was identified as an intrinsic motivator for followers and related to leadership traits, personality characteristics, and organizational effectiveness (Damanpour & Schneider, 2008; Greenwood & Hinings, 1996; Marques, 2006; Puccio & Grivas, 2009). A leaders' ability to make decisions, inspire, and guide change was more likely to occur in dynamic environments that foster such thinking (deHoogh et al., 2005). In addition, divergent thinking has been associated with change and critical in organizations for competitiveness in a global market (Levine, 1999; Oke et al., 2009). The affect of gender, minority status, and tenure has been confirmed in academic environments that has provided limited opportunity and demonstrated a need to diversify to better reflect the market. Chapter 3 explains the methodology used to answer questions in the study.

Chapter 3: Methodology

The purpose of the study was to understand the leadership traits and creativity and its effects on leading innovation today. A quantitative study examined the leadership traits (based on the five-factor model), divergent thinking, and innovation in higher education. The survey instrument was adapted from current research models in the areas of leadership and divergent thinking. The research was conducted through a large-scale, web-based, non-experimental survey facilitated through Qualtrics.com.

Participants

The participants in the study were executive (Level III) administrators in U.S. colleges and universities as defined by employment categories in the *Chronicle of Higher Education.* The sample was selected because it has been determined the highest level of an organization is traditionally responsible for directing strategic change, and it is this group where the effects of demographics may be evidenced (Westphal & Frederickson, 2001). Executives in the sample were defined as follows:

> *Executive: (Level III)* the title of President, Chancellor, Assistant Vice-President, Associate Vice-President, Senior Administrative Vice-President, Provosts, Executive Directors and other similar titles

The sample was based on colleges and universities identified in the *U.S. News and World Report* rankings and a database provided by the Higher Education Directory. This comprehensive database used the Carnegie Foundation for the Advancement of Teaching classifications as a foundation and identified colleges and universities into four main categories as shown in Table 2: National Universities, National Liberal Arts Colleges, Regional Universities and Regional Colleges as well as specialty schools. They were grouped

by geographical locations as indicated in Table 3.

The classifications identified the institutions by five ranges in size based on

enrollment that ranged from under 1,000 students to over 10,000 students, indicated in Table

4. The categories of "public, private, and proprietary" provided additional information as to

institutional type. The sample was generated from the 1,587 colleges and universities shown

in Table 1.

Of the specialty schools, 44 AICAD (Association of Independent Colleges of Art and

Design), were included in the sample as art and design colleges are considered a model for

creativity (Chance, 2008). Unranked colleges and universities, and liberal arts colleges were

not considered in the study. All institutions were accredited by recognized regional and

national accrediting organizations; some specific programs within the institutions had

additional accreditation or programmatic certification, however, this was not considered a

variable in the study.

Instrumentation and Procedure

The survey instrument was developed based on the conceptual model shown in Figure

1 and had five sections: innovation (IN), divergent thinking (DT), leadership traits (LT),

institutional environment (IE), and demographics (D). Each section was coded with the

corresponding letter for that variable; questions related to innovation and divergent thinking

were alpha-numerically coded to correspond to specific sub-categories in those areas (IN_1,

IN_2, IN_3 and DT_1, DT_2, DT3). The final Qualtrics survey is found in Appendix C.

Innovation. Innovation measured leaders' *plan to innovate in the next year* (i.e.,

early adaptor) or *have already implemented* innovation based on a Likert scale. Three areas

of innovation were defined based on focused areas and directions in higher education and

included curricula and interdisciplinary studies (IN_1), entering new markets (IN_2), and information and technology (IN_3). Each category had six sub questions for a total of eighteen questions.

Divergent thinking. Divergent thinking was measured based on improved scales of measurements of creativity that addressed creative value (DT_1), creative restrictions (DT_2), and not feeling too busy for new ideas (DT_3); (Basadur et al., 1999, p. 75). This model linked attitudes and behaviors towards creativity in relationship to organizational commitment and provided more accurate perspective of the institutional environment. A shorter version of the instrument was adapted to measure participant's attitudes of divergent thinking on a Likert scale. Similarly, each category had six sub questions for a total of eighteen questions.

Leadership traits. The International Personality Item Pool was developed by Goldberg (1990) as a scale to measure personality and individual differences based on 100 descriptive adjectives. From the IPIP, several iterations of personality measurement have emerged that include the five-factor model (IPIP-FFM), a 50-item scale, a 44-item instrument the Big Five Inventory (BFI) (Rammstedt & John, 2007), a 240-item inventory NEO-PI-R, and shorter 60-item inventory NEO-FFI (McCrae & Costa, 2008). Due to the interest in the Big Five and its application in research shorter versions of the inventory have been developed including a 10-item inventory (Gosling, Rentfrow, & Swann, 2003), but there are significant trade offs in using such a short version. Cooper, Smillie, and Corr (2010) found the 20-item inventory, Mini-IPIP five-factor model, to be a reliable instrument when a shorter assessment is required. The twenty item instrument is in the public domain and readily accessible for research purposes; it was used in the study to measure extraversion, agreeableness, conscientiousness, neuroticism (negative correlation) and openness to

experience (Donnellan, Oswald, Baird, and Lucas, 2006; Rammstedt & John, 2007)). In terms of creativity, openness to experience is linked with "imagination, originality, art, and innovative" described in this trait (Goldberg, 1990; Srivastava, 2011).

Institutional environment. The institutional environment included four questions on geographical location, size (based on student population), type (based on Carnegie classifications), and the environment (dynamic or static). To categorize the environment as *dynamic or static*, participants were provided with descriptive options to select the best fit for their institution. The survey did not allow for multiple responses.

Demographics. The survey included six questions that focused on age, gender, ethnicity, level of education, time in current position, and title. Participants were allowed to select "choose to not disclose" in terms of demographic information.

Human Subjects Approval

Prior to distributing the survey, the researcher completed all of the documents necessary to proceed with the study and submitted to the University Human Subjects Review Committee (UHSRC). This included the Request for Human Subjects Approval to describe the research, CITI Completion report, Informed Consent for Internet Survey, and IRBNet Study protocol. Approval was received prior to survey distribution (Appendix A).

Participants received notification as to the purpose of the study and that participation was voluntary and without risk or harm. Participants were also notified that they could discontinue the survey at any time and results were confidential. An introduction to the survey included procedures to safeguard the data and that the survey was for the purpose of completing degree requirements. Precautions were taken so that the survey could not be started without acknowledging the terms of the study and electronically acknowledging the informed consent form.

Survey: Design, pilot, and distribution

The quantitative questionnaire (Appendix B) surveyed college and university presidents in terms of demographics: age, gender, ethnicity, education, current position, and title ($n = 6$). Questions were asked about the institutional environment: location, type, size, and environment ($n = 4$). A 20-question inventory was used to measure the five-factor model ($n = 20$) and three areas of divergent thinking were measured with six questions each ($n = 18$). Innovation was measured similarly with three areas and six questions each ($n = 18$) for a total of 66 questions. A pilot survey was distributed to a selected group of educational leaders prior to distribution to determine the usability of the instrument, time to complete (approximately 10–15 minutes), and overall comprehensiveness. The survey was revised based on feedback from the pilot survey and changes made accordingly.

The sample included 1,486 college and university presidents and executive leaders with email addresses. The survey was distributed on-line through Qualtrics.com. Participants were encouraged to complete the survey through incentives that included (a) sharing the results of the study in digital format, and/or (b) access to an on-line webinar that would share results. Two reminders were sent to encourage participation. From the surveys sent, 23 had position changes, 88 were not forwarded or "out of the office" messages, and 30 were returned unopened. A total of 1,345 surveys were delivered and 170 responses received; 133 were completed and used in the data analysis.

Independent and Dependent Variables

The independent variables in the study were leadership traits (based on the FFM), institutional characteristics, leader demographics, and divergent thinking attitudes (creativity). Divergent thinking was analyzed as a mediating variable; three constructs of

innovation were measures as dependent variables. Table 5 explains the variables with

specific coding to prepare for data analysis. Codes are indicated in parenthesis ( )

Table 5

Overview of Variables

Independent Variables:	Institutional Environment (IE)
	(IE_1) 1. Geographical Location
	(IE_2) 2. Enrollment/size
	(IE_3) 3. Type
	(IE_4) 4. Dynamic/Static
	Demographics (D)
	(D_1) 1. Age
	(D_2) 2. Gender
	(D_3) 3. Ethnicity
	(D_4) 4. Education
	(D_5) 5. Experience
	(D_6) 6. Position
	Leadership Traits (LT)
	(LT_1) 1. Extraversion
	(LT_2) 2. Agreeableness
	(LT_3) 3. Conscientiousness
	(LT_4) 4. Emotional Stability
	(LT_5) 5. Openness to Experience
Mediating Variables	Divergent Thinking (DT)
	(DT_1) 1. Values new ideas
	(DT_2) 2. Creative restrictions
	(DT_3) 3. Time for new ideas
Dependent Variables	Innovation (IN)
	(IN_1) 1. Curricula and interdisciplinary studies
	(IN_2) 2. Entering new markets
	(IN_3) 3. Information and technology

Data Collection and Analysis

The survey was distributed through Qualtrics, Inc., a web-based survey service at the

beginning of June 2016. It was open for three weeks and reminders sent. The survey was re-

sent at the beginning of July 2016, with database filtered to remove those who had already completed the survey. Reminders were sent and the survey closed at the end of July. Results were downloaded into Microsoft Excel and uploaded into SPSS for analysis. Data were "cleaned," eliminating any surveys that were not 100% complete. Data analysis included a descriptive analysis, principal component analysis, multiple linear regression, and path analysis.

Data Reduction Methods

The process of data analysis for completed surveys (9.8% $n = 133$) included data reduction to determine the relationships among variables. A principal component analysis and factor analysis (Table 8) were conducted to consider the relationship between variables. Relationships emerged that determined the effect or influence between indicators and helped to define, explain, and support variables in the study. Variables were then re-coded for analysis in keeping with the theoretical framework for the study. Interaction variables were computed to test for interaction effects. A multiple linear regression model was used in the path analysis to determine significant relationships.

Chapter 3 discussed the research methodology and the process of data gathering. Independent and dependent variables were defined and survey distribution was reviewed, including Human Subjects Review and other appropriate documentation. Chapter 4 presents the findings.

Chapter 4: Results

The purpose of the study was to determine the relationship between leadership traits, divergent thinking, and innovation of academic leaders. The study sought to determine how institutional or demographic differences and leaders' traits contributed to the innovation variables. The surveyed college presidents across the U.S., to better understand the personality traits and the impact of their (creative) leadership on innovation. The research sought to answer the following questions:

Question 1: To what extent is there a relationship between leadership traits and innovation, and specifically what is the relationship between institutional innovation and leaders with the traits of openness to experience and divergent thinking?

Question 2: To what extent does institutional environment influence innovation? The following represents data results and significant findings.

Independent Variables

Demographics. A preliminary review of the demographics of college presidents, institutions, and recent student population trends was conducted to determine patterns over approximately a ten-year period and to gain insight for the analysis. This provided context for the study and allowed comparisons with the survey data. The research sample of college presidents is shown in Table 6. The sample was slightly older, Whiter, slightly more female, and less experienced than in the last few years.

Nearly half of the college presidents (49.3%, $n = 66$) were 61 years of age or older, compared to 49% in 2006 and 48% in 2011. Nearly three-quarters of the college presidents were male (70%, $n = 94$). The percentage of Caucasian presidents increased slightly from

86% in 2006, and 87% in 2011 to 91.7% (*n* = 122). Less than 5% of the presidents (3.8%, *n* = 5) had been in the position more than 25 years and over half (50.4%, *n* = 67) had been in the position less than five years. This reflected a change in the previous leadership profiles of 2006 in which nearly 10% (8.5%) had been in the position over 25 years. The results may indicate a shift in the aging demographics in higher education as more presidents opt out for retirement or may be the result of sampling error in which the "volunteer effect" may be evident.

Table 6

Descriptive Analysis of Independent Variables

Comparative Demographics of College Presidents		2006 National	2011 National	2016 (Current sample)
Age	61 or older	49%	48%	49.3%
Gender	Male	76%	74%	70.7%
Ethnicity	Caucasian	86%	87%	91.7%
Time in Position	More than 25 years	8.5%	7.0%	3.8%
	Less than 5 years			50.4%

Institutional Data. More than one-third of the respondents were from institutions located in the Midwest region (37.6%, *n* = 50) and were relatively small in size with 1,000–5,000 students (*n* = 70). In 2011, the majority of respondents were located in the Southern region. Average institutional size increased from 11,020 students in 2011 to 13,594 students in 2016; similarly, total student enrollment in all institutions (full or part time) increased from 20,379,000 in 2011 to 21,575,000 in 2016 as is expected to continue to grow. Nearly

half (46.6%, $n = 62$) of the institutions were regional colleges or universities and about half

(50.4%, $n = 67$) felt their environment "focuses on teamwork, collaboration, and openness;

ideas are shared frequently and respected." (Table 7).

Table 7

Comparison of Institutional Data

		2011 National	2016 National	2016 (current sample)
Geographical Region		South		Midwest
Institutional Size	Number of students	$M = 11,020$	$M = 13,594$	1,000–5,000
Enrolled Students	(In all institutions; full and part time)	20,379,000	21,575,000	
Institutional Type	Carnegie Classifications/ USNWR Data	N/A	N/A	Regional College or University (private) 46.6% $n = 62$
Institutional Environment	The institution focuses on teamwork, collaboration and openness; ideas are shared frequently and respected.			50.4% $n = 67$

Dependent Variables

Factor Analysis. Factor analysis was conducted as a data reduction method to

explain the relationship among variables and consider the effect of latent variables. The

analysis found 22 of 66 items (one-third) loaded in the pattern matrix shown in Table 8. In

the factor analysis, five of six items regarding innovation loaded for *new markets* (IN_2), two

of six items loaded for *external innovation* (IN_1), and two of six items loaded for *internal*

innovation (IN_3). Of the five leadership trait factors, four factors loaded; two of five items

for *(lack of) openness*, and two of four items for *risk adverse*, or *extraversion*. *Neuroticism*

and *conscientiousness* also loaded for two of six items. Interestingly, the leadership trait of *agreeableness* dropped from the matrix.

In terms of *divergent thinking*, two of six items loaded for both *creative value* (DT_1) and *creative restrictions* (DT_2). *Time for new ideas* (DT_3) did not load in the analysis. Further principal component analysis explained the latent variables and pairings.

Principal component analysis

Data were further analyzed to determine relationships between items. Principal component analysis (PCA) is a multivariate process used to understand displayed patterns of similarity and relationships described in a data table (Abdi & Williams, 2010). Correlations between dependent variables were observed and latent variables identified by combining survey items that loaded together. PCA allows data to be extracted from the table and expressed in terms of new (latent) variables, or *principal components* (Abdi & Williams, 2010, p. 433).

The PCA identified several latent variables from the data shown in Table 8 and allowed re-coding for clarity. An interesting finding was the negative loading of two items for *conscientiousness* with one of *openness*. A negative loading on "I often forget things" was a positive indicator of conscientiousness, however "I like order" is a negative aspect of *openness* but really reflects one who is very conscientious. So the third item of *conscientiousness*, "I get chores done right away" confirmed that the three items together reflected *conscientiousness* despite the unusual pairings.

Positive correlations of negative items regarding openness indicate a latent variable of *lack of openness* from the analysis. Interesting loadings of *extraversion* and *creative value* (DT_1) resulted in the latent variable *risk adverse* rather than *extraversion* based on the relationship between those specific items. Because of other negative loadings, *neuroticism*

the five factor was renamed *emotional instability* and similarly, *creative value* (DT_1) was

renamed *lack of creative value* (DT_1). *Creative restrictions* (DT_2) was relabeled

organizational creativity based on the relationship of loaded items.

Table 8

Principal Component Analysis

Pattern Matrix[a]									
		Component							
		1NEW MARKET (IN_2)	2CONS (FFM)	3 LACK OPEN (FFM)	4EXTERNAL (IN_1)	5 RISK ADVERSE (FFM)	6 INTERNAL (IN_3)	7 EMOT INSTAB (FFM)	8 CREAT VAL (DT_1)	ORG CREAT (DT_2)
INNOVATION	I2c_crosscult	.846								
	I2f_intermult	.780								
	I2e_exchange	.752								
	I2a_global	.744								
	I2b_grants	.726								
LEADERSHIP TRAITS	OPEN_neg.order		.811							
	CONS_chores		.781							
	CONS_neg.forget.		-.678							
LEADERSHIP TRAITS	OPEN_neg.abstr.			.897						
	OPEN_neg.ideas			.858						
INNOVATION	I1d_partnerships				.853					
	I1a_curricula				.784					
LEADERSHIP TRAITS	EXT_neg.backgrd.					.831				
	DT1e_neg.rarewrk					.735				
INNOVATION	I3c_delivery						.943			
	I3b_factrain						.620			
LEADERSHIP TRAITS	NEUR_neg.blue							-.883		
	NEUR_moodswgs.							.624		
DIVERGENT THINKING	OPEN_imagin.								-.792	
	DT2f_onlysome								.710	
DIVERGENT THINKING	DT2b_enough									.794
	DT2c_neg.notlim									.740
Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.										
a. Rotation converged in 8 iterations.										

Descriptive Statistics

Data were further analyzed for mean, standard error of mean, and standard deviation

to understand values and weights for individual and latent variables captured in Table 8.

Descriptive statistical analyses will report out the findings for these variables and are shown

in Table 9.

Innovation (IN).

External focus-curricula and interdisciplinary studies (IN_1). Descriptive analysis revealed that college presidents were engaged in developing external connections in terms of "corporate, civic, or institutional relationships and partnerships to support curricular initiatives" (M = 4.550). Innovation through curricular initiatives had also been developed through external efforts in the areas of working with "other colleges, universities, or associations" (M = 4.050).

Entering new markets (IN_2). There was a high level of interest in entering new markets as five of six factored into the model, although at a moderate level of engagement. "Cross-cultural learning including language and communication strategies" (M = 3.20) was important and "interdisciplinary and multi-disciplinary studies" (M = 3.820) was important to a greater extent. "Co-curricular, articulation initiatives, or faculty and student exchange programs" were areas of innovation (M = 3.553) and efforts to support faculty in terms of "development of courses" was important to college presidents (M = 3.640). There was less interest in "global programs beyond study abroad OR established a global campus" (M = 2.750).

Internal focus-information and technology (IN_3). Distance education was a very important part of innovation for college presidents in terms of planning for "resources, and other delivery systems to support new markets" (M = 4.260). There was an even greater interest in supporting faculty to deliver such programs via "software development, and training programs" (M = 4.630). The data supported the idea that college presidents were not only interested in distance learning, but investing internally in information and technology systems to a certain extent.

Divergent thinking.

Lack of creative value (DT_1). In the analysis, presidents viewed themselves as not having a "vivid imagination" ($M = 1.380$) as measured by *openness to experience*. This indicates a leader who might be very practical, down to earth, and perhaps, more conservative. At the same time, while they did not quite agree with the notion that "only some people are creative" ($M = 2.090$), when loaded together the result is a lack of creative value. Leaders who may not view themselves as very creative, may not value divergent thinking in others, confirmed in the data.

Organizational creativity (DT_2). Presidents felt that their institutions were creative and did not agree with the statement "we have enough creative people at our institution " ($M = 2.300$). But they did not feel strongly about creativity at their institution in "I am not limited by my institution when it comes to creative ideas" ($M = 3.380$). There appeared to be some conflict between the desire to have more creative people and the environment to support such initiatives organizationally.

Leadership traits (LT1-5).

Understanding the five-factor model of leader traits was the foundation for the study and it is within this framework that interesting findings emerged. Most important, five factors were not significant among college presidents, but rather a four-factor model emerged. Of the five factors (conscientiousness, lack of openness, risk adverse [or not extraversion], emotional instability [or neuroticism], and agreeableness), agreeableness was insignificant in the findings. Leaders "liked order" ($M = 3.955$), "got chores done right away" ($M = 4.130$), and did not "forget to put things back in their proper place" (M=1.860). They viewed themselves as very open to experiences and rejected the notions that they "were not interested in abstract ideas" ($M = 1.350$) or "have difficulty understanding abstract ideas"

($M = 1.220$). This conflicts with earlier views of openness in which presidents did not feel they had a "vivid imagination," thus creating a distinction between themselves as creative individuals and understanding creative endeavors.

Presidents viewed themselves as risk adverse and did not particularly "keep in the background" ($M = 1.90$) which supported the concept of "extraversion" in the five-factor model. Moreover they strongly rejected the notion that "new ideas rarely work out" ($M = 1.48$). When questions of extraversion and divergent thinking align as a result of the factor analysis, "risk adverse" better explained the college presidents' perspective, as risk takers are considered important in leading innovation.

Emotional instability or neuroticism was above average among presidents and findings were conflicted. They sometimes "felt blue" ($M = 3.790$), yet responded that they did not "have frequent mood swings" ($M = 1.340$). However, the path analysis revealed an opposite relationship and confirmed that presidents exhibited tendencies of emotional instability. Table 9 explains the descriptive statistics in detail.

Table 9

Descriptive Statistics Dependent Variables

Variable		Descriptives					
		Mean	Std. Error	Median	Variance	Std. Deviation	Number of Responses
IN_2 NEW MARKETS	Innovated cross-cultural learning including language and communication strategies	3.200	0.128	5.000	0.568	0.753	133
	Innovated interdisciplinary or multi-disciplinary studies.	3.820	0.123	4.000	2.080	1.424	133
	Innovated co-curricular, articulation initiatives OR faculty and student exchange programs.	3.553	0.136	3.000	2.448	1.565	133
	Innovated global programs beyond study abroad OR established a global campus.	2.750	0.143	2.000	2.703	1.644	133
	Innovated grants to support faculty development of courses.	3.640	0.126	3.000	2.110	1.453	133
CONS (FFM)	Like order.	3.955	0.077	4.000	0.786	0.886	133
	Get chores done right away.	4.130	0.083	4.000	0.915	0.957	133
	Often forget to put things back in their proper place.	1.860	0.098	1.000	1.290	1.136	133
LACK OPEN (FFM)	Am not interested in abstract ideas.	1.350	0.066	1.000	0.576	0.759	133
	Have difficulty understanding abstract ideas.	1.220	0.066	1.000	0.577	0.766	133
IN_1 EXTERNAL	Innovated corporate, civic, or institutional relationships and partnerships to support curricular initiatives.	4.550	0.066	1.000	0.587	0.766	133
	Innovated curricula with other colleges, universities, or associations.	4.050	0.103	4.000	1.399	1.183	133
RISK ADVERSE (FFM)	Keep in the background.	1.900	0.087	2.000	1.013	1.007	133
	New ideas rarely work out	1.480	0.065	1.000	0.570	0.755	133
IN_3 INTERNAL	Innovated in terms of distance education, resources, and other delivery systems to support new markets.	4.260	0.094	5.000	1.117	1.085	133
	Innovated in terms of faculty support, software development, and training programs.	4.630	0.067	5.000	0.598	0.773	133
EMOT INSTABILITY (FFM)	Seldom feel blue.	3.790	0.119	4.000	1.895	1.376	133
	Have frequent mood swings.	1.340	0.059	1.000	0.468	0.684	133
DT_1 LACK OF CREATIVE VALU	Have a vivid imagination.	1.380	0.066	1.000	0.587	0.766	133
	Only some people are creative.	2.090	0.098	2.000	1.280	1.131	133
DT_2 ORGANIZATIONAL CREATIVITY	We have enough creative people at our institution.	2.300	0.107	2.000	1.530	1.237	133
	I am not limited by my institution when it comes to creative ideas.	3.480	0.114	4.000	1.721	1.312	133

Interaction Variables.

Interaction variables considered the relationship among three variables of leadership traits, divergent thinking, and innovation. The interaction, or moderating effect occurs when the effect of one variable or more variables depends on a third variable. Moderating effects address the when or under what conditions the independent variable influences the outcome but can be difficult to explain due to lack of baseline criteria (Anderson, Cuervo-Cozurra, & Nielsen, 2014). In the study, it was hypothesized that the environment (dynamic or static) influenced divergent thinking (creativity), therefore, interaction variables were included in the analysis. Because leadership traits were so critical as a foundation for the study, it was further hypothesized that the five-factor traits were related to divergent thinking and therefore, interaction variables that addressed the five-factors were also included in the analysis.

To compute the effect of the interaction, the environment was multiplied by both divergent thinking variables (ENVXDT_1 and ENVXDT_2) and incorporated into the analysis. In addition, creativity and leadership were hypothesized to have a direct correlation and the four leadership traits that emerged from the factor analysis were multiplied by divergent thinking to consider the strength of the relationship (EMOTSTABxDT_1, EMOTSTABxDT_2, CONSxDT_1, CONSxDT_2, LACKOPENxDT_1, LACKOPENxDT_2, and RISKADVERSExDT_1 and RISKADVERSExDT_2). For that purpose, all six-interaction variables were added to the model for testing.

Path Analysis

Overview. The results of the path analysis are represented in Figure 2. Demographics did not impact creativity overall, but some variables influenced certain aspects of innovation. Leaders with *no doctoral degree* (No_Doc) had a positive significant influence on innovation (IN_1 External), but *female* leaders negatively influenced external innovation (IN_1 External).

The path analysis found that of the five-factor model (FFM), two leadership traits emerged; *conscientiousness*, and *emotional instability*, and both negatively influence internal innovation (IN_3). When calculated with interaction variables, *risk adverse* and lack of openness dropped off from the original analyses. In terms of divergent thinking, the variables of *lack of creative value* (DT_1) and *time for new ideas* (DT_3) were not significant in the analysis and dropped. There was a significant relationship between *organizational creativity* (DT_2) and colleges in the West region and private colleges; however, no other institutional characteristics were significant for either divergent thinking or innovation.

The interaction effect of divergent thinking with the environment (ENVXDT_1 and ENVXDT_2) was significant in terms of innovation (IN_1 External and IN_3 Internal), but not in terms of entering new markets (IN_2). The negative effect of *static environments*, in particular, was found at all levels of innovation, thus confirming the significance of the environment on innovation. (Figure 2).
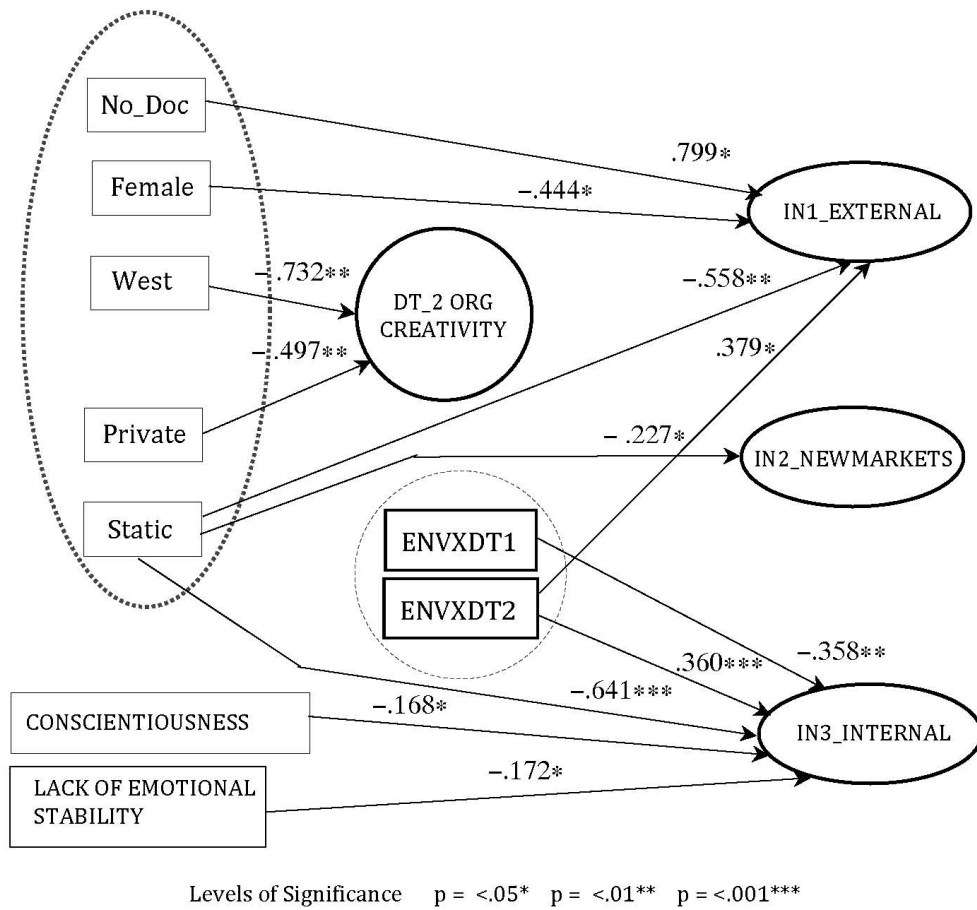
Levels of Significance   p = <.05*   p = <.01**   p = <.001***

Figure 2. Path analysis model

Discussion

Demographics. The study found no significant relationships between the demographic variables of age, or years in position in the tendencies of college presidents to drive innovation. In addition, ethnicity was not significant in the findings as most of the college presidents were Caucasian and had earned doctoral degrees (91.7%). Interestingly, presidents with no doctoral degree were more externally innovative, even though they represented a very small percentage (7.5%) of the respondents; they were highly engaged in establishing focused relationships to build curricula and interdisciplinary studies ($B = .799*$). This is significant in another way, because 91.7% of the presidents had earned doctoral degrees, so the influence of a very small group is meaningful. It was somewhat surprising that no other demographic variables emerged as significant, such as time in position and age in terms of innovation. The study confirmed that leader demographics have not changed or kept pace with change over the last 10 years or so (Cook, 2012) and may in part explain the limited innovation in higher education.

Gender influenced external innovation and female presidents were not inclined to execute external innovation strategies. The small percentage of women (26.6%) did not engage in forging "corporate, civic, or institutional relationships or partnerships to support curricular initiatives" or developing "curricula with other colleges, universities, or associations" and as a result a negative influence was found ($B = -.444*$) This may be due in part to the cultural affect in universities that results in more adaption than innovation. Women and minorities are more likely to adapt as a result of institutional culture and opportunities for driving innovation may be limited, except for institutions that are gender and minority focused (Olsen, et al., 1995; Ostroff & Rothausen, 1997).

Institutional Environment

Geographical location, size, and type. The data found no relationship between

institutional size and divergent thinking or innovation. In terms of geographical location, the

majority of respondents were from Midwest private colleges and universities (37.6%), yet the

small percentage of colleges in the West (15.5%) significantly affected organizational

creativity ($B = -.732**$). In addition, private colleges that represented nearly half of the

responses (46.6%) also negatively influenced organizational creativity ($B = -.497**$). This is

surprising in that private, smaller institutions and colleges in the West are assumed to be

more innovative and nimble organizations; however, the findings do not support this

perception.

Static environment. Most important in the findings was the overarching effect of the

institutional environment on innovation, which was significant at all levels. About half of the

respondents (50.4%, $n = 67$) described their institutional environment as one that "is focused

on teamwork, collaboration and openness; ideas are shared frequently and respected." The

findings support the idea that dynamic environments are conducive for innovation to occur

and that presidents viewed their institutions as dynamic. The data, however, confirm a

significant negative impact of a static environment on innovation in all three measures of

innovation.

The environment negatively impacted the development of "corporate, civic, or

institutional relationships and partnerships to support curricular decisions," thus limiting

external innovation (IN_1). Moreover, there was a negative effect on external collaboration

with other "colleges and universities or associations" ($B = -.558**$). In terms of entering new

markets (IN_2), there was a significantly negative environmental affect ($B = -.227*$) in terms

of "cross-cultural learning including language and communication strategies,

interdisciplinary or multi-disciplinary studies, co-curricular articulation initiatives, faculty and student exchange programs, global initiatives beyond study abroad or global campuses, and grants to support faculty development of courses."

Data also revealed a negative relationship between a static environment and internal innovation (IN_3) in the areas of "faculty support, software development, and training programs" as well as "distance education, resources, and other enhanced delivery systems to support new markets." ($B = -.641**$). So while there was some interest and effort in the areas of innovation, a static environment overall challenged implementation and perhaps the environments were not as "open" as originally thought.

Interaction Variables

When calculated as an interaction variable with "creative value" (ENVXDT_1), it was found that static environments and lack of creative value negatively impacted internal innovation ($B = -.358**$). There was an interesting effect of the interaction variables of ENVXDT_1 (environment x lack of creative view) and ENVXDT_2 (environment x organizational creativity) on innovation; two positive relationships emerged. The environment with "organizational creativity" (ENVXDT_2) positively impacted both external innovation ($B = .379*$) and internal innovation ($B = .360**$). The influence of "organizational creativity" has a positive effect, whereas the "individual view of creativity" negatively impacted innovation. This finding has both leadership and organizational implications for innovation.

However important, the effect of each of the interaction variables was not as significant as the effect of the static environment alone. The interaction variables confirmed initial findings that revealed significance of a static environment on innovation. The data emphasizes the importance and influence of the institutional environment and culture on

innovation. Static environments negatively impacted the institution's innovation in all three-innovation variables, and a limited view of creativity contributed to that effect. It was only through organizational creativity that positive influence was realized. Considering only one-fifth (17.3% n=23) of respondents felt their institution was more static and "committed to its culture and tradition, strong cultural ties and beliefs are the basis for conformity," it provides a perspective of institutional environment and its impact on innovation.

Leadership Traits

The leadership traits of college presidents overall were not related to external innovation efforts or entering new markets. However, leaders with the traits of conscientiousness ($B = -.166*$) and emotional instability ($B = -.172*$) negatively influenced internal innovation. These results do not entirely reflect the literature in which the four of five-factors are positively related to effective leadership. Lack of emotional stability or neuroticism is supported in the literature as a negative influence on creative endeavors (McCrae & Costa, 1987; Puccio & Grivas, 2009). The data suggest that those who are overly conscientious and emotionally unstable are more conservative and less likely to take risks associated with creative leadership. This confirms the model in part.

College presidents were very conscientious in that they "liked order," "got chores done right away," and did not "forget to put things back in their place." There was no level of significance with the interaction variable, of conscientiousness and divergent thinking (CONSXDT_1 or CONSXDT_2), but there was a negative relationship with innovation from an internal perspective ($B = -.168*$). They did not engage in innovation from an internal information and technology perspective to support new markets, nor provide faculty support, software development, or training programs.

Findings were similar in terms of emotional stability and divergent thinking (EMOSTABxDT_1 and EMOSTABxDT_2); (B = -.172*) where data suggest a very emotionally stable profile. Presidents were "seldom blue" and did not have "frequent mood swings" which suggests calm, steady and focused leaders. Emotional intelligence (empathy for others) is viewed as an emerging trait for leaders and leads to the question as to how the five-factor model of emotional stability (or lack of neuroticism) considers empathetic analysis; in the context of creative endeavors, emotional stability was a limitation.

Leaders viewed themselves as very open, "interested in abstract ideas" and able to "understand abstract ideas" although there were no significant relationships between lack of openness and innovation. This was surprising as the variable of openness to experience in the five-factor model is used to measure the propensity for creativity. One might expect the trait of openness to have stronger correlation with both divergent thinking as a dependent variable, and with divergent thinking as an interaction variable (LACKOPENXDT_1 and LACKOPENXDT_2). Ultimately, the expectation was that openness would have a significant relationship on innovation, but this was not the case.

College presidents were supportive of new ideas, even though they did not exhibit the tendencies of extraversion and were more likely to be risk adverse. Persons who are extraverts are gregarious, outgoing, and not afraid to take risks; similarly, those who are not afraid of "new ideas" are risk takers as well. It made sense to re-code the variable as it has context for the five-factor model and in the analysis. Additionally, risk adverse was considered an interaction variable as well (RISKADVXDT_1 and RISKADVXDT_2). In the analysis however, there was no statistical significance between risk adverse persons and innovation. This was another surprise as innovation is driven by the implementation of new ideas and risk takers.

Summary

The research showed no relationship between the demographics of age, years in position, and ethnicity and innovation for all three variables of measurement. Female leaders negatively impacted external innovation and were not engaged in efforts to develop curricular initiatives, partnerships, or other similar associations. This is an unusual finding as women are viewed as more transformative in their leadership styles and more creative. Leaders with no doctorate degree positively impacted external innovation, which was unexpected, since there were so few presidents with no doctoral degrees. Institutional size was not significant in terms of innovation and mid-sized regional colleges and universities were the most represented in the findings. Leaders in the West and private colleges negatively impacted "organizational creativity" more than leaders in other types of institutions. The static institutional environment overall, had negative impact on all areas of innovation. Static environments hinder innovation in terms of external initiatives, entering new markets, and internal innovation. The influence of the environment is emphasized when analyzed with divergent thinking as an interaction variable.

In the analysis of personality traits of leaders, the data suggest that the five factors are not equally significant and that academic leaders do not exhibit all traits. More importantly, extraversion and agreeableness, considered important leadership traits, were not significant traits in terms of institutional leadership. There was a surprising negative relationship between the leadership traits of conscientiousness and emotional stability in terms of innovation.

Chapter 4 reviewed the survey data and results in detail and provided context for understanding the research questions. Chapter 5 presents conclusions and discusses implications for practice and future research.

Chapter 5: Conclusions

This research was framed around the conceptual model of leadership traits as drivers of innovation in higher education. The study sought to understand the traits and divergent thinking of leaders in academia. Findings supported the relationship of two of the five factors of leadership and emphasized the environmental significance in innovation initiatives. A review of the findings revealed several conclusions.

Research Questions

Question One.

To what extent is there a relationship between "leadership traits" and "innovation" and specifically what is the relationship between institutional "innovation" and leaders with the traits of "openness to experience" and "divergent thinking?"

The study found two of the leadership traits of *conscientiousness* ($B = -.168*$) and *emotional instability* ($B = -.172*$) to have a significantly negative influence on innovation, but there was no statistical relationship between the leadership trait of *openness to experience* and divergent thinking. That is, leaders did not express high value for creative ideas individually or as an organization. *Openness to experience* was the leadership trait most likely to reflect divergent thinking, which was surprising. This was interesting from the perspective that leaders viewed themselves as very open and able to understand abstract ideas, but the sense of order, efficiency, and deliberateness of an overly conscientious person is not conducive to innovation that can be unpredictable and "messy." The creative process in and of itself requires flexibility, fluency, and elaboration of ideas (Runco & Mraz, 2008) and is not necessarily based on a sense of order that is reflected in the conscientiousness trait.

Leaders who like "order" and "get things done right away" are not comfortable with the disruption of innovation. Excessively conscientious and organized persons may be task oriented or do not understand the creative process in generating new solutions. So while they may appreciate creativity in concept, the inability to relate to divergent thinking is a detriment to the institution. Because about half of the respondents represented smaller scaled, private colleges and universities in the Midwest, there may be conservativeness in some environments to "err on the side of caution" as creativity disrupts the environment.

Emotionally unstable leader traits significantly limited innovation as well. The overly emotionally stable leader may be lacking in skills to understand others or have low empathy and be a bit on the shy side. This coincides with the trait of *risk adverse*, in that the presidents were not outwardly focused. The presidents had some moods swings and sometimes felt blue, which indicates one who may not be very confident. Emotionally stable leaders are comfortable leading change, but those who are overly emotionally stable may also be overly conscientious as well. Because both *conscientiousness* and *emotional instability* impacted internal innovation and are related, there may be other interpersonal considerations that affect leaders and creativity. In that only 3.8% had been in their positions for any length of time, it is possible that there is a relationship between tenure and leadership, as experience builds confidence.

Aside from the traits that were statistically significant, the presidents did not exhibit characteristics of *extraversion* a trait frequently associated with gregarious, energetic leaders. Even though leaders viewed themselves as not *risk adverse* (or willing to take some chances), and supported the notion that "new ideas rarely work out," they lacked creative value and were not overly outgoing when it came to organizational creativity. This influenced innovation at the institutional level because there was no relationship of

extraversion and divergent thinking. Literature in leadership indicated that those who take risks are more likely to lead innovation, so a strong relationship was expected (Zhao & Seibert, 2010).

Question 2.

To what extent does the institutional environment influence "innovation?

The study looked at how the environment impacted innovation from the leaders' perspective in the context of the institution. In that dynamic environments are more receptive to creative behaviors and thus, innovation, it was conceptualized that there would be a significant effect. Even though about half of the presidents felt their environments were dynamic in nature, the static environment, or one in which "the institution is committed to its culture and tradition; strong structural ties and beliefs are the basis of conformity" was negatively significant at all levels of innovation. The *static environment* has a statistically negative relationship with all variables of innovation: external innovation ($B = -.558**$), new markets ($B = -.227*$), and internal innovation ($B = -.641***$). This makes sense as innovation is about change and new ideas, rather than status quo and conformity.

When computed as an interaction variable, however, with divergent thinking, differences were observed. The environment influenced lack of creative value (ENVxDT_1) in terms of internal innovation negatively ($B = -.358**$) at a lesser level than that of the (static) environment alone ($B = -.641***$). This suggests that a leaders' value of creativity may temper the innovation effect of a static environment and that the environment alone (without a leader who values creativity) can significantly impact innovation.

There was an interesting finding in terms of the interaction effect of the environment and organizational creativity (ENVXDT_2). A static environment with an open view of creativity from an organizational perspective had a positive effect on external efforts to

innovate (B = .379*) and on "internal" efforts as well (B =. 360*). Leaders' view of the

organization was that there were "no limits" to creative endeavors and that they did not "have

enough" creative individuals at their institutions. The findings suggest an organizational view

of creativity that is different from leaders' creative value, which positions creativity at the

institutional level, perhaps through a more holistic lens. The institution may be static in terms

of culture and tradition, beliefs and norms, but be interested in innovation and change. Even

more interesting in terms of innovation and the organizational effect is that there was no

significance for engaging in new markets (globally) because regional colleges and

universities may be more locally focused.

Demographics and Institutional Data

To answer the research questions, data was gathered to understand the demographics

and institutional data of respondents relative to divergent thinking and innovation. Colleges

and universities in the West (B = -.732**) and private schools (B = -.497**) negatively

impacted organizational creativity. This is interesting because the perception is that colleges

in the West are more likely to exhibit innovative activities. However, the geographic territory

for schools in the West includes the states of Alaska, Arizona, California, Colorado, Hawaii,

Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington,

Wyoming, and Montana, of which many areas are more conservative ideologically and static

by definition. A similar precept might be applied to private colleges that negatively impact

organizational creativity, as there may be cultural and institutional characteristics that limit

innovation. Interestingly enough, there were no other relationships with innovation. So while

the environment may be supportive of creative ideas, implementation may be a problem for

these institutions and may dispel myths about private and West coast colleges and

universities.

Another finding is that presidents with *no doctoral degree* positively influenced external innovation ($B =. 799*$). This is unusual, as there were so few presidents that did not have doctoral degrees ($n = 13$, 8.5%). However, because the presidents had been in their positions far less than other presidents, there may be more proclivities for creativity and divergent thinking than in those who were more experienced. In addition, those with no doctoral degree may be more likely to reach out to other experts, such as in "corporate, civic, or institutional relationships and partnerships to support curricular initiatives" and "partner with other colleges, universities, or associations." As colleges and universities look outside the academy for leadership, there may be more presidents in the future that lead institutions differently and may influence innovation as external influence are more critical and this may be an indication of such initiatives.

Additionally, *female* presidents, although few in number ($n = 38$, 28.6%) negatively influenced external innovation efforts ($B =. -444*$). This supports the literature that suggested women are more likely to be adapters as a result of environmental influences (Ostroff & Rothausen, 1997; Young & Hurlic, 2006). Even though women exhibit more transformational leadership skills and creativity, the environment may not be receptive to women's influence institutionally (Eagly & Johannensen-Schmidt, 2003; Young & Hurlic, 2007).

Implications for Practice

What the research found is that institutions are attempting to innovate at varying levels as confirmed in the literature (ACE, 2012; Godemann, 2006; Howell et al., 2003; Morton & Mojowski, 1991; Qiang, 2003; Silver, 1999). There appeared to be a great deal of interest in entering new markets through interdisciplinary and multi-disciplinary studies and some interest in cross cultural studies, and articulation initiatives. There was some support

for co-curricular activities but minimal interest in developing global programs, which

conflicts with the current emphasis on internationalization efforts and educating for world

mindedness (VanGyn et al., 2009). There was a high level of support for collaboration,

investment of resources, and faculty development; however, a very static environment

negatively impacted innovation. This was an unexpected finding, but supported literature that

emphasized the importance of dynamic environments and creative endeavors (Derue et al.,

2011; Jung, 2000). More often, dynamic environments influence innovation and are less

limited in terms of taking risks, thus creating an environment of innovation (Rogers et al.,

2003).

The effect of leaders who were risk adverse or considered themselves open to

experience was not enough to compensate for a static environment. This conflicts with

leadership studies that find risk adverse and openness indicators of leader effectiveness

(Derue et al., 2011) and drivers of innovation (Matthew, 2009; Oke et al., 2008; Zhao &

Seibert, 2010). Openness, in particular, is linked with creative endeavors, yet there was no

statistical significance found in the study (deHoogh et al., 2005; McCrae, 1987). Of the

leadership traits, literature confirms the significance of conscientiousness, openness, and

emotional stability in terms of creativity, but the findings suggest that leaders who are overly

conscientious negatively impede innovation (McCrae, 1987; Puccio & Grivas, 2009; Zhao &

Seibert, 2006). Those who lack emotional stability similarly effect innovation; this is a

different perspective on conscientiousness and (lack of) emotional stability that has not been

evidenced (per se) in the literature.

Female leaders need to be encouraged to be innovative as they have a proclivity for

transformative leadership and creativity (Eagly & Johannensen-Schmidt, 2003) but

surprisingly had a negative impact on innovation in the study. Transformative leadership is a

consideration for understanding academic leadership as it relates to innovation and the role of female leaders is increasingly important (Crossan et al., 2008; Eagly & Johannesen-Schmidt, 1990). Interesting, in the findings, those with no doctoral degree had a positive influence on some aspects of innovation, contrary to the literature that suggests intellect as a component of creative leadership (Marques, 2007; Sternberg, 2005). This does not imply that those with higher levels of education are necessarily more intellectual, but that the desire for knowledge through education has been traditionally thought of as a framework for leadership and supports previous studies which have considered "wisdom" a component of leadership (Sternberg, 2005). The results may suggest a different kind of academic leader from outside the academy as the external focus of innovation is considered in new context. It is imperative for leaders who have influence over institutional culture and strategic initiatives, to create an environment that supports innovation.

While some leader traits impacted internal innovation, the environment had more significant effect on institutional innovation efforts, from an internal, external, and market point of view. This emphasized the need for leaders to drive innovation through cultural shifts and focus on organizational creativity that is imperative for change to occur (Jaussi and Dionne, 2003; Oke et al., 2009). Market shifts and globalization continue to impact higher education and the need for a more organic environment has been demonstrated (ACE, 2012: DiLiello & Houghton, 2008; Elton, 2003; Healey, 2007; Hemlin, 2009; Silver, 1999).

Theoretical Implications

The data produced unexpected findings that led to the conceptualization of new theories. Initially, conscientiousness, emotional stability, openness and risk adverse emerged as expected traits from a leadership perspective. However, loading of the items in the factor analysis and path analysis resulted in the traits of conscientiousness and lack of emotional

stability having statistical significance, in a negative way. Traits of risk adverse and openness evidenced in effective and transformative leaders were not significant in terms of creative efforts and innovation. More importantly, items of divergent thinking were not statistically significant, and organizational creativity emerged as an important measure of innovation, particularly as an interaction variable with the environment. This provides an alternative view in which to consider institutional creativity critical for innovation, compared to individual leaders' measures, because traits may be contextual based on the situation (Schneider, 1995). A broader view of organizational creativity is in keeping with rapid times of change and an organization's desire to be innovative.

Gender, institutional type, and location were significant in the findings, and the role of gender in studies of transformational leadership is particularly compelling (Eagly & Johannesen-Schmidt, 2003). The definitions for innovation and the framework around innovation were confirmed and worthy of future study in the context of strategic institutional direction. The significant effect of the environment on innovation at all levels was a bit unexpected, but more importantly, "organizational creativity" has emerged as a topic of future investigation.

Leaders' traits are very important, however, the relationship between the environment and divergent thinking were more important in understanding institutional innovation. Incorporating person-environment fit and organizational culture" theories would frame the outcome to consider the environmental effects in a more in-depth manner. Addressing and defining "organizational creativity" in the context of the multi-dimensions of environmental fit would provide an appropriate framework for innovation that has broad-based organizational implications. This suggests a modification of the conceptual model for future study (Figure 3).

LEADERSHIP STYLE
- Gender
- Education/Intellect

INSTITUTIONAL CHARACTERISTICS
- Location
- Type

CHANGE
- Relational
- Attitudes
- Beliefs
- Behaviors

ORGANIZATIONAL CREATIVITY
- Dynamic/Static
- P-E Fit

INNOVATE
- Curricula
- New Markets
- Info-Tech

IMPACT
- Strategic Direction
- Mission
- Goals

LEADERSHIP TRAITS
- Conscientiousness
- Emotional Stability
- Openness

Figure 3. Proposed model of organizational creativity
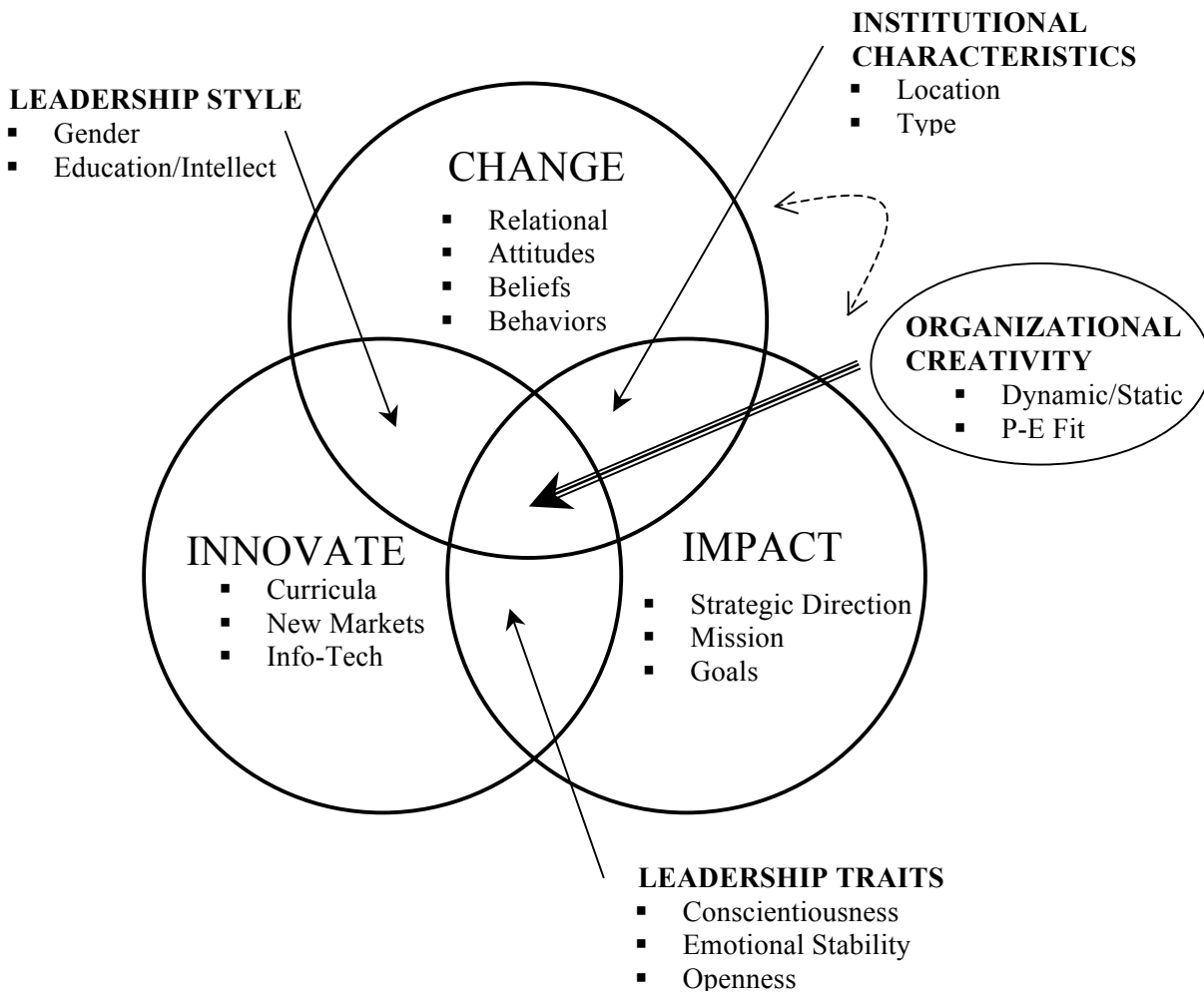
Limitations

There were limitations associated with the study. First, there is a limited potential to generalize the findings for all institutions, due to the small sample size (9.8%, *n* = 133) compared to the number of surveys sent (*n* = 1345) and that largest percentage of smaller regional colleges and universities (46.6%) are not representative of larger research

institutions. In addition, the timing for distribution of the survey did not lend itself to a high yield of responses. The pilot survey did not reveal technical challenges with the survey format in terms of skip logic" and the ability to answer questions; all persons in the pilot survey responded to all questions, but when participants tried to respond in part, or save work "in progress," that was not allowed and there may have been some frustration on the part of participants, contributing to incomplete surveys.

Refinement in the survey instrument itself and clarity in defining variables would resolve some of the challenges created by combining existing surveys. The overlap of items in terms of innovation might more accurately define internal and external innovation efforts, as questions had dual implication. For example, items on entering new markets could be perceived as external innovation as well and there might be more definition in the areas of creativity, openness, and innovation. Framing divergent thinking in the context of institutional innovation would provide a clear foundation for the study; this relationship should be explicit. In general, additional items should be created to improve the reliability of all latent variables in the study.

In terms of the five-factor model, while there may be some questions as to the use of the 20-item instrument, it was reliable and has been confirmed as a valid measurement of leaders' characteristics over time. Various iterations of the instrument, from 1,431 trait clusters, to the 20-item inventory used in the study, have withstood challenges. Even with alternative extraction methods, different rotations, and variations, minimal effects have been found that have impacted the results in any way (Goldberg, 1990). Further, it is accepted that the items can typically load on only two factors, one of which is the modal factor and that "the uniformity of the values demonstrates the robustness of the solution across variables" (Goldberg, 1990, p. 1219). It was an appropriate application in this study.

A final limitation was the presidents' apparent lack of interest in the survey. Because college presidents are required to provide so much data in their positions, completing surveys is not a priority; this was a limitation. From a leadership perspective, understanding characteristics is important when times are changing and dynamic; the fact that most were White, male, Caucasian, and over the age of 65 led to some undocumented assumptions about why the survey was not important to them. That was one of the biggest limitations in the study.

Enhancements to the survey would include further data gathering on static and dynamic institutional environments and their respective relationship to organizational creativity. This is an important measure as organizational creativity emerged as a latent variable in the study and is important in the study of innovation. Considering leadership traits in concert with organizational creativity is a suggestion for further investigation.

Implications for Research

There are opportunities for future research; initially, one approach would be to revise the survey and distribute to department heads and other academic leaders to compare their perspectives on the academic environment and innovation. Updating the leadership model to include emotional intelligence vs. emotional stability would be a way to approach some of the current issues in leadership and address questions related to the gender influence (or lack of) institutionally.

Since the environment played such an important role in terms of innovation, the research focus might include a qualitative component in a focused study of institutional innovation. Observation studies, interviews, focus groups, and other means of data gathering would provide rich information of the institutional environment and provide perspective in

terms of the "who, what, why, and how" of innovation and how leaders actually define their institutional environments as dynamic or static.

Because institutions differ in size, type and mission, a stratified sample might have the potential to glean information in terms of strategic goal setting. It is important to consider not only innovation efforts, but also the results of such innovation. The metrics around institutional perception of innovation and actual results pose interesting questions going forward. Most importantly, defining institutional creativity, as a framework for new research is critical, as it has broad-based implication for institutional mission, strategic initiatives, and the future of education.

Other questions that emerged in terms of innovation have to do with more specific definitions of innovation. Since information and technology are drivers of globalization and can be linked to both new markets and interdisciplinary studies it may be possible to combine questions to further understand institutional innovation.

Summary

The results of the study showed that there is a great deal of interest in innovation, from an information/technology, new markets/globalization, and curricular perspective. College and university leaders are seemingly aware of the need to differentiate and innovate as well. While there is interest, there is a moderate degree of engagement in taking risks to innovate; this is a challenge for institutions. Overly conscientious and emotionally unstable personalities limit innovation. The institutional environment is key to innovation and divergent thinking and must be kept in mind when dealing with any organizational change. Static environments limited innovation at all measured levels of the institution and leaders must address the need to adapt and evolve institutionally; risk adverse persons limit innovation and progress.

Most important, defining organizational creativity as a framework for innovation is imperative and suggests a new model for investigation. The interest and need to understand the personality traits of leaders who lead innovation, change strategies, and impact education will not diminish, as they are critical for the future. Additional studies to consider environmental and leaders relationships to innovation and organizational creativity in greater detail would provide great insight into institutional culture. The results of the study posed new questions for future research and are needed to further advance innovation, leadership, organizational creativity, and the academy.

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TABLES

Table 1

2016 U.S. News World Report College Categories

Category	Total Number of Schools	Total Number of Public Schools	Total Number of Private Schools	Total Number of Proprietary Schools	Number in Category That Were Unranked
1. National Liberal Arts Colleges	245	217	27	1	10
2. National Universities	280	100	173	7	12
3. Regional Universities–South	132	59	71	2	5
4. Regional Universities–North	193	121	70	2	10
5. Regional Universities–West	135	68	63	4	17
6. Regional Universities–Midwest	158	98	56	4	9
7. Regional Colleges–South	116	85	28	3	18
8. Regional Colleges–North	73	45	21	7	12
9. Regional Colleges–West	67	37	28	2	26
10. Regional Colleges–Midwest	107	86	17	4	11
11. Art	62	42	2	18	62
12. Business	13	9	0	4	13
13. Engineering	6	5	1	0	6
Total	1587	972	557	58	211
Regional Universities (total)	618	346	260	12	41
Regional Colleges (total)	363	253	94	16	6

Table 2

Carnegie Classifications

U.S. News category	Carnegie classifications
National Universities	Research Universities (very high research activity), Research Universities (high research activity) and Doctoral/Research Universities
Regional Universities: North, South, Midwest, and West	Master's Colleges and Universities (larger programs), Master's Colleges and Universities (medium programs) and Master's Colleges and Universities (smaller programs)
National Liberal Arts Colleges	Baccalaureate Colleges—Arts and Sciences
Regional Colleges: North, South, Midwest, and West	Baccalaureate Colleges—Diverse Fields; Baccalaureate/Associate's Colleges; Associate's—Public 4-year, Primarily Associate's; Associate's Private Not-for-profit 4-year, Primarily Associate's; and Associate's Private For-profit 4-year, Primarily Associate's

Table 3

Geographical Region

Region	Number of States	States
North	11	Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Washington DC.
South	12	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia
Midwest	12	Illinois, Iowa, and Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
West	15	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming

Table 4

Institutional Size/Enrollment

Includes all students full or part time, distance learning, study abroad, etc. Includes multiple campuses and locations.	Less than 1,000 students
	1000–5000 students
	5001–7500 students
	7501–10,000 students
	More than 10,000 students

Table 5

Overview of Variables

Independent Variables:	Institutional Environment (IE) (IE_1) 1. Geographical Location (IE_2) 2. Enrollment/size (IE_3) 3. Type (IE_4) 4. Dynamic/Static Demographics (D) (D_1) 1. Age (D_2) 2. Gender (D_3) 3. Ethnicity (D_4) 4. Education (D_5) 5. Experience (D_6) 6. Position Leadership Traits (LT) (LT_1) 1. Extraversion (LT_2) 2. Agreeableness (LT_3) 3. Conscientiousness (LT_4) 4. Emotional Stability (LT_5) 5. Openness to Experience
Mediating Variables	Divergent Thinking (DT) (DT_1) 1. Values new ideas (DT_2) 2. Creativity restriction (DT_3) 3. Time for new ideas
Dependent Variables	Innovation (I) (IN_1) 1. Curricula and interdisciplinary studies (IN_2) 2. Entering new markets (IN_3) 3. Information and technology

Table 6

Descriptive Analysis of Independent Variables

Comparative Demographics of College Presidents		2006 National	2011 National	2016 (current sample)
Age	61 or older	49%	48%	49.3%
Gender	Male	76%	74%	70.7%
Ethnicity	Caucasian	86%	87%	91.7%
Time in Position	More than 25 years	8.5%	7.0%	3.8%
	Less than 5 years			50.4%

Table 7

Comparison of Institutional Data

		2011 National	2016 National	2016 (current sample)
Geographical Region		South		Midwest
Institutional Size	Number of students	$M = 11,020$	$M = 13,594$	1,000–5,000
Enrolled Students	(In all institutions; full and part time)	20.379,000	21,575,000	
Institutional Type	Carnegie Classifications/ USNWR Data	N/A	N/A	Regional College or University (private) 46.6% $n = 62$
Institutional Environment	The institution focuses on teamwork, collaboration and openness; ideas are shared frequently and respected.			50.4% $n = 67$

Table 8

Principal Component Matrix

Pattern Matrix[a]									
		Component							
		1NEW MARKET (IN_2)	2CONS (FFM)	3 LACK OPEN (FFM)	4EXTERNAL (IN_1)	5 RISK ADVERSE (FFM)	6 INTERNAL (IN_3)	7 EMOT INSTAB (FFM)	8 CREAT VAL (DT_1)	ORG CREAT (DT_2)
INNOVATION	I2c_crosscult	.846								
	I2f_intermult	.780								
	I2e_exchange	.752								
	I2a_global	.744								
	I2b_grants	.726								
LEADERSHIP TRAITS	OPEN_neg.order		.811							
	CONS_chores		.781							
	CONS_neg.forget.		-.678							
LEADERSHIP TRAITS	OPEN_neg.abstr.			.897						
	OPEN_neg.ideas			.858						
INNOVATION	I1d_partnerships				.853					
	I1a_curricula				.784					
LEADERSHIP TRAITS	EXT_neg.backgrd.					.831				
	DT1e_neg.rarewrk					.735				
INNOVATION	I3c_delivery						.943			
	I3b_factrain						.620			
LEADERSHIP TRAITS	NEUR_neg.blue							-.883		
	NEUR_moodswgs.							.624		
DIVERGENT THINKING	OPEN_imagin.								-.792	
	DT2f_onlysome								.710	
DIVERGENT THINKING	DT2b_enough									.794
	DT2c_neg.notlim									.740
Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.										
a. Rotation converged in 8 iterations.										

Table 9

Descriptive Statistics-Dependent Variables

Variable		Descriptives					
		Mean	Std. Error	Median	Variance	Std. Deviation	Number of Responses
IN_2 NEW MARKETS	Innovated cross-cultural learning including language and communication strategies	3.200	0.128	5.000	0.568	0.753	133
	Innovated interdisciplinary or multi-disciplinary studies.	3.820	0.123	4.000	2.080	1.424	133
	Innovated co-curricular, articulation initiatives OR faculty and student exchange programs.	3.553	0.136	3.000	2.448	1.565	133
	Innovated global programs beyond study abroad OR established a global campus.	2.750	0.143	2.000	2.703	1.644	133
	Innovated grants to support faculty development of courses.	3.640	0.126	3.000	2.110	1.453	133
CONS (FFM)	Like order.	3.955	0.077	4.000	0.786	0.886	133
	Get chores done right away.	4.130	0.083	4.000	0.915	0.957	133
	Often forget to put things back in their proper place.	1.860	0.098	1.000	1.290	1.136	133
LACK OPEN (FFM)	Am not interested in abstract ideas.	1.350	0.066	1.000	0.576	0.759	133
	Have difficulty understanding abstract ideas.	1.220	0.066	1.000	0.577	0.766	133
IN_1 EXTERNAL	Innovated corporate, civic, or institutional relationships and partnerships to support curricular initiatives.	4.550	0.066	1.000	0.587	0.766	133
	Innovated curricula with other colleges, universities, or associations.	4.050	0.103	4.000	1.399	1.183	133
RISK ADVERSE (FFM)	Keep in the background.	1.900	0.087	2.000	1.013	1.007	133
	New ideas rarely work out	1.480	0.065	1.000	0.570	0.755	133
IN_3 INTERNAL	Innovated in terms of distance education, resources, and other delivery systems to support new markets.	4.260	0.094	5.000	1.117	1.085	133
	Innovated in terms of faculty support, software development, and training programs.	4.630	0.067	5.000	0.598	0.773	133
EMOT INSTABILITY (FFM)	Seldom feel blue.	3.790	0.119	4.000	1.895	1.376	133
	Have frequent mood swings.	1.340	0.059	1.000	0.468	0.684	133
DT_1 LACK OF CREATIVE VALU	Have a vivid imagination.	1.380	0.066	1.000	0.587	0.766	133
	Only some people are creative.	2.090	0.098	2.000	1.280	1.131	133
DT_2 ORGANIZATIONAL CREATIVITY	We have enough creative people at our institution.	2.300	0.107	2.000	1.530	1.237	133
	I am not limited by my institution when it comes to creative ideas.	3.480	0.114	4.000	1.721	1.312	133

FIGURES

- IE_1 Geographical location
- IE_2 Enrollment/size
- IE_3 Type
- IE_4 Dynamic/static

(IE)
INSTITUTIONAL
ENVIRONMENT

- D_1 Age
- D_2 Gender
- D_3 Ethnicity
- D_4 Education
- D_5 Experience
- D_6 Position

(D)
DEMOGRAPHICS

(DT)
DIVERGENT
THINKING

(IN)
INNOVATION

- DT_1 Valuing new ideas
- DT_2 Creativity is not restrictive
- DT_3 Time for new ideas

FIVE FACTOR MODEL
- LT_1 Extraversion
- LT_2 Agreeableness
- LT_3 Conscientiousness
- LT_4 Emotional Stability
- LT_5 Openness to Experience

(LT)
LEADERSHIP
TRAITS

- IN_1 Curricula and interdisciplinary studies
- IN_2 Entering new markets
- IN_3 Information and technology

Figure 1. Conceptual model of institutional innovation

Figure 2. Path analysis model

INSTITUTIONAL
CHARACTERISTICS
- Location
- Type

LEADERSHIP STYLE
- Gender
- Education/Intellect

CHANGE
- Relational
- Attitudes
- Beliefs
- Behaviors

ORGANIZATIONAL
CREATIVITY
- Dynamic/Static
- P-E Fit

INNOVATE
- Curricula
- New Markets
- Info-Tech

IMPACT
- Strategic Direction
- Mission
- Goals

LEADERSHIP TRAITS
- Conscientiousness
- Emotional Stability
- Openness
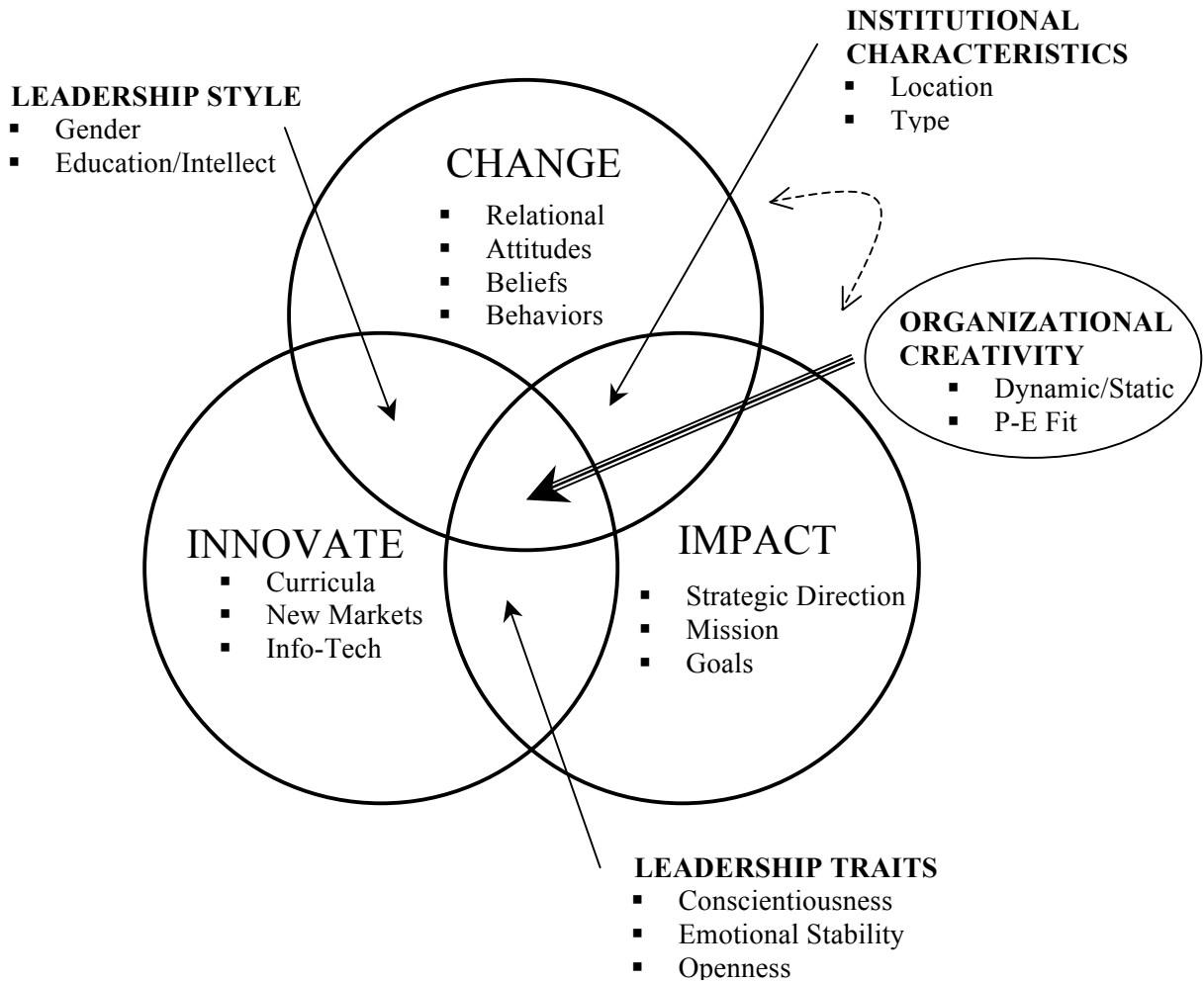
Figure 3. Proposed model for organizational creativity

APPENDIX A

RESEARCH @ EMU

UHSRC Determination: EXEMPT
DATE: May 19, 2016
TO: Barbara Marini
Department of Leadership and Counseling
Eastern Michigan University
Re: UHSRC: # 875419-1
Category: Exempt category *2*
Approval Date: May 19, 2016

Title: Leadership Traits, Divergent Thinking, and Innovation in Higher Education
Your research project, entitled **Leadership Traits, Divergent Thinking, and Innovation in Higher Education,** has been determined **Exempt** in accordance with federal regulation 45 CFR 46.102. UHSRC policy states that you, as the Principal Investigator, are responsible for protecting the rights and welfare of your research subjects and conducting your research as described in your protocol.

Renewals: Exempt protocols do not need to be renewed. When the project is completed, please submit the **Human Subjects Study Completion Form** (access through IRBNet on the UHSRC website).

Modifications: You may make minor changes (e.g., study staff changes, sample size changes, contact information changes, etc.) without submitting for review. However, if you plan to make changes that alter study design or any study instruments, you must submit a **Human Subjects Approval Request**

Form and obtain approval prior to implementation. The form is available through IRBNet on the UHSRC website.

Problems: All major deviations from the reviewed protocol, unanticipated problems, adverse events, subject complaints, or other problems that may increase the risk to human subjects **or** change the category of review must be reported to the UHSRC via an **Event Report** form, available through IRBNet on the UHSRC website

Follow-up: If your Exempt project is not completed and closed after **three years**, the UHSRC office will contact you regarding the status of the project.
Please use the UHSRC number listed above on any forms submitted that relate to this project, or on any correspondence with the UHSRC office.
Good luck in your research. If we can be of further assistance, please contact us at 734-487-3090 or via e-mail at human.subjects@emich.edu. Thank you for your cooperation.
Sincerely,
Sonia Chawla, PhD
Research Compliance Officer

APPENDIX B

Date: April 2016

Dear Participant:

As an educational leader, you are in the unique position of driving **innovation** at your institution, just as business leaders are responsible for innovation in corporations. Yet in looking at the higher educational environment, there has been minimal attention to the characteristics of **academic leadership** that is driving innovation, **compared to the business world**. I am inviting you to participate in this research study that looks at leadership by completing the attached survey. I am a doctoral student at Eastern Michigan University in the Department of Educational Leadership and Counseling and am studying the relationship between leadership, creativity, and innovation.

The following questionnaire will require **approximately 20** minutes to complete. There is no compensation for your participation nor is there any known risk. To ensure that all information will remain **confidential**, no identification is required to participate. In addition, there are no other identifiers to link you to an institution, insuring **complete anonymity**.

Participation is strictly voluntary and you may refuse to participate at any time. Completion of the questionnaire will indicate **your willingness** to participate in this study. Your responses are critical, so please answer all questions as honestly as possible and **complete the questionnaire promptly**. You may come back to the survey if you are not able to complete it in one setting; **two weeks will be allowed** for completion.

Data will be **collected through Qualtrics.com** and stored in a secure, password-protected location. If you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you so choose) any concerns to the Department of Leadership and Counseling at Eastern Michigan University at the contact information below provided for the program.

Other groups may have access to your research information for quality control or safety purposes. These groups include the University Human Subjects Review Committee, the Office of Research Development, the sponsor of the research, or federal and state agencies that oversee the review of research. The University Human Subjects Review Committee reviews research for the safety and protection of people who participate in research studies.

We may share your information with other researchers outside of Eastern Michigan University. If we share your information, we will remove any and all identifiable information so that you cannot reasonably be identified. The results of this research may be published or used for teaching. Identifiable information will not be used for these purposes.

In return for your participation an opportunity to attend a webinar at which time the results will be shared or you may receive a copy of the final data analysis in PDF format. At the end of the survey you may include your contact information, should you wish to do so; your responses will remain confidential in the data analysis.

Thank you for taking the time to assist me in my educational endeavors. The data collected will provide useful information regarding **leadership** in higher education and provide insight into the role of **creativity** and **innovation** initiatives. It will serve to **understand change** and **inform future direction**.

If you require additional information or have questions, please contact me, or Dr. Anderson at the number listed below. Otherwise, if you are satisfied with the terms outlined, please proceed to the survey.

Sincerely,

Barbara S. Marini Doctoral Candidate

C: 313-910-8988 E: bmarini@emich.edu

Dr. David Anderson
C: 734-484-1741 E: danderson@emich.edu

Eastern Michigan University
Department of Leadership and Counseling
304 John W. Porter Building, Suite 304
Ypsilanti, MI 48197
734-487-0255

APPENDIX C

A SURVEY OF LEADERSHIP AND CREATIVITY IN HIGHER EDUCATION

WE WANT TO KNOW A LITTLE BIT ABOUT YOU…SO PLEASE TELL US ABOUT YOURSELF!

D1 What age group describes you?
- ○ 25-35 (1)
- ○ 36-45 (2)
- ○ 46-55 (3)
- ○ 56-65 (4)
- ○ Older than 65 (5)
- ○ Prefer to not disclose (6)

D2 Gender
- ○ Male (1)
- ○ Female (2)
- ○ Prefer to not disclose (3)

D3 What is your primary ethnic background?
- ○ African American (1)
- ○ Asian (2)
- ○ Hispanic (3)
- ○ Caucasian (4)
- ○ Native American (5)
- ○ Prefer to not disclose (6)

D4 What is your highest degree earned?
- ○ Bachelor's degree (1)
- ○ Master's degree (2)
- ○ Doctoral degree (3)
- ○ Prefer to not disclose (4)

D5 How many years have you been in your current position?
- ○ Less than 1 year (1)
- ○ 1-5 years (2)
- ○ 6-10 years (3)
- ○ 10-15 years (4)
- ○ 15-20 years (5)
- ○ More than 20 years (6)

D6 Which of the following BEST describes your current position?
- ○ Department Chair or Department Head (1)
- ○ Academic Dean (2)
- ○ Associate or Assistant Dean (3)
- ○ Provost or Executive Director (4)
- ○ Senior Vice President, Vice President, Vice Chancellor (5)
- ○ Assistant or Associate Vice President (6)
- ○ President or Chancellor (7)
- ○ Other (describe) (8) _____

PLEASE DESCRIBE YOUR INSTITUTION

IE1 In what area of the country is your institution located?
- ❍ North: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Washington DC. (1)
- ❍ South: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia (2)
- ❍ Midwest: Illinois, Iowa, and Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin (3)
- ❍ West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming (4)

IE2 What is the approximate size of your institution, including graduate and on-line students?
- ❍ Under 1,000 students (1)
- ❍ 1,000-5,000 students (2)
- ❍ 5,000-7,500 students (3)
- ❍ 7,500-10,000 students (4)
- ❍ Over 10,000 students (5)

IE3 Which of the following best describes your institutional type?
- ❍ National College or University (1)
- ❍ Regional College or University (2)
- ❍ Art and Design College or University (3)
- ❍ Other (describe) _____ (4)

IE4 Which of the following best describes your institutional environment?
- ❍ The institution focuses on teamwork, collaboration and openness; ideas are shared frequently and respected. (1)
- ❍ The institution is committed to its culture and tradition; strong structural ties and beliefs are the basis of decision-making. (2)
- ❍ The culture values creativity but falls short on implementation. (3)
- ❍ Other (describe) _____ (4)

In the fast paced academic environment, leadership is imperative in the context of institutional success. We are interested in your leadership characteristics and traits.

HOW DO YOU LEAD YOUR TEAMS? PLEASE INDICATE YOUR AGREEMENT WITH THE FOLLOWING:

LT For each statement 1-20 mark how much you agree with the statement on the scale 1-5, where 1=disagree, 2=slightly disagree, 3=neutral, 4=slightly agree and 5=agree

	Disagree (1)	Slightly Disagree (2)	Neutral (3)	Slightly Agree (4)	Agree (5)
1. Am the life of the party.	❍	❍	❍	❍	❍
2. Sympathizes with others' feelings.	❍	❍	❍	❍	❍
3. Get chores done right away.	❍	❍	❍	❍	❍
4. Have frequent mood swings.	❍	❍	❍	❍	❍
5. Have a vivid imagination.	❍	❍	❍	❍	❍
6. Don't talk a lot.	❍	❍	❍	❍	❍
7. Am not interested in other people's problems.	❍	❍	❍	❍	❍
8. Often forget to put things back in their proper place.	❍	❍	❍	❍	❍
9. Am relaxed most of the time.	❍	❍	❍	❍	❍
10. Am not interested in abstract ideas.	❍	❍	❍	❍	❍
11. Talk to a lot of different people at parties.	❍	❍	❍	❍	❍
12. Feel others' emotions	❍	❍	❍	❍	❍
13. Like order.	❍	❍	❍	❍	❍
14. Get upset easily.	❍	❍	❍	❍	❍
15. Have difficulty understanding abstract ideas.	❍	❍	❍	❍	❍
16. Keep in the background.	❍	❍	❍	❍	❍
17. Am not really interested in others.	❍	❍	❍	❍	❍
18. Make a mess of things.	❍	❍	❍	❍	❍
19. Seldom feel blue.	❍	❍	❍	❍	❍
20. Do not have a good imagination.	❍	❍	❍	❍	❍

DIVERGENT and CREATIVE THINKING
DT1 In today's world there is a lot of conversation around the topic of creativity, particularly in the academic setting. Please respond to the following questions in terms of your ability and/or willingness to be creative at your institution.

	Disagree (1)	Slightly Disagree (2)	Neutral (3)	Slightly Agree (4)	Agree (5)
a. I enjoy the challenge of finding a different way to solve problem.	○	○	○	○	○
b. Crazy ideas can lead to something.	○	○	○	○	○
c. All people have creative ideas from time to time.	○	○	○	○	○
d. Senior management should encourage ideas by demonstrating they are willing to act on them.	○	○	○	○	○
e. New ideas rarely work out.	○	○	○	○	○
f. Only smart, knowledgeable people have the best ideas.	○	○	○	○	○

DT2 Please respond to the following questions regarding your view of creative potential at your institution.

	Disagree (1)	Slightly Disagree (2)	Neutral (3)	Slightly Agree (4)	Agree (5)
a. Creative people bring new perspectives to problem-solving.	○	○	○	○	○
b. We have enough creative people at our institution.	○	○	○	○	○
c. I am not limited by my institution when it comes to creative ideas.	○	○	○	○	○
d. We need organized people in our work not more "creatives."	○	○	○	○	○
e. Doers, not creative thinkers are the kind of people we need.	○	○	○	○	○
f. Only some people are creative.	○	○	○	○	○

DT3 Finally, creative thought requires an investment of institutional, departmental, and personal resources, not the least of which is time for implementation. Please respond to the following questions regarding your view of creativity and time commitment at your institution.

	Disagree (1)	Slightly Disagree (2)	Neutral (3)	Slightly Agree (4)	Agree (5)
a. I could be more creative but simply do not have time for new ideas.	○	○	○	○	○
b. If we take time to be providing new ideas, none of the work gets done.	○	○	○	○	○
c. Ideas are only important if they impact major projects.	○	○	○	○	○
d, It is better to do things the way they are than to try to implement new ideas.	○	○	○	○	○
e. We should all slow down and think of new ideas.	○	○	○	○	○
f. My peers do not want to take the time to implement new things.	○	○	○	○	○

INNOVATION

I1 As higher education experiences a shift in students, instruction, and learning in the global market, how have you differentiated your institution in the competitive environment? Which of the following curricular initiatives have you implemented in the last 2 years or plan to do in the next year?

	Will not implement (1)	May consider future implementation (2)	Neutral (3)	Likely to implement (4)	Will definitely implement (5)
a. Innovated curricula with other colleges, universities, or associations.	○	○	○	○	○
b. Innovated policies and procedures to support and advance curricular initiatives.	○	○	○	○	○
c. Innovated "outcomes-based" or competency based learning opportunities for students.	○	○	○	○	○
d. Innovated corporate, civic, or institutional relationships and partnerships to support curricula initiatives.	○	○	○	○	○
e. Innovated curricula in interdisciplinary or multi-disciplinary studies.	○	○	○	○	○

f. Innovated
curricula in
creativity and
innovation, studies,   ○   ○   ○   ○   ○   ○
including design
thinking, design
management, etc.

I2 Have you entered new markets and expanded the strategic direction of your institution?
Please respond to the following questions regarding international education. On a scale of
1=not engaged to 6=plan to innovate, to what degree have you engaged in global education
in the last 2 years or plan to in the next year?

	Not engaged (1)	Minimally (2)	Somewhat (3)	Significantly (4)	Extensively (5)	Plan to innovate (6)
a. Innovated global programs beyond study abroad OR established a global campus.	○	○	○	○	○	○
b. Innovated grants to support faculty development of courses.	○	○	○	○	○	○
c. Innovated cross-cultural learning including language and communication strategies.	○	○	○	○	○	○
d. Innovated collaborative multi-institutional research initiatives.	○	○	○	○	○	○
e. Innovated co-curricular,	○	○	○	○	○	○

articulation
initiatives OR
faculty and
student
exchange
programs.

f. Innovated interdisciplinary or multidisciplinary academic initiatives.	○	○	○	○	○	○

I3 In today's academic environment, innovation is influenced and driven by information and technology. Which of the following have you implemented in the last 2 years or plan to invest in the next year?

	Will not implement (1)	May consider future implementation (2)	Neutral (3)	Likely to implement (4)	Will definitely implement (5)
a. Innovated strategic initiatives and policies for technology decisions to inform and support curricula.	○	○	○	○	○
b. Innovated in terms of faculty support, software development and training programs.	○	○	○	○	○
c. Innovated in terms of distance education, resources, and other delivery systems to support new markets,	○	○	○	○	○
d. Innovated	○	○	○	○	○

partnerships in the information and technology industry.

e. Innovated virtual, cloud-based systems for information and technology storage and access.　　　　○　　　　　○　　　　　○　　　　　○　　　　　○

f. Innovated proprietary systems to advance curricular objectives, UX, or manage and control data.　　　　○　　　　　○　　　　　○　　　　　○　　　　　○

g. Innovated specialized institutional security measures that safeguard virtual and real attacks.　　　　○　　　　　○　　　　　○　　　　　○　　　　　○