A New Paradigm of Knowledge Production in Minnesota Higher Education:

A Delphi Study

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ABSTRACT

The convergence of globalization, emergence of the knowledge society and accelerating change contribute to what might be best termed a New Paradigm of knowledge production in higher education. The New Paradigm reflects the emerging shifts in thought, beliefs, priorities and practice in regard to education in society. These new patterns of thought and belief are forming to harness and manage the chaos, indeterminacy, and complex relationships of the postmodern.

This future-oriented, multiple-methods study identifies potential futures for higher education and their related implications, consequences and policy actions in regard to the New Paradigm of knowledge production. In the first phase of the study, a review of the relevant literature qualitatively scanned for trends in higher education and identified profound statements on the long-term futures of higher education in the United States, and globally, related to the three driving trends of the New Paradigm.

Data generated in the first phase were developed into a set of statements and inputted into a Delphi questionnaire instrument. An expert group of 20 Minnesota college and university presidents (or their designates) comprised this study’s Delphi panel in the study’s second phase, which determined the level of importance, level of acceptability and possibility of occurrence for each item identified by the literature review’s scan of the environment of higher education. Following the quantitative analysis of these three measurements for each questionnaire item over two Delphi rounds, where group consensus emerged, each panelist was asked to provide qualitative statements on implications for their institution, policy actions, how to improve the
likelihood of preferred futures, and the potential for competing institutions to lead in least preferred futures. Content analysis of the response set in the study’s third phase revealed ten thematic categories for implications and policy actions for higher education given the futures identified in the first two rounds of the Delphi process. The findings suggest higher education leaders need to integrate the concept of accelerating change of the New Paradigm into their thinking and leadership practices and further align their activities to succeed in an era of accelerating change, chaos and ambiguity.

This research helps to better inform the practices of leaders, policymakers, and stakeholders in Minnesota higher education and beyond. This study concludes with a note that through action on the findings and the feedback-looped, reflective consideration of policy actions, this study provides for the possibility of better informed and more future-oriented praxis by the higher education leaders who participated.
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CHAPTER 1: INTRODUCTION

Problem statement

The convergence of globalization, emergence of the knowledge society and accelerating change contribute to what might be best termed a New Paradigm of knowledge production in higher education. The New Paradigm reflects the emerging shifts in thought, beliefs, priorities and practice in regard to education in society. These new patterns of thought and belief are forming to harness and manage the chaos, indeterminacy, and complex relationships of the postmodern. The following subheadings provide a summary of these three phenomena in higher education and are explored in further detail in the next chapter.

Globalization

The phenomenon of globalization exposes oppositional dichotomies of the local vs. the global, homogenization vs. heterogenization, and the periphery vs. core. The second chapter of this study explores four frameworks for understanding globalization in greater detail. First, McLuhan (2002; 1967; McLuhan & Powers, 1992) describes a “global village” driven by communications technology. Appadurai (1990; 1996) provides a cultural framework to describe the “scapes” of globalization. Wallerstein (1974a; 2004) borrows from international relations theory to explain tensions between the local and global in the globalized world. Finally, Anthony Giddens (1991) presents a sociological perspective on the interconnectedness of the globalized world.

The interdependence and distanciation described by McLuhan and Giddens, respectively, contribute to what several authors (see esp. Guri-Rosenblit, 2001; Schank,
2002; see esp. Skolnik, 2000; Stallings, 2001, 2002) refer to as the virtual university. While virtualization of the university has not revolutionized education, Schank (2002) believes the formation of the virtual university is driven by a fear of high competition in all educational driven by top-tiered schools.

To provide education competitively in a globalized world, higher education institutions need to consider how to leverage economies of scale (Hartley, 1995). This is a consequence of what Ritzer (1993; 1998) terms the “McDonaldization” of education. He writes, “the university is a means of educational consumption […] and students are adopting a consumerist orientation to it” (Ritzer, 1998, p. 153). Ritzer contends that to competitively conduct business, universities need to make themselves more readily accessible just as ATMs have made banks more accessible and fast-food chains have democratized the reach of restaurants. Ritzer (1998) writes that this results in a globalized McUniversity that “can be conceived of as a means of educational consumption, one that allows students to consume educational services and eventually to obtain important ‘goods’ – degrees and credentials” (p. 151).

Analyzing case studies that observed change at five European universities, Clark (1998) writes of a trend where universities are becoming entrepreneurial, innovative and adaptive to their environments (pp. 3-4). The role of the university in the knowledge society, Delanty (2004) argues, is to govern the communicative interconnections between academic knowledge and its praxis (p. 252-253). The future role of the university in the knowledge society, he further argues, is to facilitate the globalization of knowledge.
Emergence of the knowledge society

Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow (1994) define two modes of knowledge production. The first, Mode 1, is reflective of the “traditional,” nineteenth and twentieth century industrial models of inquiry and knowledge production. Mode 1 knowledge production is operationalized, likely to be conducted in absence of a practical goal or application, driven by individuals, and bounded by Balkanized disciplinary boundaries in the knowledge landscape. By contrast, Mode 2 knowledge production is based on applied problem solving for contextually-appropriate results.

Gibbons et al (1994) write that “Mode 2 knowledge is created in broader, transdisciplinary social and economic contexts” (p. 1).

In the sciences, this opening of knowledge beyond disciplinary boundaries leads to what Nowotny (1993) terms socially distributed knowledge. Knowledge production is no longer dependent on formal research structures, but is also present in public spaces of individual scientific creativity, professional and lay knowledge, the market, and public discourse (Nowotny, 1993).

Delanty (1998) writes that the university is now complemented by an emerging ecosystem of competing knowledge-based institutions. Slaughter and Rhoades (2004) propose a Theory of Academic Capitalism, centered on networked relationships, which states that, in the new knowledge economy, universities may no longer separate themselves from corporations or governments. By virtue of working in the knowledge economy, individuals and institutions rarely function solely within the academy, government or the private sector (Etzkowitz & Leydesdorff, 1997).
Harkins, Tomsyck and Kubik (2002) extend the idea of the knowledge society and knowledge economy to a technologically-augmented *innovation economy*. The innovation economy “refers to both process and outcome: innovative processes transform an invention to a successful product; many successful products characterize an innovation economy” (Harkins et al., 2002, p. 18). The innovation economy is primarily “built” from *creative destruction and continuous improvement*, the *replacement* and *digitization of knowledge worker capabilities* by advanced computer software (Harkins et al., 2002, pp. 1-18). Central to this conceptualization of a future social and economic reality is the nature of technology – and particularly that of information technology – to drive accelerating change.

*Accelerating change*

A comparatively small, yet emerging, body of literature discusses accelerating technological and social change. Kurzweil (1999) postulates a *Law of Accelerating Returns* to describe the evolutionary process that leads to accelerating technological and social change. According to the theory, change is occurring rapidly, and the pace of change is increasing. Kurzweil’s idea is founded on the proposal that as technologies evolve, the technologies improve and reduce in costs; and, in turn, the process of technological evolution improves and speeds itself up. As technologies evolve, so will society (see esp. Morgan, 1877).

Minsky (1988) writes that, “we tend to think of knowledge as a good in itself, but knowledge is useful only when we can use it to exploit our goals” (p. 57). Authors argue increasingly, however, that it is becoming difficult to set goals based on human foresight and imagination. Vinge (1993) terms the theoretical limit of human foresight and
imagination as the *Technological Singularity*. As the rate of technological advancement increases, it will become more difficult for a human observer to predict to determine future technological advancements. Given the rate of exponential advancement identified by Kurzweil (2005), the rate of technological advancements in the future may seem nearly simultaneous.

Together, the above reviewed resources converge on the assessment that the future of humanity—and, by extension, education—will be very different than anything experienced in history to the present. To approach the future of education in an age of accelerating change, Harkins and Moravec (2006) argue we must expand our horizons, and build universities that are creative, edgy and hard-charging.

**Synthesis of the three trends**

The problem is the three phenomena driving the New Paradigm are rarely explored together as a whole, particularly as it pertains to higher education leadership. This is not only reflected as a key deficiency in the literature, but also in the policy practices of education at all levels. By putting the pieces of the New Paradigm together through the forecasting of futures for higher education, leadership implications, consequences and policy actions may be identified.

**Purpose and description of the study**

The intent of this future-oriented, multiple-methods study is to identify potential futures for higher education and their related implications, consequences and policy actions in regard to the New Paradigm of knowledge production. In the first phase of the study, a review of the relevant literature qualitatively scanned for trends in higher education and identified profound statements on the long-term futures of higher
education in the United States, and globally, related to the three driving trends of the New Paradigm.

Data generated in the first phase were developed into a set of statements and inputted into a Delphi questionnaire instrument. An expert group of Minnesota college and university presidents (or their designates) comprised this study’s Delphi panel, which determined the level of importance, level of acceptability and possibility of occurrence for each item identified by the literature review’s scan of the environment of higher education. Following the quantitative analysis of these three measurements for each questionnaire item, where group consensus emerged, each Delphi panelist was asked to provide qualitative statements on implications for their institution, policy actions, how to improve the likelihood of preferred futures, and the potential for competing institutions to lead in least preferred futures.

Delimitation and context of the study

The contextual locality of this study was within the State of Minnesota. The state is selected not only for its arms-length accessibility for the researcher and the researcher’s institution, but for the state’s historical concern and investment in education. Most notable is the “Minnesota Miracle” in which a 1971 tax reform measure reformulated the funding allocation for public primary and secondary schools (see esp. Krupey & Minnesota Legislature Office of Senate Research, 1977). By discontinuing a funding model that was based on property tax revenue, funding disparities between wealthy and poor districts were reduced while providing an overall increase in education funding. The Minnesota Miracle became a model that was replicated rapidly nationwide. For Minnesotans, the Miracle symbolically culminated with the publication of the image
of then Governor Wendell Anderson with a Minnesota lake in the background, and captioned “the good life in Minnesota” ("Minnesota: A state that works," 1973).

In terms of educational attainment, Minnesota fares better than the national average. In 2004, 32.5% of Minnesotans aged 25 or older possessed a bachelor’s degree or higher, and 92.3% completed high school. Nationally, 27.7% of Americans aged 25 or older possessed a bachelor degree in 2004, and 85.2% of the same age group completed high school (U.S. Census Bureau, 2006, p. 149). Furthermore, 39.2% of Minnesotans were employed in managerial, professional and related occupations in 2003, compared to the national average of 34.8% (U.S. Census Bureau, 2006, p. 405). These figures may indicate that Minnesotans are positioned to better succeed in a knowledge-based economy than the U.S. as a whole.

A limitation of conducting a study entirely within Minnesota is that the global phenomena considered cannot be generalized to national or global contexts. This limitation is shared among virtually all qualitative studies where the defined population (in this case, higher education stakeholders around the globe) is broad.

Research questions

The purpose of this study was to identify potential futures for higher education and their related implications, consequences and policy actions in respect to the New Paradigm. The central questions of this study were therefore: 1) What are the potential futures of higher education in Minnesota related to the three driving trends of the New Paradigm? And, 2) what are the implications and policy actions for higher education given these futures?

Three subquestions are related to the first central question:
1. What is the *level of importance* of each potential future?

2. What is the *level of acceptability* for each potential future? And,

3. What is the *possibility of occurrence* for each potential future?

Six subquestions are related to the second central question:

1. For items that are rated as important and acceptable, but unlikely, how might its likeliness be improved?

2. For each item that is rated important, acceptable and likely:
   
   a. What are the implications for each leader’s college or university?

   And,

   b. What can be done in regard to the item today?

3. For each item that is rated important, unacceptable and likely:

   a. What are the implications for each leader’s college or university?

   b. What might be done in regard to the item today to produce an acceptable outcome? And,

   c. What if competing institutions accept this item, transcend its challenges and become leaders?

Key concepts and definitions

**Automated Information Technology (AIT)**

Hakken (2003) uses AIT to describe computing technologies that go beyond information processing and aid in the construction of knowledge. He writes, AIT is, “a class of technologies that make storage, retrieval, and manipulation of information automatic, raising numerous issues about the character of information-related phenomena, including what knowledge is” (Hakken, 2003, p. 395).
Accelerating returns/accelerating change

Kurzweil (1999) postulates a Law of Accelerating Returns: “as order exponentially increases, time exponentially speeds up (that is, the time interval between salient events grows shorter as time passes)” (p. 30). Figure 1 illustrates Kurzweil’s law. Technological advances (e.g., achievements in the development of agriculture, industrialization) are represented by s-curves. As time progresses, the rate of technical advancement increases, and multiple significant advancements will occur concurrently. If combined and plotted as a line, the multiple s-curves form a “J-curve” shape that approximates an exponential rate of technological change over time. The Law of Accelerating Returns is modeled after Moore’s (1965) Law of technological development of integrated circuits.

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1 For a discussion on s-curves and the theory of the diffusion of innovations, see Rogers (2003).
Figure 1.

*Kurzweil’s Law of Accelerating Returns*


**Commodification of the university**

The commodification of the university, colloquially referred to as the *McUniversity* (see esp. Parker & Jary, 1995), is a projected near future for higher education based on the driving trends of mass consumerism and globalization. Ritzer (1998) writes that the globalized McUniversity, “can be conceived of as a means of educational consumption, one that allows students to consume educational services and eventually to obtain important ‘goods’ – degrees and credentials” (p. 151).
The McUniversity is sometimes representative of a dystopian future vision. Ritzer (1998) cautions “McDonaldized systems do not excel at innovation: they are at their best in implementing and rationalizing ideas stemming from other sources. Thus innovations are always highly likely to emerge outside of McDonaldized systems” (p. 178).

**Commodification of knowledge**

*Commodification of knowledge* is a phrase used to describe the phenomena that knowledge itself has transformed into an intangible, commoditized good that may be exchanged by individuals and institutions.

**Globalization**

Several conceptualizations of *globalization* are provided in the second chapter. Giddens (1990), for example, defines the phenomenon of globalization as “an intensification of worldwide social relations, via which far away places are linked together in such a way that events in one place are affected by processes taking place many miles away, and vice-versa” (p. 64). Elements that previously appeared separate are now becoming increasingly interdependent and integrated with each other. For individuals and organizational actors, this means the world appears to have become more compact and networked.

Barber (2001b) writes that globalization of the world’s economies is forming a homogenized *McWorld*, “a kind of virtual reality, created by invisible but omnipotent high-tech information networks and fluid transnational economic markets” (p. 26).

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2 (for a discussion of knowledge as intangibles, see esp. Allee, 2003)
Ritzer (1998) extends this concept to describe globalization of higher education as the contributor to the formation of the *McUniversity*.

**Information and communications technology (ICT)**

ICT is a term used to describe hardware and software technologies that aid in the communication of information. In higher education, ICT is used to “provide increased flexibility to students while reaching students beyond the usual catchment area” (D'Antoni, 2003), and ICT is seen as a leading technological means for development toward the knowledge society and the knowledge economy.

**Internationalization**

Ellingboe (1998) defines internationalization of the university as “the process of integrating an international perspective into a college or university system” (p. 199). Furthermore, she writes, internationalization “is the way an institution adapts to an ever-changing, diverse external environment that is becoming more globally-focused” (Ellingboe, 1997, p. 1). The internationalization of the curriculum, states Hunter (2004), is designed to develop students into globally-competent citizens, able to become successful participants in an increasingly globalized world. In this study, internationalization is considered as a policy response to globalization.

**Knowledge economy/knowledge society**

The *knowledge economy* was first defined by Drucker (1969) to describe the emerging impact that information technology advances would have on the economy and on society. Drucker (1993) describes the social impact of the knowledge economy on individuals in the *knowledge society*:
In the knowledge society into which we are moving, individuals are central. Knowledge is not impersonal, like money. Knowledge does not reside in a book, a databank, a software program; they contain only information. Knowledge is always embodied in a person, carried by a person; created, augmented, or improved by a person; applied by a person; taught by a person, and passed on by a person. The shift to the knowledge society therefore puts the person in the center.

(p. 210)

McUniversity

See commodification of the university.

Mode 1 knowledge production

Mode 1 knowledge production is reflective of the traditional, nineteenth and twentieth century industrial models of inquiry and knowledge production. Gibbons et al (1994, p. 19) write, “Mode 1 is discipline-based and carries a distinction between what is fundamental and what is applied; this implies an operational distinction between a theoretical one and other areas of knowledge such as the engineering sciences, where the theoretical insights are translated into applications” (p. 19). In other words, Mode 1 knowledge production is operationalized, likely to be conducted in absence of a practical goal or application, driven by individuals, and bounded by Balkanized disciplinary boundaries in the knowledge landscape.

Mode 2 knowledge production

Mode 2 knowledge production is based on applied problem solving for contextually-appropriate results. Gibbons et al (1994) write that “Mode 2 knowledge is created in broader, transdisciplinary social and economic contexts” (p. 1). In contrast to
Mode 1 knowledge production, Mode 2 knowledge is created by transdisciplinary teams, tasked to solve a particular problem that is both contextually appropriate and practically applicable. Members from the teams may later reconfigure to form new teams to solve new problems and recontextualize applications of knowledge produced.

New Paradigm of knowledge production

The three trends of globalization, emergence of the knowledge economy and accelerating change contribute to what this study terms the New Paradigm in education. The New Paradigm reflects the emerging shifts in thought, beliefs, priorities and practice in regard to all levels of education in society. The surfacing of the New Paradigm suggests that Schwartz and Ogilvy’s (1979) “emergent paradigm” has reached maturity, and that new patterns of thought and belief are forming to harness and manage the chaos, indeterminacy, and complex relationships of the postmodern. The inputs of the three trends into the New Paradigm model are illustrated in Figure 2.
Technological Singularity

In a 1993 presentation to the VISION-21 Symposium sponsored by NASA Lewis Research Center and the Ohio Aerospace Institute, Vernor Vinge described the Technological Singularity:

Developments that before were thought might only happen in ‘a million years’ (if ever) will likely happen in the next century. […] It is a point where our old models must be discarded and a new reality rules. As we move closer to this point, it will loom vaster and vaster over human affairs till the notion becomes a commonplace. Yet when it finally happens it may still be a great surprise and a greater unknown. (Vinge, 1993)
The Singularity represents the point in Kurzweil’s (1999) *J*-curve of accelerating change where the value of the slope approaches $1 - \frac{1}{\infty}$. At this point, socioeconomic and technological change will occur so rapidly that, to an outside observer, it would be impossible to discern what changes will take place or how. Human imagination can provide visions of what the Singularity’s *event horizon*\(^3\) could be like, but, due to the exponential rate of change, what lies beyond is not predictable.

**Transdisciplinarity**

Gibbons et al (1994) describe *transdisciplinarity* as the movement beyond the constraints of disciplines in Mode 2 knowledge production. Transdisciplinarity therefore: 1) “develops a distinct but evolving framework to guide problem solving efforts;” 2) utilizes empirical and theoretical problem solving; 3) is a process of knowledge diffusion in practice; and, 4) is “dynamic” and “may not fit easily into any one of the disciplines that contributed to the solution” (Gibbons et al., 1994, p. 5).

**Virtual University**

Stallings (2001) uses the term *virtual university* to describe the expansion of the university from its traditional confines to support the development of knowledge workers. To fulfill this need, universities are developing online presences to provide distance education. She writes, “in the virtual university, the academic institution is more fitted for the role of the *content provider*, less for that of the *context provider*, especially in a high-tech, globalized environment” (Stallings, 2001, p. 11).

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\(^3\) The terms *singularity* and *event horizon* are borrowed from astrophysical terms used to describe black holes in spacetime. For the purpose of this study, the event horizon refers to the boundary of human imagination where, due to accelerating change, it becomes impossible to predict “what’s next.”
Significance of this study

This study adds to the scholarly research and knowledge in the fields of educational policy, administration, comparative education and international development education by integrating the three driving trends of the New Paradigm of knowledge production in higher education. This allows for a more holistic investigation of futures for higher education. New knowledge is created that is applicable for professionals in higher education administration through the study’s investigation of implications, consequences and policy actions related to the futures evaluated.

A secondary benefit emerges from this study in the form of improved policy making and practice. Through feedback-looped, reflective consideration of policy actions, this study’s research design allows for the possibility that participating leaders will become better informed and more futures-oriented in their praxis of higher education leadership.
CHAPTER 2: REVIEW OF THE LITERATURE

Introduction

“We look at the present through a rear-view mirror. We march backwards into the future.”

Marshall McLuhan (1967, pp. 73-74)

This literature review divides its content into two components. First, a theoretical framework for analysis is presented. This study uses an original theoretical framework largely derived from the work of Inayatullah and Gidley (2000) that examines how globalization, the emergence of knowledge society and accelerating change contribute to the formation of a New Paradigm in higher education. The second section reviews the literature relevant to these three areas.

Division of works under review into categories

The three trends driving the future of higher education – globalization, emergence of the knowledge society and accelerating change – are largely derived from the work of Inayatullah and Gidley (2000), who identify four trends that shape the university of the future: 1) maturation of the Internet and related technologies, 2) internationalization of the curriculum, 3) decreasing political and academic freedom; and, 4) economic globalization. Review of the literature and consideration of the concept of Kurzweil’s (1999) Law of Accelerating Returns, suggest that this new model of three driving trends, integrated as metatheory, describe a macro-level phenomena of a New Paradigm in higher education. It is important to note that the three trends feeding into the model, particularly globalization and the emergence of the knowledge society, are often
intertwined and not easily disentangled. Elements of each trend may also be present in the others.

Trend I: Globalization

Following the termination of the Cold War, scholars and policy makers began to reassess the global landscape. Huntington (1993) intrepidly announces, “world politics is entering a new phase, and intellectuals have not hesitated to proliferate visions of what it will be –the end of history” (p. 22). In his treatise, he believes the era of state-dominated relations has concluded and future international conflict will be driven by dichotomous “clashes” of culture.

This section presents four perspectives on the phenomenon of globalization with particular attention focused on the oppositional dichotomies of the local vs. the global, homogenization vs. heterogenization, and the periphery vs. core. First, McLuhan (2002; 1967; McLuhan & Powers, 1992) describes a “global village” driven by communications technology. Second, Appadurai (1990; 1996) provides a cultural framework, while Wallerstein (1974a; 2004) borrows from international relations theory to explain tensions between the local and global in the globalized world. Finally, Giddens (1991) presents a sociological perspective on the interconnectedness of the globalized world. Modern tensions between homogenization and heterogenization are explored with citizenship building offered as a remedy for tensions. This section concludes with a discussion on globalization’s contributions toward the creation of the virtual university, the commodified university, and academic capitalism and entrepreneurialism.
McLuhan (2002) writes, “the new electronic interdependence recreates the world in the image of a global village” (p. 31). Instant communication through radio and other media have connected people and cultures that were previously divided. In McLuhan’s view, the medium of electronic technology is “the massage,” and, “is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and reevaluate practically every thought, every action and every institution formerly taken for granted” (McLuhan & Fiore, 1967, pp. 6-10).

Twentieth century technology and media enabled people to view their world as an interconnected whole and as a world among others. McLuhan and Powers (1992) write:

After the Apollo astronauts had revolved around the moon’s surface in December of 1968, they assembled a television camera and focused it on the earth. All of us who were watching had an enormous reflexive response. We “outered” and “innered” at the same time. We were on earth and the moon simultaneously. And it was our individual recognition of that event which gave it meaning. […] The true action in the event was not on the earth or the moon, but rather in the airless void between, in the play of the axel and the wheel as it were. We had become newly aware of the separate physical foundations of these two different worlds and were willing, after some initial shock, to accept both as an environment for man. (p. 4)

Appadurai (1990) identifies a framework of five dimensions of global “culture flow” that addresses the conflict between the cultural homogenization and cultural
heterogenization of globalization: ethnoscapes, technoscapes, finanscapes, mediascapes and ideoscapes (p. 296). The term “ethnoscape” refers to individual persons and groups of people in motion, adaptive to shifting social and labor capital needs (Appadurai, 1990, p. 297). The flow and distribution of technology is reflected in the “technoscape,” whereas the flow and distribution of global capital is reflected in the “finanscape” (Appadurai, 1990, pp. 297-298).

The above three “scapes” describe Appadurai’s operational mechanics of globalization. To describe the global flow of metanarratives, Appadurai (1990) uses the “mediascape” to describe “image-centered, narrative-based accounts of strips of reality” (p. 299), and the “ideoscape” to account for master-narratives, value orientations and ideologies (pp. 299-300).

In the Appadurai model of globalization, cultures traverse among the scapes, and this portability of cultures cause “disjunctures” and “differences” (Appadurai, 1996). Disjunctures occur when cultural products or artifacts overlap in a manner that appears juxtaposed. For example, a disjuncture may occur between ideoscapes and finanscapes where international finance regimes influence local politics (Appadurai, 1990, p. 305). Differences surface when a cultural group traverses the culture flow, finds itself in a new cultural context, and begins to develop its own cultural space (Appadurai, 1996, p. 22). Writing on the impact of Appadurai’s model on higher education, Cornwell and Walsh (2001) note, “if anything is clear about the future of liberal education, it is that paradigms of knowledge and inquiry are moving in the direction of complexity.”

Tensions between global and the local are a “tension between cultural homogenization and cultural heterogenization” (Appadurai, 1996, p. 32). Critics such as
Sinha (2002) counter that the binary nature of this model is too reductionist and reflective of cultural imperialism to properly reflect the intricacies of the true nature of the globalization phenomenon. Some authors, such as Jonathan Friedman (1994), suggest that the dichotomy between the local and the global is not necessarily wholly distinct as the local is often formed from the global.

**World-system theory**

Wallerstein’s world-system theory, derived from the field of international relations, also presents a binary perspective of globalization, but uses a binary perspective to describe the presence of an economic hegemony of “core,” economically-developed and militarily strong “developed” states over “periphery,” client states (see esp. Wallerstein, 1974b, 1991). This structure, he argues, is a remnant of European colonial models dating back to at least the sixteenth century (Wallerstein, 1974a).

According to the theory, post feudalist innovations demanded expansion of previous nation-based economic production into an international economic system dependent on an exploitative core-over-periphery relationship that developed and matured through the twentieth century. Wallerstein (1974a) writes, “exploitation and the refusal to accept exploitation as either inevitable or just constitute the continuing antinomy of the modern era, joined together in a dialectic which has far from reached its climax in the twentieth century” (p. 233).

In commenting on his world-system theory, Wallerstein (2004) argues that analysis of global problems using the world-systems perspective allows analysts to engage in a “real protest about the deep inequalities of the world-system that are so politically central to our current times” (xi). Cox (1996) cautions against presuming a
shared global history, and other authors (see esp. Giddens, 1991, 2003) suggest
dialectical worldviews and approaches to understanding relationships.

Sinha (2002) observes that Wallerstein’s Marxist orientation interprets modern
tensions between the local and the global as socialist-capitalist struggles; and, shows
“how the model of center-periphery, local-global, still persists and haunts the discourse of
political economy, and there seems to be no getting away from it within the Western
hegemonic discourse of economy, politics and culture” (p. 186).

**Distanciation**

Giddens (1991) writes that, “the concept of globalisation is best understood as
expressing fundamental aspects of time-space distanciation. Globalisation concerns the
intersection of presence and absence, the interlacing of social events and social relations
‘at distance’ with local contextualities” (p. 21). Globalized networks determine the
relations and interactions of local phenomena. For example, an individual’s purchasing,
information gathering and movement are often determined by globalized networks. A
decision by a Tunisian citizen to buy a package of foreign-produced breakfast cereal
instead of locally-produced couscous might be influenced by information provided by
global media and transnational corporate marketing campaigns. How she was enabled to
purchase it (e.g., by taking a taxi, built in Asia and fueled by West Asian oil) is also
dependent on the interaction of global networks.

Giddens (2003) further writes that, “globalisation is the reason for the revival of
local cultural identities in different parts of the world. […] Local nationalisms spring up
as a response to globalising tendencies, as the hold of older nation-states weakens” (p.
13). Friedman (2000; 2005), taking an economic perspective, identifies a core conflict
between the drive for global commerce and tradition⁴. While much of the world is obsessed with progress and economic prosperity, much of the rest of the world is concerned with maintaining tradition. Giddens (1991) writes that, “the establishment of ‘new traditions’ is plainly a contradiction in terms. Yet […] a return to sources of moral fixity in day-to-day life, in contrast to the ‘always revisable’ outlook of modern progressivism, is a phenomenon of some importance” (p. 207).

Modern tensions between homogenization and heterogenization

In a pessimistic echo of Huntington (1993), Barber (2001a) describes the dichotomous conflict that emerges when the global free market encounters local (traditional) forces as Jihad vs. McWorld – a struggle between the desire to maintain identity and the quest for economic gain (p. 8). This, he argues, is at the core of the modern conflict between radical Islam and the Western World. In this clash of economic homogenization with cultural self-preservation, Barber views democratic civil society as a solution for securing global peace. He writes, “the voice of civil society, of citizens in deliberative conversation, challenges the exclusivity and irrationality of Jihad’s clamor but is equally antithetical to the claim of McWorld’s private markets to represent some aggregative public good” (Barber, 2001b, p. 287).

Barber states the development of civil society is dependent on education and that the history of the U.S. proves that democratization through civil society is not an impossible task, but an urgent one we need to perform today: “Citizenship and citizenship founded on education is the rather simple and not so expensive key to … making the world not just more free and just, but also more safe for Americans because

⁴ Although Friedman fails to properly attribute these ideas to an original source, the conflict he describes
today we live in an interdependent world where no American child will sleep safe in their beds until the children in Damascus, in Palestine, in Hong Kong, in Indonesia and Nigeria can sleep safe in their beds” (Barber, 2003).

Shapiro (2002) writes, “as we consider the role of universities in a rapidly changing environment, we must remember that universities, their curricula, their scholarly and other programs should all be designed to serve some civic purpose. Teaching and research are a public trust. It is the civic purposes served by universities that provide the foundations for their social legitimacy” (p. 13). As several authors note, however, this is easier said than accomplished. For example, Rahman (2000) believes that postcolonial universities lack the bureaucratic agility, finance structure and competent faculty to be successful in today’s market. Mojab (2000) believes that, in West Asia, conflicts between dictatorial states and the university limit the university’s ability to produce knowledge. She argues that non-Western universities need to embrace and promote the building of civil society to modernize and enable themselves to compete in an increasingly globalized and competitive environment. As a source of building social legitimacy, several authors look toward internationalization of higher education.

*Citizenship-building through international education*

The internationalization of the curriculum, writes Hunter (2004), is designed to develop students into globally-competent citizens, able to become successful participants in an increasingly globalized world. This newly formulated, interdependent form of globalism over Huntington’s (1993) nationalist, “us vs. them” rhetoric drives the purposeful development of international education in the twenty-first century. In higher
education, this implies universities can no longer create well rounded national citizens for the societies they serve, but need to create global citizens capable of building a global, civil society. Kelly (2000) contends that a modern, “internationalized” university needs to be one that promotes the creation of “Globo-sapiens” that are both interculturally competent and socially responsible (p. 170). Mestenhauser (2002) states, that to build global perspectives, an “international” education must include a curriculum that integrates the internal and external studies of cultures, knowledge, and of the nature of knowledge, itself (p. 168).

Ellingboe (1997) writes that internationalization, “is the way an institution adapts to an ever-changing, diverse external environment that is becoming more globally-focused” (p. 1). Internationalization is furthermore, “the process of integrating an international perspective into a college or university system” (Ellingboe, 1998, p. 199). From a Western perspective, the role of internationalization in higher education is not merely to create systems-adaptive learners, but to also (directly or indirectly) transform the form and nature of education itself. Rhodes (Rhodes, 2001) predicts the successful university will be “campus based in its location […] international in its orientation and cosmopolitan in its character; its graduates will pursue their careers within an increasingly global economy and an increasingly diverse workforce” with an emphasis on global knowledge (pp. 236-237).

Ashis Nandy (2000) is concerned that the proliferation of Western-styled education in non-Western cultures threatens the diversity and valuation of indigenous knowledge systems. He argues, “the main responsibility of a university is to pluralize the future by pluralizing knowledge in the present” (p.124). From this perspective, the role
of international education is to transcend the competitive economic barriers between and among societies described by Friedman (2000), and to build toward a future that is more aligned with Barber’s (2003) vision of a global, civil society.

The virtual university

The interdependence and distanciation described by McLuhan and Giddens, respectively, contribute to what several authors (see e.g., Guri-Rosenblit, 2001; Schank, 2002; Skolnik, 2000; Stallings, 2001, 2002) refer to as the virtual university. Guri-Rosenblit (1999) notes that the pressures of globalization drive higher education institutions toward internationalization, and that information and communication technologies (ICT)-driven “distance education, by its nature, exerts global outreach” (Guri-Rosenblit, 2001, p. 497). ICT-enabled virtual universities are able to leverage communications technologies to broaden the scope and size of their market reach. In most situations, this is viewed as replacing face-to-face classroom contact with virtual, online experiences.

Schank (2002) believes the formation of the virtual university is driven by a fear in the higher education industry that “if Harvard ever got their act together and decided to deliver every Harvard course via videotaped lectures and developed some way for students to interact with TAs to have homework graded, then everyone else would be out of business” (p. 75). He further believes that the virtual university has neither revolutionized nor provided significant quality gains to how universities may provide education. Hakken (2003) agrees, and writes, “putting education online is hard to do profitably because it is just plain hard to do. Learning is a social process. It is hard for
individuals to maintain their motivation in isolation, so dropout rates in online courses are very high” (p. 304).

Experimental research by Skinner (1960) suggests that machine-augmented education is limited by its ability to customize what is taught to each individual learner (p. 190). Stallings (2001) writes, “in the virtual university, the academic institution is more fitted for the role of the content provider, less for that of the context provider, especially in a high-tech, globalized environment” (p. 11). This reflects a trend many authors regard to as the commodification of knowledge in higher education.

Commodification of tertiary education in a globalized society

In regard to the trend of homogenization in the globalized world, Barber (2001b) writes, “McWorld is a kind of virtual reality, created by invisible but omnipotent high-tech information networks and fluid transnational economic markets, so the virtual corporation is not just a provocative turn of phrase” (p. 26). Just as the virtual corporation is linked to the McWorld, several authors (see esp. Parker & Jary, 1995; Ritzer, 1998) suggest the virtual university is linked to the McUniversity. In regard to knowledge production and distribution, Bowers (2001) is concerned that modern culture centered around globalized relationships commodifies “knowledge, relationships and skills” at the expense of the maximization of our human potential in a way that is both socially and ecologically just (p. 159).

To provide education competitively in a globalized world, higher education institutions need to consider how to leverage economies of scale (Hartley, 1995). This is a consequence of what Ritzer (1993; 1998) terms the “McDonaldization” of education. He writes, “the university is a means of educational consumption […] and students are
adopting a consumerist orientation to it” (Ritzer, 1998, p. 153). Ritzer contends that to conduct business competitively, universities need to make themselves more readily accessible just as ATMs have made banks more accessible and fast-food chains have democratized the reach of restaurants. Ritzer (1998) writes that this is resulting in a globalized McUniversity, which “can be conceived of as a means of educational consumption, one that allows students to consume educational services and eventually to obtain important ‘goods’ – degrees and credentials” (p. 151).

The necessity to make higher education more readily accessible challenges scholars to consider new provisions for tertiary education. For example, Inayatullah (2004) poses several scenarios for future, McDonalidized universities: 1) a system of universities that allow for student mobility (e.g., credits may be taken at any combination of universities) to allow for greater selections of learning opportunities; 2) the university that provides a balance of face-to-face and virtual learning experiences; and, 3) a “university without walls – the entire world becomes a university” (p. 215).

Jacob (2003) claims that the commodification of knowledge in higher education is simply a continuance of the phenomena of the “commodification of everything” (p. 128). This implies “a more entrepreneurial culture in the university for academic norms and the conduct of research and ultimately education” (Jacob, 2003, p. 139). Manifestations of this culture are reflected in the writings of Slaughter and Leslie (1997), Clark (1998) and Etzkowitz (1998).

**Globalization, academic capitalism and the entrepreneurial university**

Probing the changing nature of higher education in Australia, Canada, the United Kingdom and the United States, Slaughter and Leslie (1997) note that changing economic
realities (viz. decrease in funding from governments) require that universities seek new sources of revenue and that the impact of globalization: 1) “constricts” discretionary funds in higher education; 2) fosters “the growing centrality of techno-science and fields closely involved with markets;” 3) strengthens relationships with corporate and state innovation initiatives; and, 4) increases the “focus of multinationals and established industrial countries on global intellectual property strategies” (pp. 36-37). They term the “institutional and professional market or market-like efforts to secure external moneys academic capitalism” (Slaughter & Leslie, 1997, p. 8).

Analyzing case studies that observed change at five European universities, Clark (1998) writes that a trend is present where universities are becoming entrepreneurial, innovative, and adaptive to their environments (pp. 3-4). The trend is dependent on five factors: “a strengthened steering core; an expanded developmental periphery; a diversified funding base; a stimulated academic heartland\(^5\); and an integrated entrepreneurial culture” (Clark, 1998, p. 5). He finds that for reform toward an entrepreneurial university to succeed, the university must transcend its “traditional” beliefs and practices. This change is dependent on assertive leadership (Clark, 1998, p. 148).

Although Clark (1998) does not explicitly describe the role of globalization in the transformation of the university, Deem (2001) observes that, together with Slaughter and Leslie’s (1997) Academic Capitalism, these works “convey the distinct impression that globalization alone […] is causing the social, economic and cultural convergence of universities in different countries” (p. 8). These works, Deem (2001) argues, are focused

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\(^5\) Clark’s (1998) “academic heartland” refers to academic culture and tradition.
on the economic impact of globalization. She concludes that more research needs to be conducted in regard to the impact of material culture, the environment, social relations and human culture dimensions of globalization on higher education (Deem, 2001, p. 18).

On the role of the university in globalized society, Delanty (2004) writes, “the limited universalism that is preserved in the university, and which justifies the continued use of the term university, despite pluralization and ever greater differentiation, is one of interconnectivity” (p. 253). The role of the university in the knowledge society, he argues, is to govern the communicative interconnections between academic knowledge and its praxis (Delanty, 2004, pp. 252-253). The future role of the university in the knowledge society, he further argues, is to facilitate the globalization of knowledge.

Trend II: Emergence of the knowledge economy and knowledge society

Drucker’s (1993) vision of postindustrial society, termed knowledge society, is driven by the impact of advances in information technologies on society. Key to success in the knowledge society is in personal knowledge, the awareness and understanding of information, at the individual level. Drucker (2001) writes, “the knowledge society must have at its core the concept of the educated person” (p. 289). An educated person, he argues, must be a global citizen “in vision, horizon, information” (Drucker, 2001, p. 291).

The university plays a large role in the development of the knowledge society. Philip Altbach (2000) notes,

The universities stand at the center of today’s knowledge-based economies. The post-secondary system has provided access to unprecedented numbers of students. With more than 100 million students enrolled worldwide, higher education has moved from an elite enterprise to a mass phenomenon. The highly skilled
personnel who make modern postindustrial society possible are trained mainly in universities. (p. 52)

This section discusses the impact of personal knowledge, organizational knowledge, and differing modes of knowledge production. The massification of the university and knowledge production is described as well as the role of the academy in the knowledge society. Finally, after the commodification of knowledge and the commodification of epistemology are discussed, a mode of personal, innovative knowledge production is introduced.

*Personal knowledge and organizational knowledge*

Michael Polanyi (Polanyi, 1967; 1968) distinguishes *tacit* knowledge from *explicit* knowledge. Building from Gestalt psychology, Polanyi (1968) writes that tacit knowledge is based on unspecifiables, centered on skill, artful expertise, tradition and connoisseurship (pp. 49-63). Explicit knowledge is constructed from theory, specifiable, testable, and verifiable (Polanyi, 1968, p. 64). Polanyi (1968) notes, for example, while explicit knowledge may provide physical and mechanical prescriptions for riding a bicycle, tacit knowledge (skill) is required to successfully ride a bicycle in practice (pp. 49-50).

Both of these forms of knowledge are independent of each other. Yet personal knowledge is constructed where tacit knowledge intersects with and cooperates with explicit knowledge (Polanyi, 1968). Tacit knowledge cannot be explicit knowledge and *vice versa*. While explicit knowledge may be empirically measured without difficulty, tacit knowledge is difficult to measure. In knowledge-driven organizations, where tacit knowledge is manifested as professional intuition, this poses a problem (see esp.
For tacit knowledge to be formally shared in an organization, it needs to be made explicit. McInerney (2002) writes that for knowledge to be successfully managed in an organization, the systemic relationship between explicit and tacit knowledge needs to be understood.

From a perspective on leading organizational knowledge development, Allee (2003) discusses tacit knowledge and knowledge artifacts as intangibles within organizational value networks. She writes, “perhaps what we really need is to manage less and attend more” (Allee, 2003, p. 15). This breaks from traditional, hierarchical forms of organizational management. The role of managers and leaders in a knowledge-and value-based system is to support the system, not manage it. Organizational knowledge production in the twenty-first century is both reconfigurable and self-organizing (Allee, 2003; McElroy, 2003).

Toward a socially distributed mode of knowledge production

Knorr-Certina (1999) writes that knowledge societies and knowledge cultures are resultant of social formations (pp. 5-6). The production of knowledge, she argues, is procedurally conducted through cultural activities or through scientific method. As a social formation, these two methods of knowledge production system lead to the development of epistemic cultures (Knorr-Cetina, 1999, pp. 7-8 and 24).

Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow (1994) define two modes of knowledge production. The first, Mode 1, is reflective of the “traditional,” nineteenth and twentieth century industrial models of inquiry and knowledge production. They write, “Mode 1 is discipline-based and carries a distinction between what is fundamental and what is applied; this implies an operational distinction between a
theoretical one and other areas of knowledge such as the engineering sciences, where the theoretical insights are translated into applications” (Gibbons et al., 1994, p. 19). In other words, Mode 1 knowledge production is operationalized, likely to be conducted in absence of a practical goal or application, driven by individuals, and bounded by Balkanized disciplinary boundaries in the knowledge landscape.

*Mode 2* knowledge production is based on applied problem solving for contextually-appropriate results. Gibbons et al (1994) write that “Mode 2 knowledge is created in broader, transdisciplinary social and economic contexts” (p. 1). In contrast to Mode 1 knowledge production, Mode 2 knowledge is created by transdisciplinary teams who are tasked to solve a particular problem that is both contextually appropriate and practically applicable. Members from the teams may later reconfigure to form new teams to solve new problems and recontextualize knowledge produced. Contextually applied in higher education, Harloe and Perry (2004) characterize the Mode 2 university as: 1) being “closer to government and the market and is more directly responsive to national and regional needs in teaching, research and specific enterprise activities”; 2) taking an interdisciplinary approach to research based on applicable relevance; 3) being innovative, networked and a “key player” in governance; and, 4) “changes in mission and practice are accompanied by internal turmoil, reorganization and restructuring” (p. 217). Table 1 summarizes the key characteristics of Mode 1 and Mode 2 knowledge production.
Table 1.

*Key Characteristics of Mode 1 and Mode 2 Knowledge Production*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mode 1</th>
<th>Mode 2</th>
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<tbody>
<tr>
<td>Nature of knowledge produced</td>
<td>Academic, scientific</td>
<td>Contextual (application-based)</td>
</tr>
<tr>
<td>Environment</td>
<td>Disciplinary</td>
<td>Transdisciplinary</td>
</tr>
<tr>
<td>Skills and experience of workers</td>
<td>Homogeneous</td>
<td>Heterogeneous</td>
</tr>
<tr>
<td>Relation to public interest</td>
<td>Not necessarily present</td>
<td>Socially accountable and reflexive</td>
</tr>
<tr>
<td>Quality control</td>
<td>Peer review</td>
<td>Application</td>
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In the sciences, this opening of knowledge beyond disciplinary boundaries leads to what Nowotny (1993) terms *socially distributed knowledge*. Knowledge production is no longer dependent primarily on researchers, but is also present in public spaces of individual scientific creativity, the space between science and ethno-science⁶, professional and lay knowledge, the market, and public discourse (Nowotny, 1993). This wider distribution of knowledge will have a transformative impact on understandings of knowledge itself (Nowotny, 1993, p. 318).

Guri-Rosenblit (2001) believes that ICTs will aid in the distribution of knowledge and new knowledge forms into academic practices. She writes, ICTs have already
transformed course delivery in higher education and that, “there will also be a growing inter-institutional and international collaboration in producing academic curricula” (Guri-Rosenblit, 2001, p. 495). Such institutional collaboration will lead to an increase in the quality of education provided.

**Massification and post-massification of higher education**

Gibbons (1998) notes that following World War II, industrialized nations realized they needed a larger pool of white collar workers to satisfy new demands in the labor markets. Policies were enacted to enable more young people from working and middle class families to finish secondary education. This created a larger market for tertiary education and enabled the *massification* of post-secondary education, the opening of higher education to the masses (Gibbons, 1998, p. 11). This, he argues, has not only created an expanded market for higher education and continuing higher education, but also expanded the reach of research and new knowledge production outside of the confines of the university (Gibbons, 1998, pp. 11-13).

In an analysis of trends, Gumport, Iannozzi, Shaman, and Zemsky (1997) believe growth in part-time enrollment and rising tuition costs will lead to the formation of an era of post-massification in U.S. tertiary education that will lead to a trend toward privatization (pp. 20-23). They write, “this shift is characterized by increased public scrutiny and calls for accountability, the withdrawal of public support, price resistance and discounting, rising market pressures and competition, a shift toward vocationalism, and persistence problems related to the elongation of time-to-degree” (Gumport et al., 1997, p. 23).

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6 Scientific understandings driven by cultural beliefs.
Commodification of knowledge and the commodification of epistemology

Delanty (1998) writes that the university is no longer the only knowledge-based institution. It is now complemented by an emerging ecosystem of competing knowledge-based institutions. This has lent to the explosive creation of a market for knowledge management. Hellström and Raman (2001) note that this in fact turns “‘knowledge about knowledge production,’ or epistemology, into a commercial product in its own right” (p. 140).

This raises an important question, is knowledge and, by extension, epistemology commodifiable? Citing O’Neill’s (1998) philosophical observation that it is impossible to place values on intangibles, Hellström and Raman (2001) speculate “the possibility of commodification should cause social theorists of knowledge to re-examine their own discourse to perhaps include a critical reflection on the social impacts of their theoretical excursions on knowledge production” (p. 152). The contextually-inappropriate misuse of commodified, abstract ideas, they argue, may provoke a backlash of the knowledge-producing economic model.

The academy in the knowledge society

Focusing on dimensions of knowledge production in the twenty-first century, Slaughter and Rhoades (2004) propose a Theory of Academic Capitalism, centered on networked relationships. The theory states that in the new knowledge economy, universities may no longer separate themselves from corporations or states, and furthermore:

New circuits of knowledge, interstitial organizational emergence, networks that intermediate between public and private sector, extended managerial capacity –
that link institutions as well as faculty, administrators, academic professionals and students to the new economy. New investment, marketing and consumption behaviors on the part of members of the university community also link them to the new economy. Together these mechanisms and behaviors constitute an academic capitalist knowledge/learning regime. (p. 15)

Buchbinder (1993) describes his notion of the *market-oriented university* with the following general characteristics:

- The objectives of higher education that are expressed as the production and transmission of knowledge as a social good are replaced by an emphasis on the production of knowledge as an intangible market good, a saleable commodity. In other words, the goals of research and development of knowledge are closely linked to the production of marketable products rather than social knowledge.
- The market will determine the direction of research, not the academic enterprise.
- Focus is placed on the development of corporate-university linkages.

While some authors cite cases of government “interference” in education (see, for example, Gellert, 1999), others note the development of healthier connections between institutions. Recognizing the interconnectedness of the university, industry and governments, Etzkowitz and Leydesdorff propose a *triple helix* model of academia-industry-government relations (1997). The model was created to break from linear conceptualizations that presumed “only long-term contributions of academic knowledge to the economy” (Etzkowitz & Leydesdorff, 1997, p. 1). With the rise of the new
knowledge economy, however, shorter-term contributions and linkages to industry and states are increasingly present.

By virtue of working in the knowledge economy, individuals and institutions rarely function solely in one of the three institutional categories (academy, industry and government) and cross-over relationships frequently occur (Etzkowitz & Leydesdorff, 1997, pp. 155-156). These repeated linkages contribute to the binding of the triple-helical structure of the model. These linkages require the university to communicative competencies to translate between the institutional cultures and codes it interacts with (Etzkowitz & Leydesdorff, 1997, pp. 158-159). This orientation toward the capitalization of knowledge is leading to a reconceptualization among academic professionals of their roles in research (Etzkowitz, 1998).

Several authors have expressed concern in regard to the commercialization of the university (see esp. essays in Stein, 2004). Duderstadt (2004) is concerned that pressures for commercial success will cause academia to discontinue production of knowledge for the public good and will instead produce knowledge (and protect the knowledge produced) for their self interests. He concludes that, in U.S. universities, “the nature of higher education as a public good rather than simply a market commodity needs to be recognized by higher education and reestablished by strong public policy and public investment […] because the future of the university in an ever more knowledge-driven society is clearly a national concern” (Duderstadt, 2004, p. 73).

Impact on academic professionals

Where new modes of knowledge production, the commodification of knowledge, and the university intersect, several authors note that academic freedoms may appear to
be in decline and that academic professionalism needs to be reinvented (see esp. Enders, 1999; Menand, 1996). In Mode 1 knowledge production models, knowledge produced by academicians is initiated by their own interests and inquisitiveness (Gibbons et al., 1994). Under a Mode 2 model, the focus of knowledge production rests on its purposeful, contextual application. This causes the previously protective, Balkanized spaces of discipline-specific knowledge production to “meltdown” (Menand, 1996, pp. 17-18).

Disciplinarity, Menand (1996) argues is “philosophically weak” and “deserves to be replaced” (p. 19). He further states that the dissolution of disciplinary boundaries in U.S. higher education drives university administrations to address realignment:

[…] when disciplines and departments dissolve, the machinery of self-governance becomes more difficult to maintain. For even if there is no “field” for contributions to knowledge to be measured against, and no department to determine which of its subspecialties need staffing and who is qualified to undertake the job, decisions about hiring, promotion, and curricula have to be made somewhere, and that somewhere is likely to be the office of the dean or the provost. Administrators faced with allocating dwindling resources in the period of retrenchment that now seems upon the American university will be delighted to see the disciplines lose their authority, for it means spreading fewer faculty farther, and it gives them far greater control over the creation and elimination of staff positions. (Menand, 1996, p. 18)

Altbach (1998) writes that transformations in the academy is creating a new professional model where part-time and non-permanent hires will outnumber full-time
faculty, newly hired academic professionals will be more diverse in terms of gender, race and ethnicity, and where faculty would not represent the “best and the brightest” of their fields (pp. 351-352). These changes suggest an emergence of a new ontological nature of being in the academy. Nixon (2001) writes that the modern academy needs to reconsider its underlying values toward professionalism. Academicians need to go beyond their “old values” and explore a “new” academic professionalism that has the capacity to be outward-looking, inclusive, and morally courageous” (pp. 183-184). Barnett (2000) calls for the similar development of “an epistemology for uncertainty” in an age of increasingly supercomplex relationships, that builds:

1. The capacity for revolutionary framing;
2. The capacity for critical interrogation of all claimants for knowledge and understanding;
3. The capacity for enabling individuals to feel at ease in an uncertain world;
4. The capacity for developing power of critical action. (p. 420)

*Toward a post-knowledge society: Mode 3*

Harkins, Tomsyck and Kubik (2002) extend the idea of the knowledge society and knowledge economy to a technologically-augmented *innovation economy*. The innovation economy “refers to both process and outcome: innovative processes transform an invention to a successful product; many successful products characterize an innovation economy” (Harkins et al., 2002, p. 18). The innovation economy is primarily “built” from *creative destruction and continuous improvement*, the *replacement* and *digitization* of *knowledge worker capabilities* by advanced computer software (Harkins et al., 2002, pp. 1-18). Central to this conceptualization of a future social and economic reality is the
nature of technology – and particularly that of information technology – to drive accelerating change.

As a consequence of transitioning to an innovation economy and innovation society, Harkins, Vysoka and Mollberg (2005) propose a third mode of knowledge production. While Mode 2 knowledge production is focused on group and team efforts, their proposed Mode 3 form of knowledge production focuses on individual knowledge production, centered on individuals’ unique innovative creativity. Contextualized Mode 3 knowledge is intended to primarily benefit the individual knowledge producer with knowledge fed forward into the greater social and economic contexts.

Related to contextualized Mode 3 knowledge, Pine and Gilmore (1999) refer to an “experience economy,” built on the transformation or recontextualization of services to meet the needs of individual customers. Service providers (an economic sector which includes higher education) are refocusing on providing added value to the customer experience. Pink (2005) writes on the rise of a “Conceptual Age,” fueled by creative, value-adding inputs into –and the creative recontextualization of– products and services. He writes that old economy, logic-driven, “left brain” thinking and doing needs to be supplanted by creative, “right brain” thinking and doing, and that, “in the Conceptual Age, what we need instead is a whole new mind” (Pink, 2005, p. 51).

**Trend III: Accelerating change**

“All sufficiently advanced technology is indistinguishable from magic.”

Arthur C. Clarke (1972, p. 189)

A comparatively small, yet emerging, body of literature discusses accelerating technological and social change. This section discusses key concepts, impacts and
consequences of this change. Kurzweil (1999) *Law of Accelerating Returns* is described in relation to accelerating change in society. Several near-future scenarios for the university are then presented, followed by a discussion of knowledge production augmented through emerging, constructivist technologies.

*A very different future*

Kurzweil (1999) postulates a theory he labels the *Law of Accelerating Returns* to describe the evolutionary process that leads to accelerating technological and social change:

> As order exponentially increases, time exponentially speeds up (that is, the time interval between salient events grows shorter as time passes). (Kurzweil, 1999, p. 30)

In other words, change is occurring rapidly, and the pace of change is increasing. Kurzweil’s idea is founded on the proposal that as technologies evolve, the technologies improve, costs decrease; and, in turn, the process of technological evolution advances and speeds itself up. As technologies evolve, so will society. The social-technological theoretical linkage to development has been hypothesized since at least Morgan (1877) published his anthropological observations on the development of civilizations.

Baumol (Baumol & Towse, 1997; Baumol & Wolff, 1998) makes two key economic predictions regarding the effects of accelerating technological change in education. First, unemployment and the duration of unemployment will increase as workers will struggle to align their skills with the pace of accelerating change (Baumol & Wolff, 1998, p. 1). Baumol and Wolff (1998) write:
As the frequency with which workers need retraining increases, a higher percentage of those who are fired will be unskilled, and it will take those workers longer than before to find reemployment. This is clearly a way in which increased rapidity of technical change can add to the average duration of unemployment, even without taking into account the frequency with which such change increases the need for superior worker skill and education, thereby reducing still further the relative value of an unskilled worker. (p. 2)

Baumol and Wolff (1998) state that, “improving education is the approach that is most likely to have substantial and lasting results” (p. 5). Education, however, is subject to his second prediction, a “cost disease” hypothesis, which describes a productivity lag in labor-intensive industries that struggle to keep pace with accelerating change (see esp. Baumol & Bowen, 1966; Baumol & Towse, 1997). This results in reduced growth in productivity, and, as a result, the cost of educational services increases. Writing on Baumol’s related work on rising costs in the performing arts services sector, Heilbrun (2003) states the cost disease problem is not necessarily bleak: “The problem of productivity lag exists only because there is persistent technological progress in the general economy which causes a rise in output per work hour and in real wages, in other words a rise in per capita income, which, in turn, increases the demand for the arts” (p. 99).

Kurzweil (2005) and H. P. Moravec (1988; 1999) believe that, within this century, technological advances will lead to the merging of humans and machines, allowing for almost instantaneous communication, sharing of existing knowledge and the exponential
growth of new knowledge. This technological and social development, writes Kurzweil (2005), will change the very nature of individual work and knowledge production:

Learning will first move online, but once our brains are online we will be able to download new knowledge and skills. The roll of work will be to create knowledge of all kinds, from music to art to math and science. The role of play will be, well, to create knowledge, so there won’t be a clear distinction between work and play. (p. 300)

H. P. Moravec (1999) writes, “today’s world exceeds the wildest imaginations of Jules Verne, Benjamin Franklin, Leonardo da Vinci, Roger Bacon, Archimedes or the Daedalus of myth. The world of our mind children will transcend our imagination by an even greater margin […] the real future will be even harder to reconcile with intuitions derived from the tiny piece of reality we’ve experienced thus far” (p. 163). He argues that we must therefore become more willing to imagine futures that stretch our creative limits.

Minsky (1988) writes, “we tend to think of knowledge as a good in itself, but knowledge is useful only when we can use it to exploit our goals” (p. 57). Increasingly, however, authors argue that it is becoming difficult to set goals based on human foresight and imagination. Vinge (1993) terms the theoretical limit of human foresight and imagination as the Technological Singularity. As the rate of technological advancement increases, it will become more difficult for a human observer to predict to determine future technological advancements. Given the rate of exponential advancement identified by Kurzweil (2005), the rate of technological advancements in the future may seem
nearly simultaneous. At this point, Vinge and Kurzweil hypothesize society will reach the Technological Singularity.

It is important to note that not all authors hold utopian visions of a future society based on significant technological developments. In normative and exploratory futures research, Glenn and Gordon (2003) recommend consulting science fiction literature for both expert and creative inputs into futures investigations. Indeed, a large – and popular – body of science fiction works present dystopian visions of the future based on technological progress (see, for examples, Huxley, 1998; Scott, 1982).

Dystopian concerns are also present in conventional literature. Citing current and emerging advances in biotechnology, Fukuyama (2002) expresses concern that human nature (and what it means to be human) will dramatically change in the future, and that the global community will not be able to stop these advances. To survive as a society, he argues, we must slow down the pace of technological advancement and reconsider our future directions. Others differ in opinion and write on the Nietzsche-esque (1995) possibility that we will transcend these concerns and limitations through technological progress that will artificially evolve humanity to transhumanity and posthumanity (see esp. Hayles, 1999; see esp. Kurzweil, 2005; H. P. Moravec, 1988; C. T. Rubin, 2003).

Together, however, the above reviewed resources converge on the assessment that the future of humanity—and, by extension, education—will be very different than anything experienced in history to the present. To approach the future of education in an age of accelerating change, we must expand our horizons and build universities that are creative, edgy and hard-charging (Harkins & Moravec, 2006). The remaining paragraphs
in this section explore several near-term scenarios for the future of the university in a period of rapid technological change.

*Three near-term scenarios for technologically-driven futures*

Skolnik (2000) and Dator (2000) predict that advances in technology and rapid virtualization of the university will result in the reduction of academic jobs, and trends toward the economizing of faculty jobs will result in a marked decrease in academic freedoms and in an increase in performance measurement. Abeles (2000) believes faculty need to resign to this reality and reconsider its role in a technologically-driven society where the cost and the “half-life of knowledge” will rapidly decrease in the near future (pp. 84-85). He asks, “will the Web browser, nailed to the door of the Academy, have the same consequences that Martin Luther’s parchment had on the Catholic Church?” (p. 82).

Given these challenges, Rooney and Hearn (2000) identify three scenarios for the future of the university, the latter two of which are co-considered in the following subsection:

1. a “do-nothing” scenario where little is invested into transforming the infrastructure of the university and its future is shaped by external forces (p. 99);
2. a “commodified university” where teaching staff are replaced by technology for the delivery and assessment of student learning (p. 99-100); and,
3. an “on-line learning community” where technology is used to “connect and increase the diversity of knowledge through networks” (p. 100).
Another scenario: Knowledge production through constructivist AIT

Radical constructivism holds that it is impossible to know if an absolute reality exists. “Knowledge” of “reality” is not generated by observing external stimuli, but rather is constructed through a complex, systems process. Knowledge is therefore constructed from differing interpretations of reality and shared interpretations are constructed through discourse (Foucault, 1972). In modern education, constructivist theories center on student-initiated learning. The educator’s role is to merely facilitate the process. A social, coconstructivist automated information technology-mediated knowledge transfer system, however, would remove the power-based roles of teacher and student, and, through social communication, jointly construct new metanarratives of reality. Relational horizontality among actors in the system would be maximized.

Many writers (see, for example, Afele & NetLibrary Inc., 2003; Bajunid, 2001; Hepp, Hinostroza, Laval, & Rehbein, 2004; Johnson, 2002; Soete, 2001; Stromquist & Samoff, 2000) cite ICT as a leading technological means for development toward the knowledge society and the knowledge economy. Hakken (2003) writes, in formal education today,

While coconstructivist approaches provide the most fertile ground for the transformative case, evidence that AITs are being used to apply them is in itself insufficient to justify the transformative case. Coconstructivism demands the kind of general reconceptualization of knowledge in any social formation…” (p. 306)

As Schank (2002) notes, no educational revolution appears to be underway due to the introduction of ICT in the classroom. The nature of education, however, is changing
outside the classroom. For example, by fostering “democratic” communication, knowledge production and transfer, blogs today challenge the power relationships traditional media, politicians and businesses have over society (Richardson, 2005). New social, economic, political and cultural contracts are being developed to respond to deal with the “threats” new media pose on existing relationships.

Vanderstraeten (2001) argues the potential of cybernetics and ICT has not been utilized fully and the future potential of these technologies is discounted. Kurzweil (2005) writes, “with the accumulated knowledge of human civilization increasingly accessible online, future artificial intelligences (AIs) will have the opportunity to conduct their education by accessing this vast body of information” (p. 294). While ICT today is centered on information storage and retrieval, advancements in new technologies and systems science nearly guarantee a future role for AI in new knowledge and context creation. Such advancement will stem from the epistemological development of strong AI (see esp. Lacey & Lee, 2003; J. W. Moravec, 2006; van Gigch, 1990).

Because of this, the development of strong AI in the future may lead to a general reconceptualization of education that transcends the boundaries of traditional learner environments. Already, modern advances in electronic gaming technology (viz. video games) allow people and AI to participate in collaborative creative processes and develop new social awareness (Kurzweil, 2005, p. 341).

Prensky (Prensky, 2001, 2002) believes that the distinction between learning and entertainment should be eliminated. Traditional higher education curricula, he writes, is “painful” and “drudgery” (Prensky, 2002, p. 5). University experiences, he believes, can be made both fun and educational by integrating electronic gaming and simulations
elements that college students already embrace. Citing the influence of on his visions of
the future, Dator (2005) believes integration of gaming technologies into the curricula
would add to the value of an institution, and writes, “quality education in my preferred
future will strive to raise the gross individual cool and not the gross national product.
Performance and shtick will replace labor and product, and the Word is out!” (p. 213).

Summary and implications: Emergence of a New Paradigm

In a comprehensive analytical report that examined a paradigm shift in physics,
chemistry, brain theory, mathematics, biology, philosophy, political theory, linguistics,
consciousness, psychology, religion and spirituality, and the arts, Schwartz and Ogilvy
(1979) note an “emergent paradigm” that is constructivist in nature. The work built upon
the frameworks described by Kuhn (1962) that described epistemological paradigm shifts
in the sciences. At the time of the report, the authors noted shifts from simple, hierarchic,
mechanical, deterministic, linear, assembly and objective paradigms of thought and belief
to a new paradigm that is complex, heterarchic, holographic, indeterminate, mutually
causal, morphogenic, and perspectival (Schwartz & Ogilvy, 1979, pp. 10-15).

Using the work by Schwartz and Ogilvy (1979) as a model, it can be extended
that the three trends of globalization, emergence of the knowledge society and
accelerating change contribute to what might be best termed a New Paradigm in higher
education. The New Paradigm reflects the emerging shifts in thought, beliefs, priorities
and practice in regard to all levels of education in society. The surfacing New Paradigm
suggests that Schwartz and Ogilvy’s (1979) then-emergent paradigm has reached
maturity, and that new patterns of thought and belief are forming to harness and manage
the chaos, indeterminacy, and complex relationships of the postmodern. Table 2 lists
hypothetical keys characteristics of the New Paradigm in comparison with Schwartz and Ogilvy’s (1979) *old* and *emergent* paradigms.

Table 2.

*Three Paradigms in the 20th and 21st Centuries*

<table>
<thead>
<tr>
<th>Domain</th>
<th>Old</th>
<th>Emergent</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamental relationships</td>
<td>Simple</td>
<td>Complex</td>
<td>Complex creative (teleological)</td>
</tr>
<tr>
<td>Conceptualization of order</td>
<td>Hierarchic</td>
<td>Heterarchic</td>
<td>Intentional, self-organizing</td>
</tr>
<tr>
<td>Relationships of parts</td>
<td>Mechanical</td>
<td>Holographic</td>
<td>Synergetic</td>
</tr>
<tr>
<td>Worldview</td>
<td>Deterministic</td>
<td>Indeterminate</td>
<td>Design</td>
</tr>
<tr>
<td>Causality</td>
<td>Linear</td>
<td>Mutual</td>
<td>Anticausal</td>
</tr>
<tr>
<td>Change process</td>
<td>Assembly</td>
<td>Morphogenic</td>
<td>Creative destruction</td>
</tr>
<tr>
<td>Reality</td>
<td>Objective</td>
<td>Perspectival</td>
<td>Contextual</td>
</tr>
<tr>
<td>Place</td>
<td>Local</td>
<td>Globalizing</td>
<td>Globalized</td>
</tr>
</tbody>
</table>

Fundamental relationships in the New Paradigm are built on teleological (purpose-driven) systems\(^7\) in a globalized, new knowledge producing environment in an era of accelerating change. Recalling Pink’s (2005) Conceptual Age, old economy, logic-driven activities no longer suffice. Socioeconomic success requires creative inputs that are built on complex relationships to provide “value added” to otherwise commoditized goods and services. The worldview in the New Paradigm is therefore design-oriented and constructivist in nature; and, reality is augmentable and contextual.

The almost spontaneous rate of change in the Technological Singularity requires a conceptualization of order and a relationship of parts among systems that are self-organizing and synergetic due to complex relationships in accelerating change. Such technologically-driven change is also intentional and coconstructivist in nature. Furthermore, the accelerating rate of change and accelerating rate of returns related to the Technological Singularity create a perception that anticausal processes (dependent on future inputs) are involved. The era of accelerating change encourages creative destruction and reinvention in organizations as opposed to linear assembly or morphogenic change processes.

A key element missing in the literature reviewed is that the three phenomena driving the New Paradigm are rarely explored together as a whole, particularly as it pertains to higher education leadership. This is not only reflected as a key deficiency in the literature, but also in the policy practices of education at all levels. By putting the pieces of the New Paradigm together through the forecasting of futures for higher education, leadership implications, consequences and policy actions may be identified.

The remainder of this study seeks to address this issue by identifying potential futures for higher education in Minnesota and their related implications, consequences and policy actions in light of the New Paradigm.
CHAPTER 3: METHODOLOGY

Introduction

This study explores the three driving factors of the New Paradigm of knowledge production in higher education and its long-term leadership implications. The problem is the three phenomena driving the New Paradigm are rarely explored together as a whole, particularly as it pertains to higher education leadership. This is not only reflected as a key deficiency in the literature, but is also perhaps reflected in the policy practices of education at all levels. By putting the pieces of the New Paradigm together through the forecasting of futures for higher education, new leadership implications, consequences and policy actions may be identified.

The purpose of this study is to identify potential futures for higher education and their related implications, consequences and policy actions in light of the New Paradigm. The central questions of this study are therefore 1) What are the potential futures of higher education in Minnesota related to the three driving trends of the New Paradigm? And, 2) what are the implications and policy actions for higher education given these futures?

Brief synopsis of research design and rationale

In this study, an environmental scan through a review of the relevant literature was first used to identify possible futures for higher education in the United States. These futures were categorically assigned among the three driving trends of the New Paradigm. Findings from the literature review were inputted into a Delphi process, paneled by the foremost experts on leadership in Minnesota higher education: presidents,
chancellors, provosts or equivalent leaders (or their designates) from Minnesota higher education institutions. Using statements generated from the literature review, each participant was asked to rank each statement’s level of importance, level of acceptability and possibility of occurrence using a 1-4 Likert-type scale. After group consensus was achieved for each item, leadership implications, consequences and potential policy actions were explored.

This study is explorative, qualitative and normative in its taxonomy. A futures-oriented scan of the relevant literature was used to provide inputs in the form of profound statements on the future of higher education. This is intended to improve the design of the Delphi, which would otherwise rely on the researcher’s best judgment for the selection of items to be ranked in the study.

The Delphi method was employed to determine and build group consensus on potential futures for higher education in Minnesota. Because panelists explored potential policy actions and the study may be used as a policy tool, this study resembles a Policy Delphi (see esp. Ziglio, 1996, pp. 7-8). Instead of building a group consensus for policy actions, however, this study generates an ecosystem of potential implications, consequences and policy actions for each item considered.

The Delphi method

The Delphi method was developed by the RAND Corporation in the 1950s and 1960s as a means to collect and measure opinion within a group of experts (Linstone & Turoff, 1975, p. 10). Although the method has its roots as a more basic, controlled discussion, Dalkey (1969) writes that Dalkey and Helmer (1963) “introduced an additional feature, namely iteration with controlled feedback” (Dalkey, 1969, p. 15).
This iterative process for achieving group consensus later became known as the “Delphi” method, named after the mythical Oracle at Delphi. Although the Delphi method is rooted in the support of the RAND Corporation’s Cold War military and government research, it gained acceptance as a long-term futures research methodology in the 1960’s and continues to be regularly employed since (Gordon, 2003, pp. 3-4). For researchers, it is important to keep in mind that despite the method’s oracular name, it should not be misconstrued as a method for predicting future events (Turoff & Hiltz, 1996, p. 56).

The method is qualitative, normative and exploratory in design. Dalkey (1969) writes that there are three general characteristics to a Delphi study: “(1) anonymity, (2) controlled feedback, and (3) statistical group response” (p. 16). Anonymity among participants is used to reduce *groupthink*, the uncritical acceptance of a powerful participant’s point of view. Controlled feedback, writes Dalkey (1969), “is a device for reducing noise” (p. 16). Gordon (2003) labels this as a “controlled debate,” where “reasons for extreme opinions are made explicit, fed back coolly and without anger or rancor” (p. 5). The iterative summarization of results to participants allows the researcher and expert group to focus on achieving a group consensus on items considered. Descriptive statistical reporting allows for the mean and variation of the group’s responses to be better understood by the expert group and researcher throughout the process. It is important to note that because of the size of the group of experts and non-random sampling procedure, statistics produced are not generalizeable and should be used for illustrative purposes only (Gordon, 2003, p. 5).

The Delphi method has evolved over time, and, today, there is little consensus on how, precisely, a Delphi study is procedurally conducted. This phenomenon has lent to
the creation of mini-Delphis and “Delphic” studies that are often mixed with other methods. Gordon (2003) describes Delphi studies as generally adhering to the following procedural formula:

1. Establish research question(s)
2. Identify and invite experts to panel
3. Distribute questionnaire and gather data
4. Identify range of opinions in questionnaire
5. Create second questionnaire, distribute to all experts, but ask extremes (non-median respondents) to reassess their responses and provide reasons why their responses deviate so greatly
6. Create third questionnaire, distribute to all experts for reassessment and provide reasons for extreme reasons gathered in second questionnaire responses; again, request reasons for non-modal responses
7. If necessary, create fourth questionnaire and distribute to all experts for final reassessment

There are several key criticisms of the Delphi method, centered on the question of reliability. Ziglio (1996) notes that little literature has emerged since the 1970s that examine reliability of Delphi studies, even as new technological advances (e.g., ICT) allow for new and innovative implementations of the method (p. 16). Delphis are reliant on the expertise of participants, and, as Dalkey (1969) writes, “there is no clear sense in which value judgments [by experts] can be said to be true or accurate” (p. 73). It is therefore important to carefully select panelists in a Delphi for their expertise.
Opinions vary in how many experts should be empanelled on a Delphi to produce reliable results. Considering factors such as the availability of resources and the expertise of panelists, Armstrong (Armstrong, 1985) recommends group sizes of \( n=5 \) to \( n=20 \). Dalkey (1969) found that when relating reliability to reproducibility, expert group size should be considered. Although there is no prescribed group size for Delphi studies, average group error decreases with the number of participants (Dalkey, 1969, pp. 10-12). This relationship is illustrated in Figure 3. Furthermore, the relationship between reliability and group size is approximately linear between group sizes of \( n=3 \) and \( n=11 \); but in group sizes greater than \( n=11 \), the linear relationship ceases to be present (Dalkey, 1969, pp. 10-12). From this analysis, it appears that an expert panel consisting of greater than \( n=11 \) members can be expected to provide a reasonably low group error and reliability by this measure.
Figure 3.

*Effect of Group Size in a Delphi Study.*


In a review of the literature, Nash (1978) identified the Delphi method as an appropriate method for exploring issues in educational planning. The method, he found, is also useful when working with an expert group not regularly engaged in research. In educational leadership, employment of the Delphi may result in secondary benefits beyond the original scope of the research. In their review of the literature, Kurth-Schai, Poolpatarachewin and Pitiyanuwat (2000) found that “past studies suggest that participation [in Delphi exercises] catalyses and supports clarification of facts and values, exploration of alternative perspectives and possibilities, and development of critical,
creative and systemic thought” (p. 95). The implication is that not only can the Delphi method be used to determine group consensus in regard to the future, but may also enable the group to better design their futures. This study is intentionally designed to maximize this effect through a series of reflective questions in the final Delphi round, and through a follow-up academic activity to discuss the study’s findings among participants (described below in “Proposed study design”).

Environmental scanning

Gordon and Glenn (2003) describe environmental scanning as a qualitative and explorative approach to divining visions of the future and providing inputs to strategic planning. Moreover, “the objective of a scanning system is simply to find early indications of possibly important future developments to gain as much lead-time as possible” (Gordon & Glenn, 2003, p. 3). The method is appropriate in situations where issues management and strategic planning are concerned, and where it is used to improve futures research design (Gordon & Glenn, 2003). Results from environmental scanning are therefore intended to be easily used in conjunction with other methods. In this study, results from an environmental scan are inputted into the first round of the study’s Delphi process.

According to Gordon and Glenn (2003), there are two general approaches to environmental scanning. The first technique utilizes expert panels to provide observations and judgments regarding trends that impact the future. The second approach relies on reviews of media, database searches and/or reviews of relevant literature authored by subject matter experts. As a comprehensive literature review has
already been conducted (see Chapter 2), the latter approach was utilized in this study to provide informed inputs into the construction of the first round Delphi instrument.

Design of the study: Overview

This study consists of three phases. In the first phase, to fuel the creative visioning process, a review of the literature scanned for futures of higher education in the United States as well as for global trends in higher education. Findings from the literature review were inputted as items for scoring into a Delphi process (second phase) to determine the level of importance, level of acceptability and possibility of occurrence for each item identified. The Delphi was paneled by presidents of higher education institutions in the State of Minnesota. In the third phase, results from the Delphi were qualitatively analyzed, using grounded theory construction, to identify themes and patterns, and findings are reported. The flow of this process is illustrated in Figure 4.
Figure 4.

*Flowchart of Research Methodology.*

Phase I

- **Environmental scan/Literature review:**
  - Identify items for Delphi rounds

Phase II

- **Delphi round 1:**
  - First ranking
  - Identify new items

- **Delphi round 2:**
  - Second ranking
  - (rank all items + any new items)

- Did group reach consensus?
  - No: Repeat Round 2 as necessary
  - Yes: Collect final round data

Phase III

- Analyze and report findings
Phase I: Literature review and construction of Delphi instrument

Selection of statements

A review of the literature presented in the second chapter of this study was used to supply creative, profound or otherwise seemingly provocative statements regarding the future of higher education for input into this study’s Delphi phase. Because the literature reviewed covers global trends, the specific issues explored in the study are not specific to Minnesota higher education.

As participants were invited to suggest additional statements for inclusion in the second phase of the study, it was necessary to limit the number of statements inputted into the first Delphi round from the literature review. To control the number of questions carried into the Delphi phase, a limit of six statements are selected from each of the three components of the New Paradigm of knowledge production. The brief statements abstracted from the literature—and their sources—are provided in Appendix A.

It is important to note that the time horizon for the “future” of higher education was purposefully undefined due to the influence of accelerating change and the ambiguities associated with the theorized approach of the Technological Singularity. By not specifying a precise future date, each expert in the next phase was permitted to extend their creative forecasts toward their individual horizons.

Construction of the Delphi instrument

In the design of Delphis, Goldstein (1975) cautions researchers to “be alert for ambivalent wording” and to “try to preserve the intent of the originator” (p. 220). Profound statements identified in the Phase I review of the literature were consolidated into a master file and grouped, combined and/or trimmed where similar themes occur.
The resultant statements were used for the first round of the Delphi phase. To best ensure the key ideas of the original sources were preserved and that ambivalent wording was avoided, consolidation of the Delphi statements were rendered in consultation with the researcher’s academic advisor.

Construction of the first round Delphi instrument was closely modeled after the first round of the AC/UNU Millennium Project International Assessment of Inspiring Goals for 2050 study (see esp. Glenn & Gordon, 2005, Appendix F). The first part of the first round instrument asked Phase II participants to rate the importance, acceptability and possibility of each profound statement identified in the environmental scan of the literature. The second part of the instrument invited Delphi participants to submit additional statements to be included for rating in Round 2 of the Delphi. A copy of the first round Delphi instrument is provided in Appendix C.

Phase II: Delphi panel

Sampling procedure

Invited panelists for this study consisted of university presidents (or equivalent office holders), or their designates, at the University of Minnesota, Minnesota State Colleges and Universities (MnSCU), and Minnesota private colleges and universities. The schools, identified through a Metronet8 (2006) listing, comprise a population of N=83. The list of institutions is provided in Appendix H.

Due to the varying professional interests and obligations of the sample population, it was impossible to predict a response rate for an electronic, three-round Delphi exercise.

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8 Metronet was established by the Minnesota State Legislature in 1978 to provide long-range planning, communications, resource sharing, database development, delivery and continuing education to libraries in Minnesota and the communities they serve.
A first round response rate of 50% was initially assumed. Because computer-based Delphis may be conducted asynchronously (Ziglio, 1996), it is possible to invite additional respondents to participate in case of an unfavorable response rate. To achieve a Delphi group of 20 respondents, 40 experts were initially invited to join the panel. Because this study is focused on educational leadership, the initial invited Delphi group consisted of university presidents, chancellors or equivalent leaders (or their designates) of: the five University of Minnesota campuses, 19 of 32 MnSCU colleges and universities, ten regional or national private institutions, two online-only universities, and four randomly selected private tertiary institutions.

**Improving response rates**

The principal mode of data collection in this phase was through an electronic Delphi in the form of survey questionnaires. Dillman (2000) identifies five elements for improved response rates in survey research:

1. use “respondent friendly” questionnaires (p. 150);
2. four contacts that include a brief prenotice letter, the survey questionnaire, a thank you postcard, a replacement questionnaire for nonrespondents, and a final contact made by a different mode (p. 150-151);
3. personalizing the survey communication by including first-class stamps on return envelopes (p. 152);
4. personalizing correspondences to participants wherever possible (p. 152); and,
5. the use of “token prepaid financial incentives” (p. 152).

Of these five elements, only the third is not feasible in computer-based research. All care was taken, however, to ensure the principles of the other four elements were
observed. Personalized, prenotice letters were sent to invited participants as well as their assistants by email. The prenotice letters were modeled after an example provided by Dillman (2000, pp. 156-170). All subsequent correspondences (including the Delphi questionnaires) were user-friendly and personalized.

In regard to the fifth element for improving response rates, the researcher worked to organize a professional incentive in the form of a conference session and invited dialogue on the Delphi group’s findings in spring, 2007. This activity will be incorporated into a conference on April 30, 2007 organized by the *Horizon Forum*, a focused discussion on the future of PK-12 education in Minnesota, sponsored by the Office of Continuing Professional Studies in the College of Education and Human Development at the University of Minnesota.

**Data to be collected**

For each item identified in the scan of the higher education environment provided by the literature review, consensus (or dissensus) of that item’s importance, acceptability and possibility of occurrence were measured for group consensus using a 1-4 Likert-type scale. For items where consensus was reached, individual-level short responses on leadership and strategic implications were collected.

In addition to the importance of measuring consensus among a group of experts, Linstone (1975) notes that it is acceptable for a Delphi study to identify dissensus in a panel of experts (p. 27). Therefore, for each item’s measure of importance, acceptability and possibility of occurrence, this study is interested in measuring both consensus and dissensus. A stable, unimodal distribution of opinions on an item was considered as an indicator of group consensus for that item. In the event a stable, bimodal or flat
distribution of opinions ultimately emerges for an item, a group dissensus would be reported.

Two general methods are identified in the literature to measure consensus and dissensus. Scheibe, Skutsch and Schoffer (1975) recommend measuring consensus through the stability of opinion over subsequent rounds (pp. 271-275). They note that while “there is a strong natural tendency in the Delphi for opinion to centralize, resistance in the form of unconsensual distributions should be viewed with special interest” (Scheibe et al., 1975, p. 271). This approach uses column-wide subtraction of each item’s histogram to determine the amount of change over successive rounds. Although there is no specific statistical theory that may be applied to determining stability of opinions in a typical Delphi study, the authors recommend using a 15% change level as an “equilibrium” cutoff where “any successive distributions with more than 15% change should be included in later rounds of the Delphi, since they have not come to the equilibrium position” (Scheibe et al., 1975, p. 273).

In examining expert consensus of policy issues, Raskin (1994) found that measuring interquartile deviation (IQD), is a useful indicator of consensus among respondents. This study uses this approach to measure consensus and dissensus. IQD for an item is calculated by dividing absolute value of the interquartile range (difference between 75th and 25th percentiles of responses for a variable) by two. In general, an IQD score for an item of 1.00 or less indicates consensus. Lower IQD scores, furthermore, indicate greater degrees of consensus. Rayens and Hahn (2000) recommend the use of IQD for measuring consensus, but caution against its possible misinterpretation in Policy Delphi studies that rely on a Likert-type scale with a range of 3.00. In such studies, the
authors write, “an IQD of 1.00 may be an insufficient criterion for determination of agreement, especially with only four response categories per item” (Rayens & Hahn, 2000, pp. 314-315).

As this study employs a 1-4 Likert-type scale (with a possible range of 3.00) to measure responses, items with an IQD score of 1.00 required greater scrutiny to determine if consensus was achieved. In cases where items produce an IQD score of 1.00, Rayens and Hahn (2000) recommend analyzing the proportion of responses to determine consensus, using a 60% (positive or negative response) cutoff (p. 315). This study design employed such an analysis for all items with an IQD score of 1.00, after all rating rounds were concluded, to determine if consensus is achieved for items.

Data collection: Round I

Using statements from the environmental scan of the literature, each participant was asked to rank each statement’s level of importance, level of acceptability and possibility of occurrence using a 1-4 Likert-type scale. The level of importance measures were ranked from 4 (highly important) to 1 (highly unimportant). The level of acceptability measures were ranked from 4 (highly acceptably) to 1 (highly unacceptable). The possibility of occurrence measures were ranked from 4 (highly likely) to 1 (highly unlikely). Statements were divided into three sections comprised of the three trends uncovered in the literature review: globalization, emergence of the knowledge society and accelerating change. Participants were asked to complete the first round questionnaire within one week.

The instrument instructions also invited participants to comment on any of the items in each section. This was asked to improve the clarity and scope of the second
round of the study. Finally, expert panelists were asked to provide additional profound statements and their detailed descriptions for rating in subsequent rounds of the Delphi.

Data collection: Subsequent rounds

The second round questionnaire was constructed from the results of the first Delphi round and was intended to further solidify the group’s degree of consensus for each item. Each item was presented again with a summary of comments from the previous round. Panelists were provided mean ratings for each item from the previous round and asked to re-rate each item’s importance, acceptability and possibility of occurrence using a 1-4 Likert-type scale. In cases where a panelist’s new rating differs from the group mean, that panelist was asked to provide a short comment as to why their rating differs. These comments were shared with all participants in subsequent rounds.

For items that were rated as important and acceptable, but unlikely, where it appears group consensus has already been achieved, each panelist was asked to provide feedback on how the likeliness could be improved. For each item that was rated important, acceptable and likely, where it appears group consensus has already been achieved, each participant was asked to provide feedback on: 1) what the implications are at their college or university; and 2) what can be done in regard to support the item today.

Finally, for each item that was rated important, unacceptable and likely, where it appears group consensus has been achieved, each participant was asked to provide feedback on: 1) what the implications and policy actions are at their college or university; 2) what can be done in regard to the item now to produce an acceptable outcome; and, 3) what if competing institutions accept this item and reorient their policies around it?
Participants were given 18 days to return the second round questionnaire and 19 days to return the third round questionnaire (the due dates were scheduled to coincide with the end of the work week), but deadline extensions were provided at the request of participants. After two rounds, significant degrees of consensus were measured on all items. The third round therefore focused exclusively on the follow-up questions regarding implications, consequences and policy actions.

Phase III: Data analysis and reporting

Analysis of the final round’s qualitative responses employed an inductive strategy based on the content analysis techniques described by Berg (2004, pp. 265-297) for grounded theory construction. The purpose of the analysis is to identify themes and patterns related to implications, consequences and policy actions for the university of today as it heads to the future. The ecology of responses from these data is reported to provide additional illustration and perspective to the Delphi group’s responses. In this study, a grounded theory content analysis process is employed as a tool to facilitate the open coding of data (ad hoc free coding as the data is analyzed) and the sorting of coded data into categories for reporting and discussion. The process flow of the content analysis procedure is illustrated in Figure 5.
Figure 5.

*Process Flow of Content Analysis Procedure.*

Determine sociological constructs for analysis

Open coding of data to establish grounded categories

Determine criteria of selection for sorting data chunks into the analytic and grounded categories

Sort data into categories

Report and discuss findings

Revise, if necessary


Sociological constructs used for analysis are the implications, consequences and policy actions gathered in the final round of data collection. Rubin and Rubin (2005) state that the model of grounded theory, “argues that coding, recognizing concepts and themes, and theory development are parts of one integrated process” (p. 221). They further assert that, by employing open coding, “grounded theories have worked out a systematic approach that often results in fresh and rich results” (H. J. Rubin & Rubin, 2005, p. 222).
NVivo version 2.0.163 for Windows was used to code final round data into categories, and Microsoft Excel 2003 software was used to sort and make any necessary revisions to coding. The resultant, sorted, coded categories were then sorted into ten broader categories for reporting and discussion.

All quantitative data from the Delphi rounds of the study were analyzed using Microsoft Excel 2003 and SPSS 11.5 for Windows. Using the methodology described by Raskin (1994), the collected data were used to measure the degree of consensus—and the change in consensus—between subsequent rounds; and, to measure each statement’s level of importance, acceptability and possibility of occurrence.

Since the fully qualitative portion of this study (round three) was limited to one round and group consensus on the items were not pursued through a reiterative feedback process, descriptive statistical data on the frequency and magnitude of response items are not measured. To help ensure the data were coded and reported in appropriate categories, a draft report of the final round results was shared with all participants, and solicited feedback, corrections and additions to the items it contained. Comments received were compared with the themes and categories reported, and corrections, additions and deletions were made, as necessary.

Limitations

There are several key limitations to this study. The foremost limitation is, despite this study’s future orientation, it is impossible to predict the future. Both Cornish (2004) and Glenn (2003) note that attempts to predict the future have historically resulted in a mix of success and failure. It is therefore important to emphasize that this study is not
intended to predict the future, but rather to explore potential futures and their implications.

Both the scan of the relevant literature and the Delphi are limited by the researcher’s personal judgment in the determination of who is an “expert” qualified to participate in the study. This study attempts to overcome the limitation by using Delphi panelists who consist of top organizational leaders. Qualitative research is interpretative by nature, and, as a qualitative study, it is impossible to separate the researcher from the interpretation of the research (Creswell, 2003, p. 182), and generalizability should not be assumed.

Although this study shares many characteristics of a Policy Delphi, it is not a true Policy Delphi as a group consensus for implications, consequences and policy actions will not be determined in this study. This limitation is due to practical constraints. To generate a group consensus on these items, additional Delphi rounds will be required. As the participants in this group were not compensated for their work, it was not expected that the experts would be interested in continuing in an extended study. In an extended study, these experts should be recognized as consultants and compensated appropriately (Linstone & Turoff, 1975, p. 6). This is not economically possible in doctoral dissertation research. An ecosystem of possible implications, consequences and policy actions will be generated instead, forming pathways to future research.

Finally, it is important to note that this study, like most studies rooted in comparative and international development education research, focuses on macro-level phenomena. Although Delphi participants consist of tertiary education leaders from Minnesota, inputs from the literature review originated from an internationally-diverse
pool of experts. It is possible that while macro-level trends may be adequately explored, micro-level (Minnesota and local community-level) trends are likely to be omitted.

Summary

This chapter presents a methodology and procedures required for identifying potential futures for higher education and their related implications, consequences and policy actions in light of the driving trends of globalization, rise of the knowledge society, and accelerating change in the New Paradigm of knowledge production in higher education. A literature review identified potential higher education futures in the United States. These futures were inputted into a Delphi process wherein a multi-institutional panel of Minnesota higher education leaders determined the level of importance, level of acceptability, and possibility of occurrence for each identified future. Based on their responses, a variety of leadership implications, consequences and policy actions were identified. The next chapter summarizes the results and analysis.
CHAPTER 4: RESULTS AND ANALYSIS

Introduction

Results from all three rounds of this Delphi study are analyzed and presented in this chapter. Analysis of the first two rounds measure group consensus related to the *level of importance*, *level of acceptability* and *possibility of occurrence* for each statement. A narrative summarization of the grounded theory analysis of the third round data reveals ten categorical areas regarding related leadership implications, consequences and policy actions for the statements rated in the previous two rounds.

Sample determination and prenotice letter

Invited panelists for this study consist of university presidents (or equivalent office holders), or their designates, at the University of Minnesota, Minnesota State Colleges and Universities (MnSCU), and Minnesota private colleges and universities. The schools, identified through a Metronet (2006) listing, comprise a population of \( N = 83 \). The list of schools is provided in Appendix H.

Due to the varying professional interests and obligations of the sample population, it is impossible to predict a response rate for an electronic, three-round Delphi exercise. A first round response rate of 50% was initially assumed. To achieve a Delphi group of 20 respondents, 40 experts were initially invited to join the panel via a prenotice letter sent by electronic mail (see Appendix I). The prenotice group consists of university presidents, chancellors or equivalent leaders (or their designates) from: the five University of Minnesota campuses, 19 of 32 MnSCU colleges and universities, ten regional or national private institutions, two online-only universities, and four randomly
selected private tertiary institutions (see the “sampling procedure” section in the previous chapter for detail on the sampling procedure). Following receipt of the prenotice letter, one MnSCU leader and one regional private college president declined to participate in the study, resulting in a pool of 38 participants.

Construction of Delphi statements

Using the methodology described in the previous chapter, 18 profound statements (six, each, related to globalization, rise of the knowledge society, and accelerating change) were constructed for the first round questionnaire from the literature reviewed to determine the level of importance, level of acceptability and possibility of occurrence for each statement. A list of round one Delphi statements with corresponding literature sources is provided as Appendix A. In addition to rating the 18 original statements, the first round questionnaire invited participants to submit additional statements for inclusion, rating and discussion in subsequent rounds. A list of additional statements submitted by respondents and integrated into the rounds two and three questionnaires is provided as Appendix E.

Evaluation of rounds one and two

The purpose of the first round is to perform an analysis of consensus for the initial 18 profound statements, and to solicit and collect additional statements for measurement and discussion in subsequent questionnaires. As noted in the previous chapter, Raskin (1994) found that measuring interquartile deviation (IQD), is a useful indicator of consensus among respondents when examining policy issues. This study uses this approach to measure consensus and dissensus. IQD for an item is calculated by dividing absolute value of the interquartile range by two. In general, an IQD score for an item of
1.00 or less indicates consensus. Lower IQD scores, furthermore, indicate a greater
degree of consensus. Rayens and Hahn (2000) recommend the use of IQD for measuring
consensus, but caution against its possible misinterpretation in Policy Delphi studies that
rely on a Likert-type scale with a range of 3.00. In such studies (including this study),
the authors caution against interpreting an IQD of 1.00 to indicate consensus (Rayens &
Hahn, 2000, pp. 314-315). This study takes a more conservative approach to determining
consensus, relying on an IQD of less than 1.00 to serve as a criterion for measuring
agreement. After two rounds, however, all items possess a measured IQD of less than
1.00, indicating sufficient degrees of consensus for all items have been measured.

Parameters have been set to aid in the interpretation of the quantitative data in this
study. An item is considered to have a high degree of consensus if it has an IQD score of
less than or equal to .25. For IQD scores greater than .25 and less than or equal to .75, a
medium degree of consensus is interpreted. Finally, for items with an IQD score greater
than .75, but no greater than 1.00, a low degree of consensus is determined.

In summarizing the mean scores for each measured item related to a statement,
the response scale range of 3 is divided into 4 possible responses. The interval of each
response is approximately .67. Tables 3, 4 and 5 chart the mean rating interpretations,
based on mean scores in rounds one and two, for each statement’s measured importance,
acceptability and possibility, respectively.
Table 3.

Importance Rating Interpretations, Based on Mean Scores

<table>
<thead>
<tr>
<th>Rating</th>
<th>Mean Low</th>
<th>Mean High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly unimportant</td>
<td>1.000</td>
<td>1.666</td>
</tr>
<tr>
<td>Somewhat unimportant</td>
<td>1.667</td>
<td>2.500</td>
</tr>
<tr>
<td>Somewhat important</td>
<td>2.501</td>
<td>3.333</td>
</tr>
<tr>
<td>Highly important</td>
<td>3.334</td>
<td>4.000</td>
</tr>
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</table>

Table 4.

Acceptability Rating Interpretations, Based on Mean Scores

<table>
<thead>
<tr>
<th>Rating</th>
<th>Mean Low</th>
<th>Mean High</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1.000</td>
<td>1.666</td>
</tr>
<tr>
<td>Somewhat unacceptable</td>
<td>1.667</td>
<td>2.500</td>
</tr>
<tr>
<td>Somewhat acceptable</td>
<td>2.501</td>
<td>3.333</td>
</tr>
<tr>
<td>Highly acceptable</td>
<td>3.334</td>
<td>4.000</td>
</tr>
</tbody>
</table>
Table 5.

*Possibility Rating Interpretations, Based on Mean Scores*

<table>
<thead>
<tr>
<th>Rating</th>
<th>Mean</th>
</tr>
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<td>Low</td>
</tr>
<tr>
<td>Highly unlikely</td>
<td>1.000</td>
</tr>
<tr>
<td>Somewhat unlikely</td>
<td>1.667</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>2.501</td>
</tr>
<tr>
<td>Highly likely</td>
<td>3.334</td>
</tr>
</tbody>
</table>

Round one results

A total of 20 out of 38 invited participants (52.63%) responded in the first round of the Delphi procedure. The first round response group consisted of university presidents, chancellors or equivalent leaders (or their designates) from: two University of Minnesota campuses, 11 MnSCU campuses, four regional or national private institutions, two online-only universities, and one private tertiary institution. In this round, participants were asked rate the level of importance, level of acceptability and possibility of occurrence for 18 futures identified through a review of the literature related to the future of knowledge production in higher education. The instrument was distributed by electronic mail, and is included as Appendix C.

Using criteria to evaluate data (discussed in previous section), tables 6, 7, and 8 summarize each statement’s measured mean scores, IQD scores, and interpretations of
the scores in regard to importance, acceptability and possibility, respectively. A
descriptive narrative of the first round results follow, providing additional detail.

Table 6.

*Measured Importance and Degree of Consensus for First Round Statements*

<table>
<thead>
<tr>
<th>Question number</th>
<th>n</th>
<th>Mean</th>
<th>Interpretation</th>
<th>IQD</th>
<th>Consensus level</th>
</tr>
</thead>
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<tr>
<td>1</td>
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<td>Medium</td>
</tr>
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<td>3.55</td>
<td>Highly important</td>
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<td>Medium</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>3.85</td>
<td>Highly important</td>
<td>0.000</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>3.70</td>
<td>Highly important</td>
<td>0.375</td>
<td>Medium</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
<td>3.20</td>
<td>Somewhat important</td>
<td>0.875</td>
<td>Low</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>3.65</td>
<td>Highly important</td>
<td>0.500</td>
<td>Medium</td>
</tr>
<tr>
<td>7</td>
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<td>2.90</td>
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<td>Medium</td>
</tr>
<tr>
<td>8</td>
<td>20</td>
<td>3.15</td>
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<td>0.875</td>
<td>Low</td>
</tr>
<tr>
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<td>20</td>
<td>3.90</td>
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</tr>
<tr>
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<td>0.875</td>
<td>Low</td>
</tr>
<tr>
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</tr>
<tr>
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<tr>
<td>13</td>
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</tr>
<tr>
<td>14</td>
<td>19</td>
<td>3.00</td>
<td>Somewhat important</td>
<td>1.000</td>
<td>Low</td>
</tr>
<tr>
<td>15</td>
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<td>Medium</td>
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<tr>
<td>16</td>
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<tr>
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</table>
Table 7.

*Measured Acceptability and Degree of Consensus for First Round Statements*

<table>
<thead>
<tr>
<th>Question number</th>
<th>n</th>
<th>Mean</th>
<th>Interpretation</th>
<th>IQD</th>
<th>Consensus level</th>
</tr>
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<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
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<td>Medium</td>
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<tr>
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<tr>
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<tr>
<td>9</td>
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<td>Low</td>
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</tr>
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<td>Somewhat acceptable</td>
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</table>
Table 8.

*Measured Possibility and Degree of Consensus for First Round Statements*

<table>
<thead>
<tr>
<th>Question number</th>
<th>n</th>
<th>Mean</th>
<th>Interpretation</th>
<th>IQD</th>
<th>Consensus level</th>
</tr>
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<tr>
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<tr>
<td>3</td>
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<td>4</td>
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<td>0.500</td>
<td>Medium</td>
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<td>Medium</td>
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*Statement 1: Universities will balance progress and economic prosperity with maintaining tradition.*

Respondents rated this statement as:

- somewhat important (medium degree of consensus);
- somewhat acceptable (medium degree of consensus); and,
- somewhat likely (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 20 of 20 experts responded, of which 1 respondent (5%) rated it as highly unimportant, 2 respondents (10%) rated the statement as somewhat unimportant, 8 respondents (40%) rated it as somewhat important, and 9 respondents (45%) rated it as highly important. The responses result in a mean of
3.25. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The statement is thus interpreted as somewhat important with a medium degree of consensus.

A medium degree of consensus and mean rating of somewhat acceptable was determined for the statement’s acceptability in this round (IQD = .50). Of the 20 respondents, 0 respondents (0%) rated it as highly unacceptable, 2 respondents (10%) rated the statement as somewhat unacceptable, 12 respondents (60%) rated it as somewhat acceptable, and 6 respondents (30%) rated it as highly acceptable. The resultant mean score was 3.2, with .25 and .75 quartile scores of 3 and 4, respectively.

On average, respondents rated the statement as somewhat likely (mean = 2.7): 0 respondents (0%) rated it as highly unlikely, 10 respondents (50%) rated the statement as somewhat unlikely, 6 respondents (30%) rated it as somewhat likely, and 4 respondents (20%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

Statement 2: Universities will create new traditions to enable progress and economic prosperity in a globalized future.

Respondents rated this statement as:

- highly important (medium degree of consensus);
- somewhat acceptable (low degree of consensus); and,
- somewhat likely (low degree of consensus).

Detail: A medium degree of consensus and mean rating of highly important was determined for the statement’s importance in this round (IQD = .50). Of the 20
respondents, 0 respondents (0%) rated it as highly unimportant, 2 respondents (10%) rated the statement as somewhat unimportant, 5 respondents (25%) rated it as somewhat important, and 13 respondents (65%) rated it as highly important. The resultant mean score was 3.55, with .25 and .75 quartile scores of 3 and 4, respectively.

In regard to the statement’s acceptability, 20 of 20 experts responded, of which 1 respondent (5%) rated it as highly unacceptable, 4 respondents (20%) rated the statement as somewhat unacceptable, 7 respondents (35%) rated it as somewhat acceptable, and 8 respondents (40%) rated it as highly acceptable. The responses result in a mean of 3.1. The .25 and .75 quartile scores were 2.25 and 4, respectively, resulting in an IQD of .875. The statement is thus interpreted as somewhat acceptable with a low degree of consensus.

On average, respondents rated the statement as somewhat likely (mean = 2.65): 3 respondents (15%) rated it as highly unlikely, 6 respondents (30%) rated the statement as somewhat unlikely, 6 respondents (30%) rated it as somewhat likely, and 5 respondents (25%) rated it as highly likely. 20 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 2 and 3.75, respectively, produced an IQD score of .875.

Statement 3: Universities will align their programs toward the development of global citizens.

Respondents rated this statement as:

- highly important (high degree of consensus);
- highly acceptable (medium degree of consensus); and,
- somewhat likely (low degree of consensus).
**Detail:** In regard to the statement’s importance, 20 of 20 experts responded, of which 0 respondents (0%) rated it as highly unimportant, 0 respondents (0%) rated the statement as somewhat unimportant, 3 respondents (15%) rated it as somewhat important, and 17 respondents (85%) rated it as highly important. The responses result in a mean of 3.85. The .25 and .75 quartile scores were 4 and 4, respectively, resulting in an IQD of zero. The statement is thus interpreted as *highly important* with a high degree of consensus.

A medium degree of consensus and mean rating of *highly acceptable* was determined for the statement’s acceptability in this round (IQD = .50). Of the 20 respondents, 0 respondents (0%) rated it as highly unacceptable, 1 respondent (5%) rated the statement as somewhat unacceptable, 9 respondents (45%) rated it as somewhat acceptable, and 10 respondents (50%) rated it as highly acceptable. The resultant mean score was 3.45, with .25 and .75 quartile scores of 3 and 4, respectively.

On average, respondents rated the statement as *somewhat likely* (mean = 3.1): 0 respondents (0%) rated it as highly unlikely, 5 respondents (25%) rated the statement as somewhat unlikely, 8 respondents (40%) rated it as somewhat likely, and 7 respondents (35%) rated it as highly likely. 20 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 2.25 and 4, respectively, produced an IQD score of .875.

**Statement 4:** Universities will adopt an “anywhere-anytime” model of educational products and services.

Respondents rated this statement as:

- *highly important* (medium degree of consensus);
• *somewhat acceptable* (medium degree of consensus); and,
• *somewhat unlikely* (low degree of consensus).

*Detail:* A medium degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .375). Of the 20 respondents, 0 respondents (0%) rated it as highly unimportant, 1 respondent (5%) rated the statement as somewhat unimportant, 4 respondents (20%) rated it as somewhat important, and 15 respondents (75%) rated it as highly important. The resultant mean score was 3.7, with .25 and .75 quartile scores of 3.25 and 4, respectively.

In regard to the statement’s acceptability, 20 of 20 experts responded, of which 3 respondents (15%) rated it as highly unacceptable, 3 respondents (15%) rated the statement as somewhat unacceptable, 11 respondents (55%) rated it as somewhat acceptable, and 3 respondents (15%) rated it as highly acceptable. The responses result in a mean of 2.7. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat acceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.5): 4 respondents (20%) rated it as highly unlikely, 7 respondents (35%) rated the statement as somewhat unlikely, 4 respondents (20%) rated it as somewhat likely, and 5 respondents (25%) rated it as highly likely. 20 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 2 and 3.75, respectively, produced an IQD score of .875.

*Statement 5: Colleges and universities will reorganize to allow students to take credits at any combination of universities.*
Respondents rated this statement as:

- somewhat important (low degree of consensus);
- somewhat acceptable (low degree of consensus); and,
- somewhat unlikely (low degree of consensus).

**Detail:** In regard to the statement’s importance, 20 of 20 experts responded, of which 1 respondent (5%) rated it as highly unimportant, 4 respondents (20%) rated the statement as somewhat unimportant, 5 respondents (25%) rated it as somewhat important, and 10 respondents (50%) rated it as highly important. The responses result in a mean of 3.2. The .25 and .75 quartile scores were 2.25 and 4, respectively, resulting in an IQD of .875. The statement is thus interpreted as somewhat important with a low degree of consensus.

A low degree of consensus and mean rating of somewhat acceptable was determined for the statement’s acceptability in this round (IQD = .875). Of the 20 respondents, 1 respondent (5%) rated it as highly unacceptable, 6 respondents (30%) rated the statement as somewhat unacceptable, 8 respondents (40%) rated it as somewhat acceptable, and 5 respondents (25%) rated it as highly acceptable. The resultant mean score was 2.85, with .25 and .75 quartile scores of 2 and 3.75, respectively.

On average, respondents rated the statement as somewhat unlikely (mean = 2.25): 5 respondents (25%) rated it as highly unlikely, 9 respondents (45%) rated the statement as somewhat unlikely, 2 respondents (10%) rated it as somewhat likely, and 4 respondents (20%) rated it as highly likely. 20 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 1.25 and 3, respectively, produced an IQD score of .875.
Statement 6: Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.

Respondents rated this statement as:

- **highly important** (medium degree of consensus);
- **somewhat acceptable** (high degree of consensus); and,
- **somewhat unlikely** (medium degree of consensus).

**Detail:** A medium degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .50). Of the 20 respondents, 0 respondents (0%) rated it as highly unimportant, 1 respondent (5%) rated the statement as somewhat unimportant, 5 respondents (25%) rated it as somewhat important, and 14 respondents (70%) rated it as highly important. The resultant mean score was 3.65, with .25 and .75 quartile scores of 3 and 4, respectively.

In regard to the statement’s acceptability, 20 of 20 experts responded, of which 0 respondents (0%) rated it as highly unacceptable, 2 respondents (10%) rated the statement as somewhat unacceptable, 14 respondents (70%) rated it as somewhat acceptable, and 4 respondents (20%) rated it as highly acceptable. The responses result in a mean of 3.1. The .25 and .75 quartile scores were 3 and 3, respectively, resulting in an IQD of zero. The statement is thus interpreted as *somewhat acceptable* with a high degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.5): 0 respondents (0%) rated it as highly unlikely, 12 respondents (60%) rated the statement as somewhat unlikely, 6 respondents (30%) rated it as somewhat likely, and 2 respondents (10%) rated it as highly likely. 20 experts of 20 responded to this item, providing a
medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

Statement 7: The future purpose of the university is to facilitate the globalization of knowledge.

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat acceptable* (medium degree of consensus); and,
- *somewhat unlikely* (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 20 of 20 experts responded, of which 0 respondents (0%) rated it as highly unimportant, 6 respondents (30%) rated the statement as somewhat unimportant, 10 respondents (50%) rated it as somewhat important, and 4 respondents (20%) rated it as highly important. The responses result in a mean of 2.9. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat acceptable* was determined for the statement’s acceptability in this round (IQD = .50). Of the 20 respondents, 1 respondent (5%) rated it as highly unacceptable, 5 respondents (25%) rated the statement as somewhat unacceptable, 10 respondents (50%) rated it as somewhat acceptable, and 4 respondents (20%) rated it as highly acceptable. The resultant mean score was 2.85, with .25 and .75 quartile scores of 2 and 3, respectively.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.35): 2 respondents (10%) rated it as highly unlikely, 11 respondents (55%) rated the statement
as somewhat unlikely, 5 respondents (25%) rated it as somewhat likely, and 2 respondents (10%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

Statement 8: University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization.

Respondents rated this statement as:

- somewhat important (low degree of consensus);
- somewhat unacceptable (medium degree of consensus); and,
- somewhat unlikely (medium degree of consensus).

Detail: A low degree of consensus and mean rating of somewhat important was determined for the statement’s importance in this round (IQD = .875). Of the 20 respondents, 0 respondents (0%) rated it as highly unimportant, 5 respondents (25%) rated the statement as somewhat unimportant, 7 respondents (35%) rated it as somewhat important, and 8 respondents (40%) rated it as highly important. The resultant mean score was 3.15, with .25 and .75 quartile scores of 2.25 and 4, respectively.

In regard to the statement’s acceptability, 20 of 20 experts responded, of which 0 respondents (0%) rated it as highly unacceptable, 12 respondents (60%) rated the statement as somewhat unacceptable, 6 respondents (30%) rated it as somewhat acceptable, and 2 respondents (10%) rated it as highly acceptable. The responses result in a mean of 2.5. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as somewhat unacceptable with a medium degree of consensus.
On average, respondents rated the statement as *somewhat unlikely* (mean = 2.15): 3 respondents (15%) rated it as highly unlikely, 12 respondents (60%) rated the statement as somewhat unlikely, 4 respondents (20%) rated it as somewhat likely, and 1 respondent (5%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 2.75, respectively, produced an IQD score of .375.

Statement 9: *Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices.*

Respondents rated this statement as:

- *highly important* (high degree of consensus);
- *highly acceptable* (medium degree of consensus); and,
- *somewhat likely* (medium degree of consensus).

**Detail:** In regard to the statement’s importance, 20 of 20 experts responded, of which 0 respondents (0%) rated it as highly unimportant, 0 respondents (0%) rated the statement as somewhat unimportant, 2 respondents (10%) rated it as somewhat important, and 18 respondents (90%) rated it as highly important. The responses result in a mean of 3.9. The .25 and .75 quartile scores were 4 and 4, respectively, resulting in an IQD of zero. The statement is thus interpreted as *highly important* with a high degree of consensus.

A medium degree of consensus and mean rating of *highly acceptable* was determined for the statement’s acceptability in this round (IQD = .50). Of the 20 respondents, 0 respondents (0%) rated it as highly unacceptable, 2 respondents (10%) rated the statement as somewhat unacceptable, 9 respondents (45%) rated it as somewhat
acceptable, and 9 respondents (45%) rated it as highly acceptable. The resultant mean score was 3.35, with .25 and .75 quartile scores of 3 and 4, respectively.

On average, respondents rated the statement as somewhat likely (mean = 3.2): 0 respondents (0%) rated it as highly unlikely, 4 respondents (20%) rated the statement as somewhat unlikely, 8 respondents (40%) rated it as somewhat likely, and 8 respondents (40%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 3 and 4, respectively, produced an IQD score of .5.

Statement 10: Rising tuition costs will lead a trend toward privatization of public institutions.

Respondents rated this statement as:

- somewhat important (low degree of consensus);
- somewhat unacceptable (medium degree of consensus); and,
- somewhat likely (medium degree of consensus).

Detail: A low degree of consensus and mean rating of somewhat important was determined for the statement’s importance in this round (IQD = .875). Of the 20 respondents, 2 respondents (10%) rated it as highly unimportant, 8 respondents (40%) rated the statement as somewhat unimportant, 5 respondents (25%) rated it as somewhat important, and 5 respondents (25%) rated it as highly important. The resultant mean score was 2.65, with .25 and .75 quartile scores of 2 and 3.75, respectively.

In regard to the statement’s acceptability, 20 of 20 experts responded, of which 4 respondents (20%) rated it as highly unacceptable, 11 respondents (55%) rated the statement as somewhat unacceptable, 3 respondents (15%) rated it as somewhat
acceptable, and 2 respondents (10%) rated it as highly acceptable. The responses result in a mean of 2.15. The .25 and .75 quartile scores were 2 and 2.75, respectively, resulting in an IQD of .375. The statement is thus interpreted as *somewhat unacceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat likely* (mean = 2.55): 3 respondents (15%) rated it as highly unlikely, 5 respondents (25%) rated the statement as somewhat unlikely, 10 respondents (50%) rated it as somewhat likely, and 2 respondents (10%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

*Statement 11: Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat unacceptable* (medium degree of consensus); and,
- *somewhat unlikely* (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 20 of 20 experts responded, of which 3 respondents (15%) rated it as highly unimportant, 3 respondents (15%) rated the statement as somewhat unimportant, 11 respondents (55%) rated it as somewhat important, and 3 respondents (15%) rated it as highly important. The responses result in a mean of 2.7. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an
IQD of .50. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat unacceptable* was determined for the statement’s acceptability in this round (IQD = .50). Of the 20 respondents, 6 respondents (30%) rated it as highly unacceptable, 11 respondents (55%) rated the statement as somewhat unacceptable, 2 respondents (10%) rated it as somewhat acceptable, and 1 respondent (5%) rated it as highly acceptable. The resultant mean score was 1.9, with .25 and .75 quartile scores of 1 and 2, respectively.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.05): 5 respondents (25%) rated it as highly unlikely, 10 respondents (50%) rated the statement as somewhat unlikely, 4 respondents (20%) rated it as somewhat likely, and 1 respondent (5%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 1.25 and 2.75, respectively, produced an IQD score of .75.

*Statement 12: “Siloed” academic disciplines will no longer exist.*

Respondents rated this statement as:

- *highly important* (medium degree of consensus);
- *somewhat acceptable* (low degree of consensus); and,
- *somewhat unlikely* (low degree of consensus).

*Detail:* A medium degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .50). Of the 20 respondents, 0 respondents (0%) rated it as highly unimportant, 2 respondents (10%) rated the statement as somewhat unimportant, 6 respondents (30%) rated it as somewhat
important, and 12 respondents (60%) rated it as highly important. The resultant mean score was 3.5, with .25 and .75 quartile scores of 3 and 4, respectively.

In regard to the statement’s acceptability, 20 of 20 experts responded, of which 3 respondents (15%) rated it as highly unacceptable, 5 respondents (25%) rated the statement as somewhat unacceptable, 7 respondents (35%) rated it as somewhat acceptable, and 5 respondents (25%) rated it as highly acceptable. The responses result in a mean of 2.7. The .25 and .75 quartile scores were 2 and 3.75, respectively, resulting in an IQD of .875. The statement is thus interpreted as somewhat acceptable with a low degree of consensus.

On average, respondents rated the statement as somewhat unlikely (mean = 2.15): 7 respondents (35%) rated it as highly unlikely, 5 respondents (25%) rated the statement as somewhat unlikely, 6 respondents (30%) rated it as somewhat likely, and 2 respondents (10%) rated it as highly likely. 20 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 1 and 3, respectively, produced an IQD score of 1.00.

Statement 13: To enable the survival of the university, the pace of technological innovation will be restrained.

Respondents rated this statement as:

- somewhat unimportant (low degree of consensus);
- somewhat unacceptable (low degree of consensus); and,
- somewhat unlikely (medium degree of consensus).

Detail: In regard to the statement’s importance, 20 of 20 experts responded, of which 6 respondents (30%) rated it as highly unimportant, 6 respondents (30%) rated the
statement as somewhat unimportant, 6 respondents (30%) rated it as somewhat important, and 2 respondents (10%) rated it as highly important. The responses result in a mean of 2.2. The .25 and .75 quartile scores were 1 and 3, respectively, resulting in an IQD of 1.00. The statement is thus interpreted as somewhat unimportant with a low degree of consensus.

A low degree of consensus and mean rating of somewhat unacceptable was determined for the statement’s acceptability in this round (IQD = .875). Of the 20 respondents, 6 respondents (30%) rated it as highly unacceptable, 9 respondents (45%) rated the statement as somewhat unacceptable, 4 respondents (20%) rated it as somewhat acceptable, and 1 respondent (5%) rated it as highly acceptable. The resultant mean score was 2, with .25 and .75 quartile scores of 1 and 2.75, respectively.

On average, respondents rated the statement as somewhat unlikely (mean = 1.85): 8 respondents (40%) rated it as highly unlikely, 8 respondents (40%) rated the statement as somewhat unlikely, 3 respondents (15%) rated it as somewhat likely, and 1 respondent (5%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 1 and 2, respectively, produced an IQD score of .5.

Statement 14: Universities will no longer cater exclusively to the needs of human knowledge production.

Respondents rated this statement as:

- somewhat important (low degree of consensus);
- somewhat unacceptable (low degree of consensus); and,
- somewhat unlikely (low degree of consensus).
Detail: A low degree of consensus and mean rating of *somewhat important* was determined for the statement’s importance in this round (IQD = 1). Of the 19 respondents, 1 respondent (5.26%) rated it as highly unimportant, 5 respondents (26.32%) rated the statement as somewhat unimportant, 6 respondents (31.58%) rated it as somewhat important, and 7 respondents (36.84%) rated it as highly important. The resultant mean score was 3, with .25 and .75 quartile scores of 2 and 4, respectively.

In regard to the statement’s acceptability, 19 of 20 experts responded, of which 5 respondents (26.32%) rated it as highly unacceptable, 7 respondents (36.84%) rated the statement as somewhat unacceptable, 7 respondents (36.84%) rated it as somewhat acceptable, and 0 respondents (0%) rated it as highly acceptable. The responses result in a mean of 2.11. The .25 and .75 quartile scores were 1 and 3, respectively, resulting in an IQD of 1.00 The statement is thus interpreted as *somewhat unacceptable* with a low degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.16): 5 respondents (26.32%) rated it as highly unlikely, 8 respondents (42.11%) rated the statement as somewhat unlikely, 4 respondents (21.05%) rated it as somewhat likely, and 2 respondents (10.53%) rated it as highly likely. 19 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 1 and 3, respectively, produced an IQD score of 1.00.

*Statement 15: Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
• somewhat unacceptable (medium degree of consensus); and,
• somewhat likely (medium degree of consensus).

Detail: In regard to the statement’s importance, 20 of 20 experts responded, of which 1 respondent (5%) rated it as highly unimportant, 8 respondents (40%) rated the statement as somewhat unimportant, 10 respondents (50%) rated it as somewhat important, and 1 respondent (5%) rated it as highly important. The responses result in a mean of 2.55. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as somewhat important with a medium degree of consensus.

A medium degree of consensus and mean rating of somewhat unacceptable was determined for the statement’s acceptability in this round (IQD = .75). Of the 20 respondents, 5 respondents (25%) rated it as highly unacceptable, 10 respondents (50%) rated the statement as somewhat unacceptable, 5 respondents (25%) rated it as somewhat acceptable, and 0 respondents (0%) rated it as highly acceptable. The resultant mean score was 2, with .25 and .75 quartile scores of 1.25 and 2.75, respectively.

On average, respondents rated the statement as somewhat likely (mean = 2.65): 2 respondents (10%) rated it as highly unlikely, 6 respondents (30%) rated the statement as somewhat unlikely, 9 respondents (45%) rated it as somewhat likely, and 3 respondents (15%) rated it as highly likely. 20 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

Statement 16: Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.
Respondents rated this statement as:

- *highly important* (low degree of consensus);
- *somewhat unacceptable* (medium degree of consensus); and,
- *somewhat unlikely* (low degree of consensus).

*Detail:* A low degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = 1). Of the 19 respondents, 4 respondents (21.05%) rated it as highly unimportant, 2 respondents (10.53%) rated the statement as somewhat unimportant, 7 respondents (36.84%) rated it as somewhat important, and 6 respondents (31.58%) rated it as highly important. The resultant mean score was 2.79, with .25 and .75 quartile scores of 2 and 4, respectively.

In regard to the statement’s acceptability, 19 of 20 experts responded, of which 7 respondents (36.84%) rated it as highly unacceptable, 8 respondents (42.10%) rated the statement as somewhat unacceptable, 4 respondents (21.05%) rated it as somewhat acceptable, and 0 respondents (0%) rated it as highly acceptable. The responses result in a mean of 1.84. The .25 and .75 quartile scores were 1 and 2, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat unacceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.26): 5 respondents (26.32%) rated it as highly unlikely, 6 respondents (31.58%) rated the statement as somewhat unlikely, 6 respondents (31.58%) rated it as somewhat likely, and 2 respondents (10.53%) rated it as highly likely. 19 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 1 and 3, respectively, produced an IQD score of 1.00.
Statement 17: Universities will integrate gaming and simulative technologies into teaching and learning practices.

Respondents rated this statement as:

- **highly important** (medium degree of consensus);
- **somewhat acceptable** (medium degree of consensus); and,
- **somewhat likely** (medium degree of consensus).

**Detail**: In regard to the statement’s importance, 19 of 20 experts responded, of which 1 respondent (5.26%) rated it as highly unimportant, 2 respondents (10.53%) rated the statement as somewhat unimportant, 9 respondents (47.37%) rated it as somewhat important, and 7 respondents (36.84%) rated it as highly important. The responses result in a mean of 3.16. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The statement is thus interpreted as **highly important** with a medium degree of consensus.

A medium degree of consensus and mean rating of **somewhat acceptable** was determined for the statement’s acceptability in this round (IQD = .50). Of the 19 respondents, 1 respondent (5.26%) rated it as highly unacceptable, 5 respondents (26.32%) rated the statement as somewhat unacceptable, 10 respondents (52.63%) rated it as somewhat acceptable, and 3 respondents (15.79%) rated it as highly acceptable. The resultant mean score was 2.79, with .25 and .75 quartile scores of 2 and 3, respectively.

On average, respondents rated the statement as **somewhat likely** (mean = 3.05): 1 respondent (5.26%) rated it as highly unlikely, 2 respondents (10.53%) rated the statement as somewhat unlikely, 11 respondents (57.89%) rated it as somewhat likely, and 5 respondents (26.32%) rated it as highly likely. 19 experts of 20 responded to this
item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 3 and 4, respectively, produced an IQD score of .5.

Statement 18: Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.

Respondents rated this statement as:

- **highly important** (medium degree of consensus);
- **somewhat acceptable** (low degree of consensus); and,
- **somewhat likely** (low degree of consensus).

*Detail:* A medium degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .50). Of the 19 respondents, 1 respondent (5.26%) rated it as highly unimportant, 1 respondent (5.26%) rated the statement as somewhat unimportant, 8 respondents (42.11%) rated it as somewhat important, and 9 respondents (47.37%) rated it as highly important. The resultant mean score was 3.16, with .25 and .75 quartile scores of 3 and 4, respectively.

In regard to the statement’s acceptability, 19 of 20 experts responded, of which 0 respondents (0%) rated it as highly unacceptable, 5 respondents (26.32%) rated the statement as somewhat unacceptable, 9 respondents (47.37%) rated it as somewhat acceptable, and 5 respondents (26.32%) rated it as highly acceptable. The responses result in a mean of 3. The .25 and .75 quartile scores were 2 and 4, respectively, resulting in an IQD of 1.00. The statement is thus interpreted as *somewhat acceptable* with a low degree of consensus.

On average, respondents rated the statement as *somewhat likely* (mean = 2.79): 2 respondents (10.53%) rated it as highly unlikely, 5 respondents (26.32%) rated the
statement as somewhat unlikely, 7 respondents (36.84%) rated it as somewhat likely, and 5 respondents (26.32%) rated it as highly likely. 19 experts of 20 responded to this item, providing a low level of consensus. The item’s .25 and .75 quartile scores of 2 and 4, respectively, produced an IQD score of 1.00.

Round one participant comments

Two respondents reported that they felt the instrument is too focused on research universities, and they were not sure how to respond to the items. Moreover, the two respondents reported that it was not clear to them whether they should respond from their own perspective or from the perspective of universities in general. One participant reported that she felt that additional trends also affect higher education, and shared a document she authored containing a “baker’s dozen” of issues affecting tertiary education (Ramaley, 2005). With her permission, her name and the baker’s dozen document were shared with participants as a resource in the third round.

Two general comments were received in the first round in regard to the 18 statements:

1. In regard to the trend of globalization, one participant wrote, “Incentives are key, if only directives of society will not change. I see the State of Minnesota going backwards, retreating from these upfront issues. More resource investment must be made…”

2. In regard to the trend of the rise of the knowledge society, one participant wrote, “Everybody talks about it – but again, unless monetary incentives, criteria for evaluation and visionary leadership takes – will not happen.”
The two general comments regarding the trends were incorporated into the round two instrument and looped back to participants for consideration in the next round. In regard to concerns related to the construction of the study, the following response and clarification was inserted into the second round instrument:

All the comments received have been highly constructive and are incorporated into this round’s instrument. A couple of concerns were raised; however, and I should make some clarifications. First, please view this series of questionnaires as more of an anonymous, virtual group discussion than a formal survey. Items in the first round questionnaire were intended to serve as a starting point for our discussion. Six new items, suggested by the previous round’s participants are incorporated into this round. Second, the scope and impact of the selected items are macro in nature, and may affect each institution differently. For this second round, please rate how you believe these items relate to Minnesota higher education in general. In the third and final round, I will ask questions on how you and your institution might respond to the futures identified.

Additional questions identified by round one participants

Six additional statements were identified by first round participants, which were incorporated into the second round questionnaire for rating (see Appendix E for complete list of all additional Delphi items, including detailed descriptions):

1. Revenues and savings generated by distance learning will free public universities from their dependence on public funding.
2. Universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases.

3. Universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to.

4. Faculty employment rules, such as tenure and work hours, will be abolished or changed radically.

5. New types of innovative institutions grow in public acceptance and in status within the higher education community.

6. Rising tuition costs will lead to increased efficiencies through ICT\(^9\), the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization.

   Round two results

   Since a reasonable amount of consensus (IQD < 1.00) or near consensus (IQD = 1.00) has been reached for all round one statements, the purpose of the second round was to increase the level of consensus among respondents. Statements suggested by participants in the previous round were also introduced for initial rating.

   A total of 18 of 20 first round participants (47.37\% of round one sample pool) responded in the first round of the Delphi procedure, resulting a round-over-round response rate of 90\%. The second round response group consisted of university presidents, chancellors or equivalent leaders (or their designates) from: two University of

\(^9\) Information and Communications Technology
Minnesota campuses, ten MnSCU campuses, three regional or national private institutions, two online-only universities, and one private tertiary institution. In this round, participants were asked to re-rate the level of importance, level of acceptability and possibility of occurrence for the original 18 futures explored in the first round, and to provide ratings for the six new items identified by participants in the first round. To assist in re-rating statements, each participant’s first round ratings were provided in addition to each statement’s mean ratings and comments from the respondent group. The instrument was distributed by electronic mail, and is included as Appendix D.

A medium to high level of consensus was achieved for all items. Following the second round, no item’s IQD score exceeded .625. In 33 of 54 items (61.11%) carried over from the first round, measured consensus by IQD increased. In 1 of 54 items (1.85%), measured consensus decreased.

Using criteria to evaluate data (discussed in previous section), tables 9, 10, and 11 summarize each statement’s measured mean scores, IQD scores, and interpretations of the scores in regard to importance, acceptability and possibility, respectively. The previous round IQD scores and round-over-round difference in scores are also presented. A negative difference in IQD is indicative of a round-over-round increase in group consensus for the item measured. A descriptive narrative of the second round results follow the tables, providing additional detail.
Table 9.

*Measured Importance, Degree of Consensus and Change in Consensus for Second Round Statements*

<table>
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<th>IQD</th>
<th>Consensus level</th>
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Table 10.

*Measured Acceptability, Degree of Consensus and Change in Consensus for Second Round Statements*

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Table 11.

*Measured Possibility, Degree of Consensus and Change in Consensus for Second Round Statements*

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Statement 1: *Universities will balance progress and economic prosperity with maintaining tradition.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat acceptable* (medium degree of consensus); and,
- *somewhat likely* (medium degree of consensus).
**Detail:** In regard to the statement’s importance, 18 of 20 experts responded, of which 1 respondent (5.56%) rated it as highly unimportant, 1 respondent (5.56%) rated the statement as somewhat unimportant, 7 respondents (38.89%) rated it as somewhat important, and 9 respondents (50.00%) rated it as highly important. The responses result in a mean of 3.33. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The previous round’s importance IQD score of .50 yields a difference of .00, indicating no measured change in consensus in this round. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat acceptable* was determined for the statement’s acceptability in this round (IQD = .50, a difference of .00 over the first round), indicating no measured change in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 1 respondent (5.56%) rated the statement as somewhat unacceptable, 12 respondents (66.67%) rated it as somewhat acceptable, and 5 respondents (27.78%) rated it as highly acceptable. The resultant mean score was 3.22, with .25 and .75 quartile scores of 3 and 4, respectively.

On average, respondents rated the statement as *somewhat likely* (mean = 2.61): 0 respondents (0.00%) rated it as highly unlikely, 8 respondents (44.44%) rated the statement as somewhat unlikely, 9 respondents (50.00%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round IQD score differs from
the first round IQD score by .00, indicating no measured change in consensus in the second round in regard to the possibility of the statement.

Statement 2: Universities will create new traditions to enable progress and economic prosperity in a globalized future.

Respondents rated this statement as:

- **highly important** (high degree of consensus);
- **somewhat acceptable** (medium degree of consensus); and,
- **somewhat likely** (medium degree of consensus).

**Detail:** A high degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .125). Of the 18 respondents for this item, 1 respondent (5.56%) rated it as highly unimportant, 3 respondents (16.67%) rated the statement as somewhat unimportant, 14 respondents (77.78%) rated it as somewhat important, and 18 respondents (100.00%) rated it as highly important. The resultant mean score was 3.72, with .25 and .75 quartile scores of 3.75 and 4, respectively. The previous round’s importance IQD score of .50 yields a difference of -0.375, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 2 respondents (11.11%) rated the statement as somewhat unacceptable, 8 respondents (44.44%) rated it as somewhat acceptable, and 8 respondents (44.44%) rated it as highly acceptable. The responses result in a mean of 3.33. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The previous round’s acceptability IQD score of .875 yields a
difference of -0.375, indicating a measured increase in consensus in this round. The statement is thus interpreted as _somewhat acceptable_ with a medium degree of consensus.

On average, respondents rated the statement as _somewhat likely_ (mean = 2.61): 2 respondents (11.11%) rated it as highly unlikely, 4 respondents (22.22%) rated the statement as somewhat unlikely, 11 respondents (61.11%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round possibility IQD score differs from the first round IQD score by -0.375, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

*Statement 3: Universities will align their programs toward the development of global citizens.*

Respondents rated this statement as:

- _highly important_ (high degree of consensus);
- _highly acceptable_ (medium degree of consensus); and,
- _somewhat likely_ (high degree of consensus).

_Detail: In regard to the statement’s importance, 18 of 20 experts responded, of which 3 respondents (16.67%) rated it as highly unimportant, 15 respondents (83.33%) rated the statement as somewhat unimportant, 18 respondents (100.00%) rated it as somewhat important, and 2 respondents (11.11%) rated it as highly important. The responses result in a mean of 3.83. The .25 and .75 quartile scores were 4 and 4, respectively, resulting in an IQD of .00. The previous round’s importance IQD score of_
.00 yields a difference of .00, indicating no measured change in consensus in this round. The statement is thus interpreted as *highly important* with a high degree of consensus.

A medium degree of consensus and mean rating of *highly acceptable* was determined for the statement’s acceptability in this round (IQD = .50, a difference of .00 over the first round), indicating no measured change in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 1 respondent (5.56%) rated the statement as somewhat unacceptable, 7 respondents (38.89%) rated it as somewhat acceptable, and 10 respondents (55.56%) rated it as highly acceptable. The resultant mean score was 3.50, with .25 and .75 quartile scores of 3 and 4, respectively.

On average, respondents rated the statement as *somewhat likely* (mean = 2.94): 0 respondents (0.00%) rated it as highly unlikely, 4 respondents (22.22%) rated the statement as somewhat unlikely, 11 respondents (61.11%) rated it as somewhat likely, and 3 respondents (16.67%) rated it as highly likely. 18 experts of 20 responded to this item, providing a high level of consensus. The item’s .25 and .75 quartile scores of 2.75 and 3, respectively, produced an IQD score of .125. The second round IQD score differs from the first round IQD score by -0.75, indicating a measured increase in consensus in the second round in regard to the possibility of the statement.

*Statement 4: Universities will adopt an “anywhere-anytime” model of educational products and services.*

Respondents rated this statement as:

- *highly important* (high degree of consensus); and,
• somewhat unlikely (medium degree of consensus).

Detail: A high degree of consensus and mean rating of highly important was determined for the statement’s importance in this round (IQD = .125). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 0 respondents (0.00%) rated the statement as somewhat unimportant, 4 respondents (22.22%) rated it as somewhat important, and 14 respondents (77.78%) rated it as highly important. The resultant mean score was 3.78, with .25 and .75 quartile scores of 3.75 and 4, respectively. The previous round’s importance IQD score of .375 yields a difference of -0.25, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 6 respondents (33.33%) rated the statement as somewhat unacceptable, 11 respondents (61.11%) rated it as somewhat acceptable, and 1 respondent (5.56%) rated it as highly acceptable. The responses result in a mean of 2.72. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The previous round’s acceptability IQD score of .50 yields a difference of .00, indicating no measured change in consensus in this round. The statement is thus interpreted as somewhat acceptable with a medium degree of consensus.

On average, respondents rated the statement as somewhat unlikely (mean = 2.50): 2 respondents (11.11%) rated it as highly unlikely, 7 respondents (38.89%) rated the statement as somewhat unlikely, 7 respondents (38.89%) rated it as somewhat likely, and 2 respondents (11.11%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round possibility IQD score
differs from the first round IQD score by -0.375, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

*Statement 5: Colleges and universities will reorganize to allow students to take credits at any combination of universities.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat acceptable* (medium degree of consensus); and,
- *somewhat unlikely* (medium degree of consensus).

**Detail:** In regard to the statement’s importance, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 3 respondents (16.67%) rated the statement as somewhat unimportant, 6 respondents (33.33%) rated it as somewhat important, and 0 respondents (0.00%) rated it as highly important. The responses result in a mean of 3.33. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The previous round’s importance IQD score of .875 yields a difference of -0.375, indicating a measured increase in consensus in this round. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat acceptable* was determined for the statement’s acceptability in this round (IQD = .625, a difference of -0.25 over the first round), indicating a measured increase in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 5 respondents (27.78%) rated the statement as somewhat unacceptable, 9 respondents (50.00%) rated it as somewhat acceptable, and 4
respondents (22.22%) rated it as highly acceptable. The resultant mean score was 2.94, with .25 and .75 quartile scores of 2 and 3.25, respectively.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.22): 3 respondents (16.67%) rated it as highly unlikely, 10 respondents (55.56%) rated the statement as somewhat unlikely, 3 respondents (16.67%) rated it as somewhat likely, and 2 respondents (11.11%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round IQD score differs from the first round IQD score by -0.375, indicating a measured increase in consensus in the second round in regard to the possibility of the statement.

**Statement 6: Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.**

Respondents rated this statement as:

- *highly important* (high degree of consensus);
- *somewhat acceptable* (medium degree of consensus); and,
- *somewhat likely* (medium degree of consensus).

**Detail:** A high degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .00). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 0 respondents (0.00%) rated the statement as somewhat unimportant, 3 respondents (16.67%) rated it as somewhat important, and 15 respondents (83.33%) rated it as highly important. The resultant mean score was 3.83, with .25 and .75 quartile scores of 4 and
4, respectively. The previous round’s importance IQD score of .50 yields a difference of -0.50, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 0 respondents (0.00%) rated the statement as somewhat unacceptable, 13 respondents (72.22%) rated it as somewhat acceptable, and 5 respondents (27.78%) rated it as highly acceptable. The responses result in a mean of 3.28. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The previous round’s acceptability IQD score of .00 yields a difference of .50, indicating a measured decrease in consensus in this round. The statement is thus interpreted as *somewhat acceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat likely* (mean = 2.56): 0 respondents (0.00%) rated it as highly unlikely, 9 respondents (50.00%) rated the statement as somewhat unlikely, 8 respondents (44.44%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round possibility IQD score differs from the first round IQD score by .00, indicating no measured change in consensus in regard to the possibility of the statement in the second round.

*Statement 7: The future purpose of the university is to facilitate the globalization of knowledge.*

Respondents rated this statement as:

- *somewhat important* (high degree of consensus);
- *somewhat acceptable* (high degree of consensus); and,
• *somewhat unlikely* (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 4 respondents (22.22%) rated the statement as somewhat unimportant, 12 respondents (66.67%) rated it as somewhat important, and 2 respondents (11.11%) rated it as highly important. The responses result in a mean of 2.89. The .25 and .75 quartile scores were 2.75 and 3, respectively, resulting in an IQD of .125. The previous round’s importance IQD score of .50 yields a difference of -0.375, indicating a measured increase in consensus in this round. The statement is thus interpreted as *somewhat important* with a high degree of consensus.

A high degree of consensus and mean rating of *somewhat acceptable* was determined for the statement’s acceptability in this round (IQD = .00, a difference of -0.50 over the first round), indicating a measured increase in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 3 respondents (16.67%) rated the statement as somewhat unacceptable, 13 respondents (72.22%) rated it as somewhat acceptable, and 2 respondents (11.11%) rated it as highly acceptable. The resultant mean score was 2.94, with .25 and .75 quartile scores of 3 and 3, respectively.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.39): 1 respondent (5.56%) rated it as highly unlikely, 11 respondents (61.11%) rated the statement as somewhat unlikely, 4 respondents (22.22%) rated it as somewhat likely, and 2 respondents (11.11%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and
3, respectively, produced an IQD score of .50. The second round IQD score differs from the first round IQD score by .00, indicating no measured change in consensus in the second round in regard to the possibility of the statement.

Statement 8: University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization.

Respondents rated this statement as:

- somewhat important (medium degree of consensus);
- somewhat acceptable (medium degree of consensus); and,
- somewhat unlikely (high degree of consensus).

Detail: A medium degree of consensus and mean rating of somewhat important was determined for the statement’s importance in this round (IQD = .50). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 3 respondents (16.67%) rated the statement as somewhat unimportant, 10 respondents (55.56%) rated it as somewhat important, and 5 respondents (27.78%) rated it as highly important. The resultant mean score was 3.11, with .25 and .75 quartile scores of 3 and 4, respectively. The previous round’s importance IQD score of .875 yields a difference of -0.375, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 9 respondents (50.00%) rated the statement as somewhat unacceptable, 8 respondents (44.44%) rated it as somewhat acceptable, and 1 respondent (5.56%) rated it as highly acceptable. The responses result in a mean of 2.56. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The previous round’s acceptability IQD score of .50 yields a difference of
.00, indicating no measured change in consensus in this round. The statement is thus interpreted as *somewhat acceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.11): 3 respondents (16.67%) rated it as highly unlikely, 11 respondents (61.11%) rated the statement as somewhat unlikely, 3 respondents (16.67%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 of 20 experts responded to this item, providing a high level of consensus. The item’s .25 and .75 quartile scores of 2.00 and 2.25, respectively, produced an IQD score of .125. The second round possibility IQD score differs from the first round IQD score by -0.250, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

**Statement 9: Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices.**

Respondents rated this statement as:

- *highly important* (high degree of consensus);
- *highly acceptable* (medium degree of consensus); and,
- *somewhat likely* (medium degree of consensus).

**Detail:** In regard to the statement’s importance, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 0 respondents (0.00%) rated the statement as somewhat unimportant, 1 respondent (5.56%) rated it as somewhat important, and 17 respondents (94.44%) rated it as highly important. The responses result in a mean of 3.94. The .25 and .75 quartile scores were 4 and 4, respectively, resulting in an IQD of .00. The previous round’s importance IQD score of .00 yields a
difference of .00, indicating no measured change in consensus in this round. The statement is thus interpreted as *highly important* with a high degree of consensus.

A medium degree of consensus and mean rating of *highly acceptable* was determined for the statement’s acceptability in this round (IQD = .50, a difference of .00 over the first round), indicating no measured change in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 0 respondents (0.00%) rated the statement as somewhat unacceptable, 9 respondents (50.00%) rated it as somewhat acceptable, and 9 respondents (50.00%) rated it as highly acceptable. The resultant mean score was 3.50, with .25 and .75 quartile scores of 3 and 4, respectively.

On average, respondents rated the statement as *somewhat likely* (mean = 3.33): 0 respondents (0.00%) rated it as highly unlikely, 2 respondents (11.11%) rated the statement as somewhat unlikely, 8 respondents (44.44%) rated it as somewhat likely, and 8 respondents (44.44%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 3 and 4, respectively, produced an IQD score of .50. The second round IQD score differs from the first round IQD score by .00, indicating no measured change in consensus in the second round in regard to the possibility of the statement.

*Statement 10: Rising tuition costs will lead a trend toward privatization of public institutions.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat unacceptable* (high degree of consensus); and,
• *somewhat unlikely* (medium degree of consensus).

*Detail:* A medium degree of consensus and mean rating of *somewhat important* was determined for the statement’s importance in this round (IQD = .50). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 8 respondents (44.44%) rated the statement as somewhat unimportant, 9 respondents (50.00%) rated it as somewhat important, and 1 respondent (5.56%) rated it as highly important. The resultant mean score was 2.61, with .25 and .75 quartile scores of 2 and 3, respectively. The previous round’s importance IQD score of .875 yields a difference of -0.375, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 2 respondents (11.11%) rated the statement as somewhat unacceptable, 15 respondents (83.33%) rated it as somewhat acceptable, and 1 respondent (5.56%) rated it as highly acceptable. The responses result in a mean of 2.00. The .25 and .75 quartile scores were 2 and 2, respectively, resulting in an IQD of .00. The previous round’s acceptability IQD score of .375 yields a difference of -0.375, indicating a measured increase in consensus in this round. The statement is thus interpreted as *somewhat unacceptable* with a high degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.39): 0 respondents (0.00%) rated it as highly unlikely, 2 respondents (11.11%) rated the statement as somewhat unlikely, 7 respondents (38.89%) rated it as somewhat likely, and 9 respondents (50.00%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round possibility IQD score
differs from the first round IQD score by .00, indicating no measured change in consensus in regard to the possibility of the statement in the second round.

*Statement 11: Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat unacceptable* (medium degree of consensus); and,
- *somewhat unlikely* (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 18 of 20 experts responded, of which 2 respondents (11.11%) rated it as highly unimportant, 3 respondents (16.67%) rated the statement as somewhat unimportant, 12 respondents (66.67%) rated it as somewhat important, and 1 respondent (5.56%) rated it as highly important. The responses result in a mean of 2.67. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The previous round’s importance IQD score of .50 yields a difference of .00, indicating no measured change in consensus in this round. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat unacceptable* was determined for the statement’s acceptability in this round (IQD = .50, a difference of .00 over the first round), indicating no measured change in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 5 respondents (27.78%) rated the statement as
somewhat unacceptable, 12 respondents (66.67%) rated it as somewhat acceptable, and 1 respondent (5.56%) rated it as highly acceptable. The resultant mean score was 1.83, with .25 and .75 quartile scores of 1 and 2, respectively.

On average, respondents rated the statement as *somewhat unlikely* (mean = 1.94): 5 respondents (27.78%) rated it as highly unlikely, 10 respondents (55.56%) rated the statement as somewhat unlikely, 2 respondents (11.11%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 1 and 2, respectively, produced an IQD score of .50. The second round IQD score differs from the first round IQD score by -0.25, indicating a measured increase in consensus in the second round in regard to the possibility of the statement.

Statement 12: “Siloed” academic disciplines will no longer exist.

Respondents rated this statement as:

- *highly important* (high degree of consensus);
- *somewhat acceptable* (medium degree of consensus); and,
- *somewhat unlikely* (medium degree of consensus).

*Detail:* A high degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .125). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 0 respondents (0.00%) rated the statement as somewhat unimportant, 4 respondents (22.22%) rated it as somewhat important, and 14 respondents (77.78%) rated it as highly important. The resultant mean score was 3.78, with .25 and .75 quartile scores of 3.75
and 4, respectively. The previous round’s importance IQD score of .50 yields a difference of -0.375, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 1 respondent (5.56%) rated it as highly unacceptable, 3 respondents (16.67%) rated the statement as somewhat unacceptable, 9 respondents (50.00%) rated it as somewhat acceptable, and 5 respondents (27.78%) rated it as highly acceptable. The responses result in a mean of 3.00. The .25 and .75 quartile scores were 2.75 and 4, respectively, resulting in an IQD of .625. The previous round’s acceptability IQD score of .875 yields a difference of -0.25, indicating a measured increase in consensus in this round. The statement is thus interpreted as somewhat acceptable with a medium degree of consensus.

On average, respondents rated the statement as somewhat unlikely (mean = 2.00): 5 respondents (27.78%) rated it as highly unlikely, 9 respondents (50.00%) rated the statement as somewhat unlikely, 3 respondents (16.67%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 1 and 2.25, respectively, produced an IQD score of .625. The second round possibility IQD score differs from the first round IQD score by -0.375, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

Statement 13: To enable the survival of the university, the pace of technological innovation will be restrained.

Respondents rated this statement as:

- somewhat unimportant (medium degree of consensus);
- somewhat unacceptable (medium degree of consensus); and,
• **highly unlikely** (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 18 of 20 experts responded, of which 4 respondents (22.22%) rated it as highly unimportant, 9 respondents (50.00%) rated the statement as somewhat unimportant, 4 respondents (22.22%) rated it as somewhat important, and 1 respondent (5.56%) rated it as highly important. The responses result in a mean of 2.11. The .25 and .75 quartile scores were 1.75 and 3, respectively, resulting in an IQD of .625. The previous round’s importance IQD score of 1.00 yields a difference of -0.375, indicating a measured increase in consensus in this round. The statement is thus interpreted as *somewhat unimportant* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat unacceptable* was determined for the statement’s acceptability in this round (IQD = .50, a difference of -0.375 over the first round), indicating a measured increase in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 5 respondents (27.78%) rated it as highly unacceptable, 11 respondents (61.11%) rated the statement as somewhat unacceptable, 2 respondents (11.11%) rated it as somewhat acceptable, and 0 respondents (0.00%) rated it as highly acceptable. The resultant mean score was 1.83, with .25 and .75 quartile scores of 1 and 2, respectively.

On average, respondents rated the statement as *highly unlikely* (mean = 1.67): 0 respondents (0.00%) rated it as highly unlikely, 7 respondents (38.89%) rated the statement as somewhat unlikely, 10 respondents (55.56%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 1
and 2, respectively, produced an IQD score of .50. The second round IQD score differs from the first round IQD score by .00, indicating no measured change in consensus in the second round in regard to the possibility of the statement.

Statement 14: Universities will no longer cater exclusively to the needs of human knowledge production.

Respondents rated this statement as:

- somewhat important (high degree of consensus);
- somewhat unacceptable (medium degree of consensus); and,
- somewhat unlikely (medium degree of consensus).

Detail: A high degree of consensus and mean rating of somewhat important was determined for the statement’s importance in this round (IQD = .25). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 3 respondents (16.67%) rated the statement as somewhat unimportant, 10 respondents (55.56%) rated it as somewhat important, and 4 respondents (22.22%) rated it as highly important. The resultant mean score was 3.06, with .25 and .75 quartile scores of 3 and 3.5, respectively. The previous round’s importance IQD score of 1.00 yields a difference of -0.75, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 3 respondents (16.67%) rated it as highly unacceptable, 7 respondents (38.89%) rated the statement as somewhat unacceptable, 7 respondents (38.89%) rated it as somewhat acceptable, and 0 respondents (0.00%) rated it as highly acceptable. The responses result in a mean of 2.24. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The previous round’s acceptability IQD score of 1.00 yields a difference
of -0.50, indicating a measured increase in consensus in this round. The statement is thus interpreted as *somewhat unacceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat unlikely* (mean = 2.18): 2 respondents (11.11%) rated it as highly unlikely, 10 respondents (55.56%) rated the statement as somewhat unlikely, 5 respondents (27.78%) rated it as somewhat likely, and 0 respondents (0.00%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round possibility IQD score differs from the first round IQD score by -0.50, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

**Statement 15:** Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat unacceptable* (high degree of consensus); and,
- *somewhat likely* (medium degree of consensus).

**Detail:** In regard to the statement’s importance, 18 of 20 experts responded, of which 1 respondent (5.56%) rated it as highly unimportant, 4 respondents (22.22%) rated the statement as somewhat unimportant, 12 respondents (66.67%) rated it as somewhat important, and 1 respondent (5.56%) rated it as highly important. The responses result in a mean of 2.72. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The previous round’s importance IQD score of .50 yields a difference of .00,
indicating no measured change in consensus in this round. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A high degree of consensus and mean rating of *somewhat unacceptable* was determined for the statement’s acceptability in this round (IQD = .00, a difference of -0.75 over the first round), indicating a measured increase in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 3 respondents (16.67%) rated it as highly unacceptable, 12 respondents (66.67%) rated the statement as somewhat unacceptable, 3 respondents (16.67%) rated it as somewhat acceptable, and 0 respondents (0.00%) rated it as highly acceptable. The resultant mean score was 2.00, with .25 and .75 quartile scores of 2 and 2, respectively.

On average, respondents rated the statement as *somewhat likely* (mean = 2.67): 1 respondent (5.56%) rated it as highly unlikely, 5 respondents (27.78%) rated the statement as somewhat unlikely, 11 respondents (61.11%) rated it as somewhat likely, and 1 respondent (5.56%) rated it as highly likely. 18 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round IQD score differs from the first round IQD score by .00, indicating no measured change in consensus in the second round in regard to the possibility of the statement.

*Statement 16: Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat unacceptable* (high degree of consensus); and,
• somewhat unlikely (medium degree of consensus).

Detail: A medium degree of consensus and mean rating of somewhat important was determined for the statement’s importance in this round (IQD = .50). Of the 17 respondents for this item, 2 respondents (11.76%) rated it as highly unimportant, 3 respondents (17.65%) rated the statement as somewhat unimportant, 10 respondents (58.82%) rated it as somewhat important, and 2 respondents (11.76%) rated it as highly important. The resultant mean score was 2.71, with .25 and .75 quartile scores of 2 and 3, respectively. The previous round’s importance IQD score of 1.00 yields a difference of -0.50, indicating a measured increase in consensus in this round.

In regard to the statement’s acceptability, 17 of 20 experts responded, of which 3 respondents (17.65%) rated it as highly unacceptable, 12 respondents (70.59%) rated the statement as somewhat unacceptable, 2 respondents (11.76%) rated it as somewhat acceptable, and 0 respondents (0.00%) rated it as highly acceptable. The responses result in a mean of 1.94. The .25 and .75 quartile scores were 2 and 2, respectively, resulting in an IQD of .00. The previous round’s acceptability IQD score of .50 yields a difference of -0.50, indicating a measured increase in consensus in this round. The statement is thus interpreted as somewhat unacceptable with a high degree of consensus.

On average, respondents rated the statement as somewhat unlikely (mean = 2.35): 2 respondents (11.76%) rated it as highly unlikely, 8 respondents (47.06%) rated the statement as somewhat unlikely, 6 respondents (35.29%) rated it as somewhat likely, and 1 respondent (5.88%) rated it as highly likely. 17 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50. The second round possibility IQD score
differs from the first round IQD score by -0.50, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

Statement 17: Universities will integrate gaming and simulational technologies into teaching and learning practices.

Respondents rated this statement as:

- highly important (medium degree of consensus);
- somewhat acceptable (high degree of consensus); and,
- somewhat likely (high degree of consensus).

Detail: In regard to the statement’s importance, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 0 respondents (0.00%) rated the statement as somewhat unimportant, 10 respondents (55.56%) rated it as somewhat important, and 8 respondents (44.44%) rated it as highly important. The responses result in a mean of 3.44. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The previous round’s importance IQD score of .50 yields a difference of .00, indicating no measured change in consensus in this round. The statement is thus interpreted as highly important with a medium degree of consensus.

A high degree of consensus and mean rating of somewhat acceptable was determined for the statement’s acceptability in this round (IQD = .125, a difference of -0.375 over the first round), indicating a measured increase in consensus in regard to the acceptability of this item in the second round. Of the 18 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 4 respondents (22.22%) rated the statement as somewhat unacceptable, 12 respondents (66.67%) rated it as somewhat acceptable, and 2
respondents (11.11%) rated it as highly acceptable. The resultant mean score was 2.89, with .25 and .75 quartile scores of 2.75 and 3, respectively.

On average, respondents rated the statement as somewhat likely (mean = 3.17): 0 respondents (0.00%) rated it as highly unlikely, 1 respondent (5.56%) rated the statement as somewhat unlikely, 13 respondents (72.22%) rated it as somewhat likely, and 4 respondents (22.22%) rated it as highly likely. 18 experts of 20 responded to this item, providing a high level of consensus. The item’s .25 and .75 quartile scores of 3 and 3.25, respectively, produced an IQD score of .125. The second round IQD score differs from the first round IQD score by -0.375, indicating a measured increase in consensus in the second round in regard to the possibility of the statement.

Statement 18: Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.

Respondents rated this statement as:

- **highly important** (medium degree of consensus);
- **somewhat acceptable** (high degree of consensus); and,
- **somewhat likely** (medium degree of consensus).

*Detail:* A medium degree of consensus and mean rating of highly important was determined for the statement’s importance in this round (IQD = .50). Of the 18 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 1 respondent (5.56%) rated the statement as somewhat unimportant, 8 respondents (44.44%) rated it as somewhat important, and 9 respondents (50.00%) rated it as highly important. The resultant mean score was 3.44, with .25 and .75 quartile scores of 3 and
4, respectively. The previous round’s importance IQD score of .50 yields a difference of .00, indicating no measured change in consensus in this round.

In regard to the statement’s acceptability, 18 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 4 respondents (22.22%) rated the statement as somewhat unacceptable, 10 respondents (55.56%) rated it as somewhat acceptable, and 4 respondents (22.22%) rated it as highly acceptable. The responses result in a mean of 3.00. The .25 and .75 quartile scores were 2.75 and 3.25, respectively, resulting in an IQD of .25. The previous round’s acceptability IQD score of 1.00 yields a difference of -0.75, indicating a measured increase in consensus in this round. The statement is thus interpreted as somewhat acceptable with a high degree of consensus.

On average, respondents rated the statement as somewhat likely (mean = 2.89): 0 respondents (0.00%) rated it as highly unlikely, 6 respondents (33.33%) rated the statement as somewhat unlikely, 8 respondents (44.44%) rated it as somewhat likely, and 4 respondents (22.22%) rated it as highly likely. 18 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3.25, respectively, produced an IQD score of .625. The second round possibility IQD score differs from the first round IQD score by -0.375, indicating a measured increase in consensus in regard to the possibility of the statement in the second round.

Statement 19: Revenues and savings generated by distance learning will free public universities from their dependence on public funding.

Respondents rated this statement as:

- somewhat important (medium degree of consensus);
- somewhat unacceptable (medium degree of consensus); and,
• *somewhat unlikely* (medium degree of consensus).

*Detail:* In regard to the statement’s importance, 15 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 5 respondents (33.33%) rated the statement as somewhat unimportant, 5 respondents (33.33%) rated it as somewhat important, and 3 respondents (20.00%) rated it as highly important. The responses result in a mean of 2.60. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus (IQD = .50) and mean rating of *somewhat unacceptable* was determined for the statement’s acceptability in this round. Of the 15 respondents, 3 respondents (20.00%) rated it as highly unacceptable, 5 respondents (33.33%) rated the statement as somewhat unacceptable, 7 respondents (46.67%) rated it as somewhat acceptable, and 0 respondents (0.00%) rated it as highly acceptable. The resultant mean score was 2.27, with .25 and .75 quartile scores of 2 and 3, respectively.

On average, respondents rated the statement as *somewhat unlikely* (mean = 1.73): 7 respondents (46.67%) rated it as highly unlikely, 5 respondents (33.33%) rated the statement as somewhat unlikely, 3 respondents (20.00%) rated it as somewhat likely, and 0 respondents (0.00%) rated it as highly likely. 15 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 1 and 2, respectively, produced an IQD score of .5.

*Statement 20: Universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases.*

Respondents rated this statement as:
• highly important (medium degree of consensus);

• somewhat acceptable (medium degree of consensus); and,

• somewhat unlikely (medium degree of consensus).

Detail: A medium degree of consensus and mean rating of highly important was determined for the statement’s importance in this round (IQD = .50). Of the 15 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 2 respondents (13.33%) rated the statement as somewhat unimportant, 4 respondents (26.67%) rated it as somewhat important, and 9 respondents (60.00%) rated it as highly important. The resultant mean score was 3.47, with .25 and .75 quartile scores of 3 and 4, respectively.

In regard to the statement’s acceptability, 15 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unacceptable, 6 respondents (40.00%) rated the statement as somewhat unacceptable, 7 respondents (46.67%) rated it as somewhat acceptable, and 2 respondents (13.33%) rated it as highly acceptable. The responses result in a mean of 2.73. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as somewhat acceptable with a medium degree of consensus.

On average, respondents rated the statement as somewhat unlikely (mean = 2.47): 0 respondents (0.00%) rated it as highly unlikely, 9 respondents (60.00%) rated the statement as somewhat unlikely, 5 respondents (33.33%) rated it as somewhat likely, and 1 respondent (6.67%) rated it as highly likely. 15 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50.
Statement 21: Universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to.

Respondents rated this statement as:

- somewhat important (medium degree of consensus);
- somewhat unacceptable (medium degree of consensus); and,
- somewhat likely (medium degree of consensus).

Detail: In regard to the statement’s importance, 15 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 3 respondents (20.00%) rated the statement as somewhat unimportant, 8 respondents (53.33%) rated it as somewhat important, and 4 respondents (26.67%) rated it as highly important. The responses result in a mean of 3.07. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The statement is thus interpreted as somewhat important with a medium degree of consensus.

A medium degree of consensus and mean rating of somewhat unacceptable was determined for the statement’s acceptability in this round (IQD = .50). Of the 15 respondents, 5 respondents (33.33%) rated it as highly unacceptable, 8 respondents (53.33%) rated the statement as somewhat unacceptable, 1 respondent (6.67%) rated it as somewhat acceptable, and 1 respondent (6.67%) rated it as highly acceptable. The resultant mean score was 1.87, with .25 and .75 quartile scores of 1 and 2, respectively.

On average, respondents rated the statement as somewhat likely (mean = 2.60): 2 respondents (13.33%) rated it as highly unlikely, 4 respondents (26.67%) rated the statement as somewhat unlikely, 7 respondents (46.67%) rated it as somewhat likely, and
2 respondents (13.33%) rated it as highly likely. 15 experts of 20 responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

Statement 22: Faculty employment rules, such as tenure and work hours, will be abolished or changed radically.

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat unacceptable* (medium degree of consensus); and,
- *somewhat unlikely* (medium degree of consensus).

*Detail:* A medium degree of consensus and mean rating of *somewhat important* was determined for the statement’s importance in this round (IQD = .50). Of the 15 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 3 respondents (20.00%) rated the statement as somewhat unimportant, 6 respondents (40.00%) rated it as somewhat important, and 6 respondents (40.00%) rated it as highly important. The resultant mean score was 3.20, with .25 and .75 quartile scores of 3 and 4, respectively.

In regard to the statement’s acceptability, 15 of 20 experts responded, of which 7 respondents (46.67%) rated it as highly unacceptable, 5 respondents (33.33%) rated the statement as somewhat unacceptable, 2 respondents (13.33%) rated it as somewhat acceptable, and 1 respondent (6.67%) rated it as highly acceptable. The responses result in a mean of 1.80. The .25 and .75 quartile scores were 1 and 2, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat unacceptable* with a medium degree of consensus.
On average, respondents rated the statement as *somewhat unlikely* (mean = 2.20):
2 respondents (13.33%) rated it as highly unlikely, 9 respondents (60.00%) rated the statement as somewhat unlikely, 3 respondents (20.00%) rated it as somewhat likely, and 1 respondent (6.67%) rated it as highly likely. 15 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .5.

*Statement 23: New types of innovative institutions grow in public acceptance and in status within the higher education community.*

Respondents rated this statement as:

- *somewhat important* (medium degree of consensus);
- *somewhat acceptable* (medium degree of consensus); and,
- *somewhat likely* (high degree of consensus).

*Detail:* In regard to the statement’s importance, 15 of 20 experts responded, of which 0 respondents (0.00%) rated it as highly unimportant, 3 respondents (20.00%) rated the statement as somewhat unimportant, 4 respondents (26.67%) rated it as somewhat important, and 8 respondents (53.33%) rated it as highly important. The responses result in a mean of 3.33. The .25 and .75 quartile scores were 3 and 4, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat important* with a medium degree of consensus.

A medium degree of consensus and mean rating of *somewhat acceptable* was determined for the statement’s acceptability in this round (IQD = .50). Of the 14 respondents, 0 respondents (0.00%) rated it as highly unacceptable, 5 respondents (35.71%) rated the statement as somewhat unacceptable, 8 respondents (57.14%) rated it
as somewhat acceptable, and 1 respondent (7.14%) rated it as highly acceptable. The resultant mean score was 2.71, with .25 and .75 quartile scores of 2 and 3, respectively.

On average, respondents rated the statement as *somewhat likely* (mean = 3.13): 0 respondents (0.00%) rated it as highly unlikely, 1 respondent (6.67%) rated the statement as somewhat unlikely, 11 respondents (73.33%) rated it as somewhat likely, and 3 respondents (20.00%) rated it as highly likely. 15 experts of 20 responded to this item, providing a high level of consensus. The item’s .25 and .75 quartile scores of 3 and 3, respectively, produced an IQD score of .00.

**Statement 24:** Rising tuition costs will lead to increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization.

Respondents rated this statement as:

- *highly important* (medium degree of consensus);
- *somewhat unacceptable* (medium degree of consensus); and,
- *somewhat likely* (medium degree of consensus).

**Detail:** A medium degree of consensus and mean rating of *highly important* was determined for the statement’s importance in this round (IQD = .50). Of the 14 respondents for this item, 0 respondents (0.00%) rated it as highly unimportant, 1 respondent (7.14%) rated the statement as somewhat unimportant, 7 respondents (50.00%) rated it as somewhat important, and 6 respondents (42.86%) rated it as highly important. The resultant mean score was 3.36, with .25 and .75 quartile scores of 3 and 4, respectively.
In regard to the statement’s acceptability, 14 of 20 experts responded, of which 2 respondents (14.29%) rated it as highly unacceptable, 6 respondents (42.86%) rated the statement as somewhat unacceptable, 4 respondents (28.57%) rated it as somewhat acceptable, and 2 respondents (14.29%) rated it as highly acceptable. The responses result in a mean of 2.43. The .25 and .75 quartile scores were 2 and 3, respectively, resulting in an IQD of .50. The statement is thus interpreted as *somewhat unacceptable* with a medium degree of consensus.

On average, respondents rated the statement as *somewhat likely* (mean = 2.64): 0 respondents (0.00%) rated it as highly unlikely, 5 respondents (35.71%) rated the statement as somewhat unlikely, 9 respondents (64.29%) rated it as somewhat likely, and 0 respondents (0.00%) rated it as highly likely. 14 of 20 experts responded to this item, providing a medium level of consensus. The item’s .25 and .75 quartile scores of 2 and 3, respectively, produced an IQD score of .50.

*Round two participant comments*

Three trend-specific comments were received in the first round in regard to the 24 statements:

1. In regard to the trend of globalization, one participant wrote, “I agree that the state will need to invest more in higher education to make some things happen. However, the higher ed institutions will need to show a major change in attitude. It can’t be business as usual.”

2. In regard to the trend of globalization, one participant wrote, “the private and proprietary institutions are changing and becoming extremely customer driven –i.e., flexible schedules, anywhere, anytime, etc.”
3. In regard to the trend of the rise of the knowledge economy, one participant wrote, “I think that the privatization of public institutions is a dangerous outcome. It will create a wider gulf between the haves and the have-nots. The strength of our society over time has been access to education.”

In addition, two general comments related to the study were received in the second round:

1. “The problem with predictions is that the likelihood of any particular outcome is such a complex blend of institutional culture, the types of students we serve, our overall mission and the resources available as well as the inclinations and expectations of our faculty.”

2. “As someone who researched Delphi methods for months and months, I find the structure of this one concerning. Delphis are best for generating conversations (as you state in the beginning), but this is the first I have seen that generates conclusions for future scenarios. The resources I have found (e.g., http://www.is.njit.edu/pubs/delphibook/index.html\(^{10}\)) and the studies I reviewed before tackling my Delphi indicated exploring issues that might impact the future during the first round, then exploring possible effects of those in future rounds. The construction of this study may provide false-positive results on some statements. For example: “Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.” Although I believe assertive leadership is required

before “universities will become entrepreneurial, innovative, and adaptive to their environments,” I more firmly believe pressure from governing bodies will force university leaders to change the status quo, which will force them in this direction.”

All comments received were incorporated into the round three instrument and looped back to participants for consideration in the next round. In regard to the concern related to the application of the Delphi, the following response and clarification was inserted into the third round instrument:

Thanks for citing this concern. The first two rounds are designed to measure the level of importance, level of acceptability and possibility of occurrence for each issue identified in my literature review (in addition to collecting comments, additional items, points of clarification, etc.). The purpose of the third round is to ask relevant follow-up questions given group consensus for the items. This is intended to create a galaxy of responses, and not intended to create conclusions regarding the future. I hope that we can use this final round as a jumping point for further exploration of these issues.

Round three results

The purpose of the third round is to provide insight to this study’s second question: what are the implications and policy actions for higher education given the futures identified in the previous rounds? As stated previously, responses collected from this final round are not intended to drive conclusions, but, rather, are intended to generate an ecology of responses for further study and consideration.
A total of 14 of 18 second round participants (35.00% of original, round one sample pool; 70.00% of round one participants) responded in the third round of the Delphi procedure, resulting a round-over-round response rate of 77.78%. The third round response group consisted of university presidents, chancellors or equivalent leaders (or their designates) from: one University of Minnesota campus, eight MnSCU campuses, two regional or national private institutions, two online-only universities, and one private tertiary institution.

In this round, participants were invited to provide short responses to the 24 statements discussed in the previous two rounds. For items that are rated as important and acceptable, but unlikely, where it appears group consensus has already been achieved, each panelist was asked to provide feedback on how the likeliness could be improved. For each item that is rated important, acceptable and likely, where it appears group consensus has already been achieved, each participant was asked to provide feedback on: 1) what the implications are at their college or university; and 2) what can be done in regard to support the item today. Finally, for each item that is rated important, unacceptable and likely, where it appears group consensus has been achieved, each participant was asked to provide feedback on: 1) what the implications and policy actions are at their college or university; 2) what can be done in regard to the item now to produce an acceptable outcome; and, 3) what if competing institutions accept this item and reorient their policies around it? For all other statements, no specific feedback was solicited, but participants were invited to provide comments. With the author’s permission to release her identity as a participant in this study, the “baker’s dozen” document received in the first round (Ramaley, 2005) was shared with participants as a
resource in this round. The instrument was distributed by electronic mail, and is included as Appendix F.

As noted in the previous chapter, analysis of the final round’s qualitative responses employed an inductive strategy based on the content analysis techniques described by Berg (2004, pp. 265-297) for grounded theory construction. In this study, the content analysis process is employed as a tool to facilitate the open coding (free coding) of data and the sorting of coded data into categories for reporting and discussion. To help ensure the data were coded and reported in appropriate categories, a draft report of the final round results was shared with all participants, and feedback, corrections and additions to the items were solicited. Comments received were compared with the themes and categories reported, and corrections, additions and deletions were made, as necessary.

The ten categories identified through the content analysis process are:

1. Accountability
2. Attend to knowledge production
3. Change or reconfigure curricula
4. Collaboration
5. External relations
6. Faculty relations
7. Structural realignment and repositioning
8. Reconfiguration of funding, resources and measurement
9. Student relations
10. Technology leadership
The remainder of this section summarizes each of the categories identified through analysis along a review of the implications and policy actions for higher education. The complete list of respondents is provided in Appendix I and an anonymized compilation of the round three response set is provided in Appendix G. Again, the term “university” is used generically in this analysis to refer to any higher education institution participating in this study.

**Category 1: Accountability**

Respondents discussed an increased focus on accountability, attending to their constituencies, and their social and educational responsibilities as higher education institutions. Several public higher education leaders mentioned that the growing view that students are customers, taxpayers and the legislature demand greater accountability and efficiency. The demand for greater accountability from outside stakeholders, however, is not limited to public institutions. One leader from a private institution reported that, “as a publicly traded company, we have accountability to our shareholders for increased margin performance (profits) and for increased effectiveness in our outcomes (value)” (Respondent AO).

Respondents also identified an obstacle to increasing accountability in their institutions. One participant wrote that, “being accountable for learner outcomes isn't a threat to academic freedom” (Respondent AD). But another (AO) stated, “academic freedom and accountability for student learning and engagement are not opposite ends of a continuum. Faculty play the ‘academic freedom’ card as a defense against being accountable for how they support their students’ learning.”
Policy actions suggested include the elimination of tenure, development of metrics for assessing accountability and efficiency, increasing transparency, improving communications with constituencies, and redevelopment of curricula to meet the needs of the university’s constituents – particularly students. The encouragement of innovation, personal accountability for budgets, and increasing transparency were identified as policy directions intended to increase financial accountability in higher education.

Category 2: Attend to knowledge production

Respondents discussed the role of the university in attending to the production of knowledge. Discourse in this area among respondents centered on the consideration of knowledge as a commodity, a move away from reductionism in the university, the need to trial concepts in the enterprise, fostering open intellectual environments, the distribution of knowledge, and innovative sharing of knowledge.

Statement 21 generated responses from several participants who questioned whether knowledge should be regarded as a commodity. Wrote one respondent:

“Commodity” is not the right analogy for our industry. Do doctors and lawyers sell commodities? No, they sell a service. Ideally, they are to give the best advice possible to their clients based on their years of education and experience - and the mantra “the customer is always right” does not apply when it comes to law and medicine. This is a much better analogy for higher ed. That’s not to say that universities don't sell commodities, because we do in the form of apparel with logos, football or theater tickets, and so on. But the core business is a service, not a commodity. (Respondent AZ)
Other participants stated the commoditization of knowledge is already happening at their institution or elsewhere. One respondent wrote:

[…] this is happening to some degree especially with the privates. Capella and the University of Phoenix are good examples. I think in the public sector, we are beginning to think of students as customers and obviously, we have the legislatures and board to please. I suppose that we see knowledge as a commodity in the continuing education and customized training divisions.

(Respondent AN)

Actions associated with the need to attend to knowledge production in universities include “moving away from the strict reductionism to a more holistic world-view that sees interconnectivity rather than the silos” (Respondent AN) and the creation of open intellectual environments (Respondent BH). The leveraging of innovative technologies is suggested as a means to innovate in distribution of knowledge. Wrote one respondent in regard to the globalization of knowledge, “share, share, share. Think MIT OpenCourseWare. Think OpenOffice” (Respondent BB).

Category 3: Change or reconfigure curricula

Respondents discussed the need to change or reconfigure curricula to meet the needs of the university of the present and the university of the future. Responses in this area generally focused on the need to meet the needs of students as customers, change pedagogy to meet new realities, encourage greater liberal education, and internationalization of the curriculum.

In regard to meeting the needs of students as customers, respondents noted that credit transfer policies will need to become more flexible and course scheduling will need
to meet student needs (i.e., more evening classes to accommodate working students). To meet the changing needs of students, pedagogies will also need to be changed. Suggested changes in pedagogy include utilizing technologies (i.e., online education), allowing for peer-to-peer learning, and emphasizing constructivism. One respondent wrote:

Today’s students, especially the traditional 18-24 year olds who grew up with television, computers, PacMan, Intendo (sic), Game Cube and PlayStation are simply unwilling to accept lecture education. Since they expect to be entertained, the use of gaming in the classroom is here to stay. Simulation, too, is now accepted as a viable learning strategy because it is financially viable, eliminates safety risks, is student-friendly, and can supplement the need for real patients, much in-demand clinical sites and reduces potential liability issues while students are perfecting skills. (Respondent AT)

Although participants in this study hail from a diverse pool of institutions with varying missions and programs, respondents that discussed the role of liberal education in their institutions generally voiced support. Several respondents, however, voiced caution, noting that the needs and expectations of students as customers need to be met. A broad-based liberal education may not be appropriate for all programs. One respondent wrote, “Interdisciplinary or transdisciplinarity fits better in some areas than others. This approach has great merits in the liberal education core and in problem based curriculum” (Respondent AK).

Finally, internationalization of the curriculum emerged as a common theme. Conceptualizations of “internationalization” suggested by participant responses range from compartmentalized programming (i.e., “global education week”) to the
encouragement of cross-cultural understanding and knowledge production through institutional partnerships, student exchanges, faculty exchanges, improving access to the institution for international students, and the realignment of the university to foster the development of students as global citizens.

Several challenges and areas of disagreement in the transformation of curricula were identified by participants. In regard to committing resources for internationally-oriented curricula, one respondent wrote, “funding would be needed to either develop or purchase this new curriculum and students would be expected to meet another graduation requirement that would require them to spend more time and money” (Respondent AT). Another stated, in relation to the production of knowledge in the university, “[the] configuration of knowledge will remain the domain of faculty” (Respondent AI).

Category 4: Collaboration

Increased interinstitutional and interdisciplinary collaboration were mentioned by respondents in their discussions of the implications, consequences and policy actions related to the futures identified in the previous rounds. Interinstitutional collaboration is not limited to cooperation among higher education institutions, respondents report, but also with the communities they serve, primary and secondary education, businesses, and the government. Such collaboration, according to one respondent, may lead to significant changes in higher education: “Partnerships, sometimes even with competitors, will help us better utilize our facilities, process mapping will improve our effectiveness, eliminating bureaucracy and redrafting union contracts will help in holding down tuition increases and reducing dependence on public funding” (Respondent AT).
Cooperation with international institutions is suggested as an approach to bring more students to campus. Other institutions may play a role as an intermediary in such relationships. Wrote one respondent, “colleges and universities will market on a national and international scale agreements to make this happen. Private entities such as Google University may drive this or be a broker” (Respondent AL). To succeed in a globalized future, one participant suggested local collaborations are essential: “My college will have to develop a new tradition of even closer integration with K-12 partners in the region, particularly in science and technology areas” (Respondent AW).

Responding to possibilities for collaboration across disciplines, participants suggested interdisciplinary activities could be facilitated through technology, the encouragement of team teaching among faculty, the encouragement of cross-disciplinary partnerships, and the encouragement of cross-cultural programs. One participant wrote that, “programmatic or research initiatives that draw faculty out of their disciplinary and departmental silos will assist in facilitating a broader and more global view of knowledge and knowledge management” (Respondent AO). Additional policy actions related by respondents to facilitate collaboration include reforming the credentialing of university teachers, creating more interdisciplinary opportunities in graduate schools, and building an information systems capacity for interdisciplinary learning.

Category 5: External relations

Respondents discussed transforming the relationships of their universities with actors outside of their institutions. Particularly among state institutions, participants reported that the state legislature and other governmental bodies exert their influence as change forces. Some participants suggested that government relations must be attended
to through advocacy at the state and federal levels, while others did not suggest a
necessity for advocacy. Several respondents, however, suggested that accreditation
bodies and credentialing need to be reformed, particularly as a measure toward
construction of a transdisciplinary academy. One respondent wrote, “the ‘reign’ of
disciplinary societies, the AAUP\textsuperscript{11} and other organizations that depend for their
livelihood on supporting the status quo must move to new models” (Respondent AO).

Participants suggested expanding outreach to the communities that they serve,
partnering with K-12 providers, and working to increase community access to their
institutions. One participant suggested that their university should promote “the many
international opportunities that exist” at the institution to their community to support the
management of globalizing tensions and to promote itself as a “global enterprise,” and
that “there already are a few universities whose global power would rival that of some
nation-states” (Respondent AZ). Another focused on better integrating its facilities with
the community it serves: “Think of your building as a community center. Determine
popular courses. Find faculty who want to teach off hours. Cater to the working adult
with kids” (Respondent BB).

Attention to marketing and communications emerged as a reoccurring theme
among participants as a means to communicate their accomplishments and strengths,
differentiate themselves from competitors, and aid in the commoditization of knowledge.
One respondent noted that “‘branding’ – reorganizing [and] prioritizing” the university is
a way to streamline processes and improve efficiencies in the organization (Respondent
BG). In regard to the competitive environment among universities, respondents, in

\textsuperscript{11} American Association of University Professors
general, reported that they accept or embrace challenges from competitors—even if the competition, in their view, is ahead of them. One respondent wrote that higher education market is large enough to support a large variety of providers and that market segmentation and differentiation is beneficial:

The assumption that one size fits all in higher education is faulty. Different providers serve different niches, and I can tell you that we don't compete much with Phoenix. Walmart and Nordstrom coexist. Jerry Springer and The Sopranos coexist. Hyundais and Rolls Royces coexist. Oh, and there are also those things in the middle, the Targets and “24”s and Toyotas. All those industries have market segments, and higher ed does too. If we want 100% of our population well-educated, there is room for a lot of education providers! (Respondent AZ)

Category 6: Faculty relations

Participant responses related to faculty relations generally centered on professional development, rethinking tenure, union relations, compensation, empowerment of faculty and staff, the creation of an interdisciplinary environment, recruitment, and personnel management. One participant (Respondent AM), noted that in the university of the future, “[the] conceptual framework for what is a college faculty will need to be explored.” Others agreed, and stated that the nature of the roles and job descriptions will change. “A major focus will continue to be innovation,” stated Respondent AL. “Our college will hire faculty and staff who bring this to the table” (Respondent AL).

Respondents cited professional development as a means to produce and support faculty of the future. University administrators and staff also need to be trained on the
use of technologies and innovations that are transforming higher education. Training for current faculty and future faculty, respondents believe, should be oriented toward increasing learner outcomes, enable pedagogical development, building a global awareness, changing mindsets to reflect new roles for faculty, and development of new skill sets to support their changing roles in the 21st century. Faculty development is not limited to professional development within the confines of the home institution. To build a global awareness, some respondents cited increasing travel abroad opportunities. One respondent commented on the growth of online among faculty:

A significant number of our own faculty opt to take their continuing education or further their professional development from these new universities. They are, willing to pay more than they would at their public counterparts in exchange for enrolling in the cohort model, getting credit for life experiences, reducing the number of class meetings and the number of weeks enrolled, applying what they are learning in the classroom to what they are doing on the job and being treated like a customer rather than a traditional student. (Respondent AT)

Respondents disagreed on the role of faculty tenure in the university of the future. One participant wrote, “for traditional institutions, the most daunting barrier to entrepreneurialism, innovation and adaptation to emerging new environments is the faculty and entrenched systems of faculty governance and tenure” (Respondent AO). Some participants agreed that accountability and efficiency pressures threaten to eliminate tenure –and that the elimination of tenure is already happening. Others wrote that the tenure system will remain intact. Respondent BA stated, “tenure essentially trades stability for higher salaries. If we abolish tenure, faculty will become much more
nomadic, and salaries will skyrocket to levels found in other professions.” The question of the future of tenure is not a binary problem of whether to retain tenure or eliminate it. Respondents noted there is middle ground. Wrote one participant, “I don’t see tenure going away. Fewer will receive it” (Respondent AN).

Participants with unionized faculties cited union relationships as a point of concern. Responding to the need to streamline processes and improve efficiencies, Respondent AI stated, “we cannot thrive in ‘new times’ with ‘old rules.’” The same participant followed-up with a response to the group’s consensus that it is somewhat unlikely and somewhat unacceptable that faculty employment rules will be abolished or changed radically: “The growth of entitlements and protections in union contracts is far beyond center. It (change) must be addressed in this emerging marketplace of higher education” (Respondent AI).

Related to both tenure and contract issues, some participants discussed a need to reconsider compensation. Respondent AD stated that compensation needs to be tied to performance, and Respondent AM stated that universities need to “allow for salary ranges to reflect the competitive demand to leaders who [create entrepreneurial, innovative, and adaptive environments].” Compensation expenses, wrote one participant, need to be controlled: “Eighty (80) percent of our costs (as a % of general revenues) are salary and benefits, and the percentage continues to rise. If it does, these (sic) eventually will be no funds for technology, equipment, supplies, etc.” (Respondent AI).

Several respondents mentioned a need to empower faculty, and that the structures of their universities need to be adjusted to involve them in decision-making processes. Writes Respondent BH, “faculty (because it moves slowly) gets bypassed in major
decisions, having an adverse effect on morale.” Another respondent wrote that all employees are leaders in the organization, and that it is important to support the “empowerment of faculty to lead making decisions at levels where those decisions effect (sic) production” (Respondent BG).

Respondents wrote that faculty recruitment also needs complement changes in the university of the future. Writes one respondent, “as an ever-increasing share of our enrollments are delivered via distance education, we are seeking new hires that are innovative and willing to teach online...” (Respondent AT). Furthermore, while the Delphi group believed that it is somewhat likely that academic jobs will be reduced through virtualization of the university, one leader wrote otherwise:

As the leader of a fully online university, I am happy to report that “virtualization” of the university calls forth greater needs for enlightened faculty who are focused on facilitating student learning. The teaching and learning environment that has integrated technology creatively into its pedagogy and delivery will be more effective at generating expected learning outcomes, but it will not be without the same cadres of faculty and academic support staff. The major implication for our university is the need to continually recruit excellent faculty to support our students, as the university expands. (Respondent AO)

Category 7: Structural realignment and repositioning

Respondents wrote on the need for structural realignment and repositioning of higher education institutions to build universities of the future. Such activities, respondents report, need to include leadership realignment and development, transformation of institutional culture and/or traditions, a focus on increasing the quality
of service and learning, focusing on innovation, rethinking accessibility of public higher education, addressing whether education needs to be treated as a business, taking a systems approach to change, employing a global focus, and the formation of interdisciplinary partnerships.

Leadership realignment and development emerged as a theme among participant responses to questions posed in the third round questionnaire. Respondent AO stated, “faculty development is important, but so is board development and presidential leadership.” Writes Respondent AD, “universities will need to be managed better; not less well managed.” Other participants wrote about a shift toward system support in institutional leadership rather than system management. Responding to statement 24, which identified a trend toward increasing efficiencies in universities, a participant wrote, “the key to increased efficiencies appears to be in the willingness of management to adopt a mode of operations that is more inclusive then exclusive. The ability to bring together a broad-based constituency of frequent users and front-line providers to brainstorm opportunities and problem solve solutions” (Respondent AT).

Participants suggested that institutional culture must be addressed. The drive for efficiency, writes Respondent AN, “is a matter of training and changing mindsets.” Transforming an institution into “an entrepreneurial innovator” has forced one institution “to communicate this change in culture and expectation […] and instill a mind-set in employees that risk-taking is not only acceptable, it’s encouraged” (Respondent AT). Universities, writes Respondent AT, “must change the culture of the organization to accept this significant philosophical change from parochial higher education institution to teaching and learning enterprise.” Responding to the group consensus that universities
will align their programs toward the development of global citizens, one participant noted, “one implication is the need to redirect attention from the western intellectual and cultural tradition” (Respondent BH).

Responding to the response group’s consensus that innovative institutions will grow in public acceptance and status within the higher education community, several participants indicated that their focus will continue to be innovation. One respondent wrote, “[my institution] has always stood for new traditional. This item represents one of our ‘mantras.’ In fact the theme of my inauguration a few years ago was ‘Celebrating a Tradition of Innovation’” (Respondent AO). In response to a suggestion that innovation could be restrained in higher education, Respondent AZ countered, “history has shown that there is no way to restrain technological innovation, certainly not in a market-driven consumer economy with relative political freedom.”

Adoption of technological innovations and efficiency increasing agendas, however, must not degrade the quality of universities, respondents report. Wrote Respondent AD, “we must provide high quality service to online students and a quality educational experience.” Another wrote, “higher education, except for the exclusive institutions, will be expected to engage in future efficiencies activities. However, higher education is not constructed around traditional business models. As some point, efficiency and effectiveness cross each other” (Respondent AK). In regard to increasing efficiency, one respondent noted that it is important to adopt a quality philosophy:

A first step would be to adopt a quality philosophy. Such efforts force institutions to examine processes, where the most waste occurs. People often think this applies only to manufacturing, but it does not. An insurance company, for
example, reduced the time it took to process claims by more than 80% simply by
not moving claims from in-basket to in-basket. As a business grows, processes
often get added on. As leaders come, they add reports they like; but when they
leave, those reports do not usually go away. Wasted time equals wasted money.
(Respondent BB)

Several respondents noted that broadening access to higher education needs to be
reconsidered. Respondent AZ declared, “higher education could potentially serve every
single person in the U.S.” Public higher education leaders expressed a need to build state
and public support for their institutions. Respondent AT wrote, “I believe the long-term
sustainability of public higher education hinges on financial, political and public
perception ramifications. It appears that, at least from a political and financial
perspective, the pendulum of support for higher education as a public good, versus a
private good, is on the upswing.”

The same respondent wrote, “colleges must be recognized as ‘big business.’ As
such, we must respond more like business and industry than higher education
organizations of the past. We must accept and practice a student-centered, user-friendly,
customer-service approach” (Respondent AT). Respondent AP shared that, “it is
becoming increasingly necessary to change from the promotion of good academics into
business-type roles to bringing in people who understand business and the use of
operational and performance metrics.” Not all participants, however, agreed that higher
education needs to be treated a “big business.” Challenging the assertion that higher
education is becoming commoditized, one participant wrote, “the core business is a
service, not a commodity” (Respondent AZ). Respondent AP noted that the
commoditization of higher education is not desirable, and that, “while there is likely room for improvement, we need to have non-monetary goals as well as cost-containment.” Finally, one respondent voiced concern: “Academic integrity will be challenged as research motives and findings used for commercial purposes become more acceptable, in fact become a point of competition among major research universities” (Respondent AO).

Several participants described a need for a systems approach to change. Providing a pathway toward producing an acceptable outcome in the commoditization of the university, Respondent AO wrote, “black and white thinking must be changed through important engagement of boards, faculty, students and alums about the issue of efficiency and effectiveness.” In response to a statement that predicted students will be able to take courses and any combination of universities, Respondent AZ wrote, “what we really should be working on are ADAPTABLE systems to serve the students in the best way possible for each student and each field. And such systems would certainly include the traditional model of education.” Respondent AO reflected a more global orientation: “We believe that we are building new models of how to think globally but act locally, to respect the traditions of higher education, but contribute to systemic change for the higher education community.”

Both interdisciplinary environment-building and K-12 partnership-building were policy actions discussed by respondents. Respondent AO wrote, “encouragement for interdisciplinary programs, for cross-disciplinary programs, for cross-cultural programs and for any other kind of programmatic or research initiatives that draw faculty out of their disciplinary and departmental silos will assist in facilitating a broader and more
global view of knowledge and knowledge management.” Other respondents noted that interdisciplinary activities could be facilitated through technology and team teaching.

Several respondents cited little need to consider repositioning themselves due to a perception that changes in higher education will be slow. Several others noted that, in response to many of the statements presented, they are already focused on the future, and that there is no need to change. In response to the likely growth of new types of innovative institutions, Respondent AZ noted, “our niche has been and will largely remain ‘traditional’ because that is what we do well. This niche will continue to exist for the foreseeable future. But we are also creating an online presence and reaching out to serve diverse students on and off campus.”

**Category 8: Reconfiguration of funding, resources and measurement**

Funding issues emerged as a common theme among participant responses. Respondents reported pressures to increase efficiency, increase productivity, improve processes, and control the cost of higher education. Accountability to the universities’ constituents also emerged as a theme – particularly among public institutions. Respondent AN wrote, “the taxpayers are demanding more accountability as reflected in legislative appropriations that are driving more efficiency.” Another participant stated, “competition from health care, K-12, corrections will continue to put pressure on budgets for higher education” (Respondent AD).

Some participants noted that greater focus will need to be placed on performance measurement. One participant noted, “universities will need to develop measures of efficiency and effectiveness. Those that don't will receive fewer public resources” (Respondent AD). Respondent AP wrote, “it is becoming increasingly necessary to
change from the promotion of good academics into business-type roles to bringing in people who understand business and the use of operational and performance metrics.”

“Measurement,” wrote Respondent AZ, “in good practice, is a feedback loop to improve that process.”

Respondents also called for a need to improve management and utilization of facilities and plants. Participants noted efficiency and accountability concerns drive improved use of facilities, and that the design of classrooms—and campuses, themselves, need to be changed to adapt to future roles of the university. One leader of a fully online institution wrote:

I imagine a time in the next couple decades when the physical plant of college and university campuses are really like academic “resorts” where students look for life style amenities and co-curricular enrichment, and the academic program is delivered exclusively through technology. Somewhat changes the definition of the campus of the future. (Respondent AO)

Several leaders of public institutions cited the need to seek new sources of revenue beyond those traditionally provided by the state and student tuition. One respondent described their university’s approach to the problem:

The Board of Trustees, Chancellor and our students are demanding that we seek alternative sources of funding. This demand for outside fund raising means that activities of our Foundation and Alumni Association are more important than ever, the president's role and responsibilities have changed to make fundraising more a higher priority and this responsibility is consuming more time for college
leaders, grant writing is critical and colleges have been forced to become more innovative and entrepreneurial. (Respondent AT)

Category 9: Student relations

Respondents wrote on a need to transform student relations, citing a need to not only meet students’ needs as customers, but to transform student thinking about the world. Respondent AT noted, “ultimately, our survival depends on our ability to deliver what the customer wants, when then (sic) want it and at a price that’s competitive.” Another participant wrote, the university needs to, “align business practices to create a smoother and easier student interface” (Respondent AW). Some participants cited concerns, however, that treating students as customers would interfere with university ethics. Wrote Respondent BH, “grade inflation (to please the customer) is just one example.”

Particularly in response to statements regarding globalization in the questionnaire, respondents wrote of a need for students to learn to be more globally minded. Respondent AZ wrote, “students will need to think of themselves as global citizens as well as local citizens.” Actions suggested by respondents include, encouraging and motivating students to have international experiences, providing faculty and staff to encourage and support such experiences, and providing access for international students. Participant AN wrote, “we can provide student opportunities to explore the world, to clarify their values, to think beyond their current paradigms to except others who are different than themselves and to understand that there are alternative ways to approach the world.” To develop global citizens, Respondent BH wrote that the university needs to
place, “more attention to internationalizing and diversifying the curriculum; more emphasis on study abroad; more access for international and immigrant students.”

Respondents also discussed a need to attend to student diversity and build a more diverse student population. Several participants suggested that a pathway for providing a more global education and toward developing a more diverse student body is through online education. In regard to the adoption of online educational technologies, Respondent AP wrote, “this acceptance of innovation is clearly happening and an institution like mine is extending access to new audiences, with over 35% or our enrollment consisting of learning of color.”

One participant noted that the delivery of knowledge through the use of innovative technologies allows higher education professionals to refocus their activities beyond knowledge distribution and attend to students’ needs. The virtualization of the university, wrote Respondent AW, creates “a shift in focus from teaching as production and revenue-creation to a more intensive approach to student support --- counseling, tutoring, aptitude testing, career guidance, mentoring, etc.”

Category 10: Technology leadership

Participant responses on technology leadership centered on the investment in and development of new technologies, increasing their online presence, research and design of new technologies, using technology to enhance learning, and building technology-savvy students. Respondents called for more resources to be put into technology infrastructures, support for technology infrastructures, infusion of technologies within institutions, and a focus on building quality into technologies. As previously mentioned,
one participant (Respondent BB) suggested technological innovation can be a collaborative effort, using open source technologies and philosophies.

Several respondents concurred with Respondent AD’s assessment that “online courses and degree offerings will provide better opportunity (sic) to increase revenue.” Others disagreed, and expressed caution regarding the cost of technology leadership. Wrote Respondent BH, “it takes lots of money and lots of technical staff to support up-to-date technology.” The leader of a fully online institution responded, “the costs of adequate technological infrastructure are HUGE, perhaps comparable to maintaining a physical plant” (Respondent AO).

Another leader of an online institution expressed caution in fully adopting innovative technologies: “There is a need and room for both types of institutions and [information and communications technologies] cannot solve all the problems of higher education” (Respondent AP). Another respondent shared concern that technology should enhance, and not replace, learning experiences:

I don't know of any parent of a high school student who wants them to spend their college years online, nor do I know any high school students who want to do so. For such students, the technology is really an enhancement of the personal learning experience. This is still a labor-intensive business. For non-trad students in some fields, this is a bit different. (Respondent AZ)

Other participants reported, however, that online education is a growing segment of the business. One respondent, from a state college, wrote, “our own enrollments in distance education, particularly Web-based courses are growing like (sic) much faster than those of live classes” (Respondent AT). Furthermore,
Without a doubt, today's students are connected. In many cases, they are, from a communications perspective, significantly more advanced in interpersonal communications than their teachers or student services staff. They are into instant messaging, demand an immediate response and seem willing to pay whatever the price to own the latest in information and communications technology.

(Respondent AT)

Respondents described a need for collaboration among institutions to build cross-institutional infrastructures. In regard to statement #5, which probed the support of student learning at any combination of universities, one respondent noted, “the system needs to be set up to do this. There is not a database available, for example, that allows registrars to easily cross-reference courses and say ‘this is the same as ours.’ It current (sic) takes an extreme amount of time to manually cross reference courses. You either must automate this or adopt a credit banking system like Thomas Edison in New Jersey” (Respondent BB).

Additional findings

In many cases, respondents reported that they were already engaged in activities related to –or were “on top of” – issues presented within the questionnaires. For example, one leader noted their institution was “innovative and adaptable already” (Respondent BG). Others reported making significant progress, and that they “will continue with what we have been doing” (Respondent AL).

Summary

Findings from all three rounds of this Delphi study are analyzed and presented in this chapter. Analysis of the first two rounds indicate that group consensus has been
achieved for all statements measured. Analysis and summarization of the third round data reveals ten categorical areas regarding related leadership implications, consequences and policy actions for the statements rated in the previous two rounds. These areas are mapped to a pathway for the university of the future, which is discussed in the final chapter.
CHAPTER 5: DISCUSSION OF THE FINDINGS

Introduction

Findings from this study are summarized and discussed in this chapter in perspective of the two central questions of this study: What are the potential futures of higher education in Minnesota related to the three driving trends of the New Paradigm? Second, what are the implications and policy actions for higher education given these futures?

Following the summary and discussion, leadership implications and suggestions for future research are provided. This chapter concludes this study with a note that through action on the findings and the feedback-looped, reflective consideration of policy actions, this study allows for the possibility of better informed and more future-oriented praxis by the higher education leaders that participated.

Summary of the findings

*Question 1: What are the potential futures of higher education in Minnesota related to the three driving trends of the New Paradigm?*

Findings for this question were drawn from group responses to the second round of the Delphi procedure, where plausible futures for Minnesota higher education (identified through a review of the literature and respondent inputs) were scored for importance, acceptability and possibility. At the end of the second round, consensus on all items was achieved.
Figure 6.

*Group Ratings of Importance, Acceptability and Possibility of Statements Related to the Trend of Globalization.*

1: Higher education institutions will lead in the management of tensions between global and the local, homogenization and heterogenization, and between modernity and tradition.
2: Universities will create new traditions to enable progress and economic prosperity in a globalized future.
3: Universities will align their programs toward the development of global citizens.
4: Universities will adopt an “anywhere-anytime” model of educational products and services.
5: Colleges and universities will reorganize to allow students to take credits at any combination of universities.
6: Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.

Note. Scale: 1 indicates a low group rating of item measured while 4 indicates a high value of item measured.

Figure 6 summarizes group ratings in regard to the trend of globalization. The respondent group reached consensus that it is important, acceptable and likely that: 1) universities will balance progress and economic prosperity with maintaining tradition; 2) universities will create new traditions to enable progress and economic prosperity in a globalized future; 3) universities will align their programs toward the development of global citizens; and, 4) through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments. Agreement was also
reached within the group that it is important and acceptable, but unlikely that: 1) universities will adopt an “anywhere-anytime” model of educational products and services; and, 2) colleges and universities will reorganize to allow students to take credits at any combination of universities.

Figure 7.

*Group Ratings of Importance, Acceptability and Possibility of Statements Related to the Trend of the Emergence of the Knowledge Economy and Knowledge Society.*

7: The future purpose of the university is to facilitate the globalization of knowledge.
8: University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization.
9: Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices.
10: Rising tuition costs will lead a trend toward privatization of public institutions.
11: Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.
12: “Siloed” academic disciplines will no longer exist.

Note. Scale: 1 indicates a low group rating of item measured while 4 indicates a high value of item measured.
Figure 7 summarizes group ratings in regard to the trend of the *emergence of the knowledge economy and knowledge society*. Consensus was reached among respondents that it is important, acceptable and likely that information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices. The group, by consensus, also reported that it is important, acceptable, but unlikely that: 1) the future purpose of the university is to facilitate the globalization of knowledge; 2) university leadership will place less emphasis on managing and will place greater emphasis on supporting the organization; and, 3) “silied” academic disciplines will no longer exist.
Figure 8.

*Group Ratings of Importance, Acceptability and Possibility of Statements Related to the Trend of Accelerating Change.*

13: To enable the survival of the university, the pace of technological innovation will be restrained.
14: Universities will no longer cater exclusively to the needs of human knowledge production.
15: Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.
16: Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.
17: Universities will integrate gaming and simulational technologies into teaching and learning practices.
18: Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.

Note. Scale: 1 indicates a low group rating of item measured while 4 indicates a high value of item measured.

Figure 8 summarizes group ratings in regard to the trend of *accelerating change.*

The respondent group reached consensus that it is important, acceptable and likely that:
1) universities will integrate gaming and simulational technologies into teaching and learning practices; and, 2) information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities. The response group also agreed that it is important, unacceptable, but likely
that advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.

Figure 9.

*Group Ratings of Importance, Acceptability and Possibility of Statements Related to Participant Submitted Statements.*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Importance</th>
<th>Acceptability</th>
<th>Possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>19: Revenues and savings generated by distance learning will free public universities from their dependence on public funding.</td>
<td>4</td>
<td>3</td>
<td>4</td>
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<tr>
<td>20: Universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases.</td>
<td>4</td>
<td>3</td>
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<tr>
<td>21: Universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to.</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22: Faculty employment rules, such as tenure and work hours, will be abolished or changed radically.</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23: New types of innovative institutions grow in public acceptance and in status within the higher education community.</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24: Rising tuition costs will lead to increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization.</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. Scale: 1 indicates a low group rating of item measured while 4 indicates a high value of item measured.

Figure 9 summarizes responses to *items submitted by participants*. The respondent group reached consensus that it is important, acceptable and likely that new types of innovative institutions will grow in public acceptance and in status within the
higher education community. Agreement was also reached that it is important and acceptable, but unlikely, that universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases. Finally, the response group determined that it is important, unacceptable and likely that: 1) universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to; and, 2) rising tuition costs will lead to increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization.

Although rated important, the response group reached consensus that it is unacceptable and unlikely that: 1) rising tuition costs will lead a trend toward privatization of public institutions; 2) universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states; 3) universities will no longer cater exclusively to the needs of human knowledge production; 4) advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement; 5) revenues and savings generated by distance learning will free public universities from their dependence on public funding; and, 6) faculty employment rules, such as tenure and work hours, will be abolished or changed radically. The response group furthermore determined that it is unimportant, unacceptable, and unlikely that the pace of technological innovation will be restrained to enable the survival of the university.
Question 2: What are the implications and policy actions for higher education given these futures?

Findings for this question were drawn from group responses to the third round of the Delphi, where participants were invited to provide short responses to the 24 statements discussed in the previous two rounds. Content analysis of the third round response set revealed ten thematic categories for implications and policy actions for higher education given the futures identified in the first two rounds:

1. Accountability
2. Attend to knowledge production
3. Change or reconfigure curricula
4. Collaboration
5. External relations
6. Faculty relations
7. Structural realignment and repositioning
8. Reconfiguration of funding, resources and measurement
9. Student relations
10. Technology leadership

Accountability involves attending to the university’s constituencies, and their social and educational responsibilities as higher education institutions. The attention to the production of knowledge category centers on the consideration of knowledge as a commodity, a move away from reductionism in the university, the need to trial concepts in the enterprise, fostering open intellectual environments, the distribution of knowledge, and innovative sharing of knowledge. The need to change or reconfigure curricula to
meet the needs of the university of the present and to meet the needs of the university of the future is generally focused on the requisite to meet the needs of students as customers, change pedagogy to meet new realities, encourage greater liberal education, and internationalization of the curriculum.

*Collaboration* is not limited to cooperation among higher education institutions, but also with the communities they serve, primary and secondary education, businesses, government, and international institutions. Internal collaboration among disciplines within institutions may be facilitated through technology, the encouragement of team teaching among faculty, the encouragement of cross-disciplinary partnerships, the encouragement of cross-cultural programs, reform of the credentialing of university teachers, creating more interdisciplinary opportunities in graduate schools, and building an information systems capacity for interdisciplinary learning.

*External relations*, the relationships of universities with actors outside of their institutions need to be addressed. Outside actors include government bodies, accrediting organizations, disciplinary societies, K-12 institutions, and the communities the universities serve. Internal *faculty relations* also need to be reconsidered. Respondents identified issues centered on professional development, tenure systems, union relations, compensation, the empowerment of faculty and staff, creation of an interdisciplinary environment, faculty recruitment, and personnel management.

*Structural realignment* involves leadership realignment and development, transformation of institutional culture and/or traditions, a focus on increasing the quality of service and learning, focusing on innovation, rethinking accessibility of public higher education, addressing whether education needs to be treated as a business, taking a
systems approach to change, employing a global focus, and the formation of interdisciplinary partnerships. The reconfiguration of funding and resources and measurement category reflects a need to increase efficiency, increase productivity, improve processes, and control the cost of higher education. This involves seeking new revenue sources, improving management and utilization of facilities and plants, and placing a greater focus on performance measurement.

The thematic category of student relations cites a need to not only meet students’ needs as customers, but to transform student thinking about the world. Respondents reported this involves attracting international students, focusing on student diversity, working with students to meet their individual needs. Finally, technology leadership is centered on the investment in –and the development of– new technologies, increasing their online presence, research and design of new technologies, using technology to enhance learning, and building technology-savvy students.

Discussion of the findings

Reframing higher education in Minnesota

Bolman and Deal (2003) identify four “frames” for understanding and managing dynamics within organizations. The four organizational frames are not intended to be utilized to analyze organizations individually. Rather, the four frames need to be integrated within a systems-based approach to organizational management. The symbolic frame considers organizations as cultures, and that “culture is the glue that holds an organization together and unites people around shared values and beliefs” (Bolman & Deal, 2003, p. 243). Bolman and Deal (2003) state organizations in the political frame “are coalitions of diverse individuals and interest groups,” and, “there are enduring
differences among coalition members in values, beliefs, information, interests and perceptions of reality” (p. 186). The human resources frame “sees an organization much like an extended family, made up of individuals with needs, feelings, prejudices, skills, and limitations” (Bolman & Deal, 2003, p. 14). Finally, the structural frame “emphasizes goals, specialized roles, and formal relationships” (Bolman & Deal, 2003, p. 14).

The resultant thematic categories abstracted from the Delphi third round data are paired with Bolman and Deal’s (2003) four organizational frames for discussion. These pairings are presented in Table 12. While the ten response categories identified through the analysis of the third round data are discussed in relation to these frames, it is important to note that varying degrees of crossover among frames may occur. These pairings should therefore be considered illustrative rather than definitive.
Table 12.

Round Three Response Categories Paired with Bolman and Deal’s (2003) Frames

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbolic</th>
<th>Political</th>
<th>Human Resources</th>
<th>Structural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accountability</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2. Attend to knowledge production</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Change or reconfigure curricula</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Collaboration</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. External relations</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Faculty relations</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>7. Structural realignment and repositioning</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>8. Reconfiguration of funding, resources, and measurement</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Student relations</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>10. Technology leadership</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>


Schein (2001) states the role of leaders is to create and manage the culture in which they operate (p. 370). The drives for accountability, change or reconfiguration of curricula and collaboration call for incorporation of the *symbolic frame* in higher education leadership. Accountability, for example, calls for reconsideration of the tradition of academic freedom. Respondent AO wrote, “faculty play the ‘academic freedom’ card as a defense against being accountable for how they support their students’ learning.” Change or reconfiguration of curricula—especially as it pertains to internationalization of the curriculum—fosters encouragement of cross-cultural understanding and knowledge production to foster the development of global citizens.
The category of collaboration calls for a shift in culture away from institutional isolation and “siloed” departments and disciplines, and a movement toward interinstitutional collaboration and cross-disciplinary knowledge production.

Bolman and Deal (2003) write that political organizations “are coalitions of diverse individuals and interest groups,” and, “there are enduring differences among coalition members in values, beliefs, information, interests and perceptions of reality” (p. 186). The demand for accountability in the political frame involves tending to the needs of the university’s constituents and stakeholders. This also requires that universities devote attention to external relations through advocacy in government, reform of accreditation and credentialing, and focusing on marketing and communications to communicate their accomplishments and strengths, and differentiate themselves from competitors. In regard to the political power of higher education, one participant suggested that their university should promote “the many international opportunities that exist” at the institution to their community to support the management of globalizing tensions (i.e., homogenization vs. heterogenization) and to promote itself as a “global enterprise,” and that “there already are a few universities whose global power would rival that of some nation-states” (Respondent AZ). Finally, the political frame is concerned with the strategic reconfiguration of funding, resources, and measurement, particularly among public institutions. As one participant noted, “universities will need to develop measures of efficiency and effectiveness. Those that don't will receive fewer public resources” (Respondent AD).

The human resources frame provides insight to the interpersonal dynamics of the university. In the drive for meeting the challenge of accountability, several respondents
cited a growing view that students need to be treated as customers and that the tenure system may need to be reexamined. In regard to faculty relations, respondents centered their discussions on professional development, rethinking tenure, union relations, compensation, empowerment of faculty and staff, creation of an interdisciplinary environment, recruitment, and personnel management. Respondents also wrote about a need to transform student relations, citing a need to not only meet students’ needs as customers, but to transform student thinking about the world. Respondent AT noted, “ultimately, our survival depends on our ability to deliver what the customer wants.”

The drives for accountability, attending to knowledge production, change or reconfigure curricula, structural realignment and repositioning, reconfiguration of funding, resources and measurement, and technology leadership call for incorporation of the structural frame in higher education leadership. Institutional accountability requires attention to the efficiency, transparency and assessments structures of the organization. Attending to knowledge production in universities includes creating open intellectual environments and creating innovative knowledge distribution and knowledge sharing platforms. Change or reconfiguration of the curriculum requires related structural changes to meet the needs of students as customers, encourage greater liberal education and internationalization of the curriculum. Respondents suggested each of these areas can be supported through technology leadership. This involves placing more resources into technology infrastructures, building support for technologies, and greater infusion of technologies within institutions. Furthermore, respondents noted that funding and additional resources need to be reconfigured to meet evolving structural needs, and that institutions need to improve upon operational metrics to measure the effective use of
resources. Finally, respondents reported that structural realignment and repositioning activities need to include leadership realignment and development, reexamining the accessibility of public higher education, addressing whether (and how) education needs to be treated as a business, taking a systems approach to change, building a global focus enterprise-wide, and formation of interdisciplinary partnerships.

Higher education in the New Paradigm in Minnesota

The literature review in the second chapter of this study concluded that the three trends of globalization, emergence of the knowledge society, and accelerating change contribute to a New Paradigm in higher education. Modeled after Schwartz and Ogilvy’s (1979) “emergent paradigm,” the New Paradigm suggests teleological relationships, self-organizing networks, synergetic relationships, design-oriented worldviews, anticausality, change through creative destruction, contextualized reality, and a globalized setting (please refer to Table 2 in the second chapter for further illustration). A review of the findings suggest that while the New Paradigm model describes futures scanned in the literature reviewed, the New Paradigm model is not an adequate descriptor of leadership orientations toward the future of higher education in Minnesota.

Although participant responses were compatible with Bolman and Deal’s (2003) conventional organizational frames, their responses do not appear to support the New Paradigm framework fully. The responses further appear to be reflective of Schwartz and Ogilvy’s (1979) “emergent paradigm.” Fundamental relationships described by participants in round three responses are generally complicated rather than teleological or complex-adaptive, and order in the organizations is hierarchic or heterarchic rather than self-organizing and intentional. This is reflected in the response group’s consensus that it
is unlikely that university leadership will place less emphasis on managing and will place
greater emphasis on supporting the organization. This is contrary to Allee’s (2003)
advice that “perhaps what we really need is to manage less and attend more” to the
indeterminate relationships within organizational knowledge networks (p. 15).

The worldview described by participants appears supportive of design and
contextual orientations in a globalized society. This is reflected in the response group’s
consensus that it is important, acceptable and likely that through assertive leadership,
universities will become entrepreneurial, innovative, and adaptive to their environments.
The respondents’ approach to change, however, generally supports the morphogenic
approach of the emergent paradigm, and that change is accomplished through
interinstitutional and interdisciplinary collaboration, and is not accomplished through
creative destruction.

Variances in orientations toward the future between the literature reviewed and
participant responses might be explained by differences between the literature review’s
long-term futures scan and varying future horizons among respondents. In this study’s
set of questionnaires, the time horizon for the “future” of higher education was
purposefully undefined due to the influence of accelerating change and the ambiguities
associated with the theorized approach of the Technological Singularity. By not
specifying a precise future date for discussion, each expert in the data collection phase
was permitted to extend their creative forecasts toward their individual horizons.

Leadership implications

This study’s findings suggest several implications for higher education in
Minnesota as they approach the future. Although these implications are identified
through research with university leaders, it is important to note that they may not be limited to higher education leaders, and may involve the entire system and stakeholders that interact –and will interact in the future– with Minnesota colleges and universities.

As stated and explored previously, content analysis of the third round response set revealed ten thematic categories for implications and policy actions for higher education given the futures identified in the first two rounds: accountability; attend to knowledge production; change or reconfigure curricula; collaboration; external relations; faculty relations; structural realignment and repositioning; reconfiguration of funding, resources and measurement; student relations; and, technology leadership.

Given preferred futures in regard to the trend of globalization, leaders must continue to align their universities to: 1) balance progress and economic prosperity with maintaining tradition; 2) create new traditions to enable progress and economic prosperity in a globalized future; 3) align their programs toward the development of global citizens; and, 4) become entrepreneurial, innovative, and adaptive to their environments through assertive leadership. Higher education leaders must also reorient their policies and practices to increase the likelihood that 1) universities will adopt an “anywhere-anytime” model of educational products and services; and, 2) colleges and universities will reorganize to allow students to take credits at any combination of universities.

In regard to the trend of the emergence of the knowledge economy and knowledge society, higher education leaders must continue to align their universities toward their preferred futures where ICT will assist in the distribution of knowledge and new knowledge forms into academic practices. Leaders must also reorient policies and
practices to increase the likelihood that: 1) the university will facilitate the globalization of knowledge; 2) university leadership will place less emphasis on managing and will place greater emphasis on supporting the organization; and, 3) “siloed” academic disciplines will no longer exist.

To ensure the actualization of preferred futures in regard to the trend of accelerating change, leaders must continue to align their universities to: 1) integrate gaming and simational technologies into teaching and learning practices; and, 2) allow for student-student and/or student-technology-student knowledge production in universities through information and communications technology systems. Higher education leaders must also reorient their policies and practices to attend to the reality that advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.

In regard to preferred futures submitted by participants, high education leaders must continue to align their universities to ensure innovative institutions will grow in public acceptance and in status within the higher education community. Leaders must also reorient policies and practices to increase the likelihood that universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases. Finally, higher education leaders need to attend to the reality that 1) universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to; and, 2) rising tuition costs will lead to increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization.
Finally, higher education leaders need to integrate the concept of accelerating change of the New Paradigm into their thinking and leadership practices. Although the study’s findings fit the frameworks identified by Bolman and Deal (2003) and Schwartz and Ogilvy (1979), leaders must further align their activities to succeed in an era of accelerating change, chaos and ambiguity.

Guidance for future research

The above discussions of the findings and leadership implications suggest four pathways for future research:

1. Solidify findings by continuing the Delphi process until conclusive group consensus is achieved on all items and issues identified in the third round. This study could have benefited from continuing the discussion on implications and policy actions in higher education given the futures identified through continuing the discussion that began in the third round into subsequent rounds. Due to resource limitations in this study, participating experts could not be reimbursed for the amount of work required to extend the Delphi discussions and build greater, measurable consensuses on the ecology of implications, consequences and policy actions identified.

2. The impact of accelerating change on higher educational institutions and education leaders needs to be explored in greater detail. This study suggests leaders generally are not incorporating an awareness of (and planning for) accelerating change in their practice. Further investigation needs to be conducted to more-specifically measure varying orientations and leadership approaches to futures that will be seemingly chaotic, ambiguous and highly
unpredictable. Future researchers may find it useful to sharpen the definition of the “future” to target the Technological Singularity explicitly.

3. **Broaden the scope of investigation to develop a more global analysis.** The three driving trends of the New Paradigm explored in this study are global in nature. Future research should take a comparative approach to identify the potential futures of higher education across the planet and throughout cultures, and should also investigate varying implications and policy actions for higher education given those futures.

4. **Maximize the effect found by Kurth-Schai et al (2000) that “suggest[s] that participation [in Delphi exercises] catalyses and supports clarification of facts and values, exploration of alternative perspectives and possibilities, and development of critical, creative and systemic thought” (p. 95).** By encouraging leaders to incorporate futures-oriented reflection in their practice, they may become better equipped to design their own futures –especially in situations where an expanded awareness of accelerating change is preferred by the researcher and experts involved. One approach to maximizing this effect is by expanding future studies into an ongoing (long-term) Delphi process where the entire study may go over several reiterations to measure changes in leadership attitudes, beliefs, etc., over time.

**Conclusion**

Built on a review of the relevant literature, this study investigated the potential futures of higher education in Minnesota related to the three driving trends of the New Paradigm. Implications and policy actions were further explored, given the futures
investigated. This research helps to better inform the practices of leaders, policymakers, and stakeholders in Minnesota higher education and beyond. In particular, through action on the findings and the feedback-looped, reflective consideration of policy actions, this study allows for the possibility of better informed and more future-oriented praxis by the higher education leaders that participated.

One must ask, however, given the accelerating rate of change, how long can Minnesota higher education in the New Paradigm sustain itself without undergoing radical transformation? How long could we expect the New Paradigm to remain relevant before another paradigm emerges? These questions will drive higher education policy in Minnesota as it approaches the 22nd century.
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APPENDICES
## Appendix A: List of round one Delphi statements

<table>
<thead>
<tr>
<th>Statement Number</th>
<th>Category</th>
<th>Profound statement</th>
<th>Detail</th>
<th>Source from literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Globalization</td>
<td>Higher education institutions will lead in the management of tensions between global and the local, homogenization and heterogenization, and between modernity and tradition.</td>
<td>Friedman (2000; 2005)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Globalization</td>
<td>Universities will create new traditions to enable progress and economic prosperity in a globalized future.</td>
<td>Higher education institutions need to embrace and promote the building of civil society to modernize and enable themselves, and their students, to compete in an increasingly globalized and competitive environment.</td>
<td>Giddens (1991)</td>
</tr>
<tr>
<td>3</td>
<td>Globalization</td>
<td>Universities will align their programs toward the development of global citizens.</td>
<td>Universities will need to make themselves more readily accessible, just as ATMs have made banks more accessible and fast-food chains have democratized the reach of restaurants.</td>
<td>Barber (2003) and Friedman (2000; 2005)</td>
</tr>
<tr>
<td>4</td>
<td>Globalization</td>
<td>Universities will adopt an “anywhere-anytime” model of educational products and services.</td>
<td>Future higher education systems will allow for maximum student mobility and selections of learning opportunities. Accreditation will occur at the course level, not the school level.</td>
<td>Ritzer (1998)</td>
</tr>
<tr>
<td>5</td>
<td>Globalization</td>
<td>Colleges and universities will reorganize to allow students to take credits at any combination of universities.</td>
<td>Inayatullah (2004)</td>
<td></td>
</tr>
<tr>
<td>Statement Number</td>
<td>Category</td>
<td>Profound statement</td>
<td>Detail</td>
<td>Source from literature</td>
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<tr>
<td>6</td>
<td>Globalization</td>
<td>Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.</td>
<td>Changing economic realities (viz. decrease in funding from governments, decrease in discretionary spending, growing importance of science and technology fields, and increased importance of intellectual property) require universities to seek new sources of revenue.</td>
<td>Slaughter &amp; Leslie (1997); Clark (1998)</td>
</tr>
<tr>
<td>7</td>
<td>Rise of knowledge society</td>
<td>The future purpose of the university is to facilitate the globalization of knowledge.</td>
<td>Organizational knowledge production in the 21st century is both reconfigurable and self-organizing. The role of managers and leaders in a knowledge-based system is to support the system, not manage it.</td>
<td>Delanty (2004)</td>
</tr>
<tr>
<td>8</td>
<td>Rise of knowledge society</td>
<td>University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization.</td>
<td>Such technologies have already transformed course delivery in higher education. Further use of ICT will enable institutional collaboration and an increase in the quality of education provided.</td>
<td>Allee (2003)</td>
</tr>
<tr>
<td>9</td>
<td>Rise of knowledge society</td>
<td>Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices.</td>
<td>Responding to pressures for accountability, decreased external support, market pressures, and competition, public institutions will respond by privatizing to gain greater control of their institutions.</td>
<td>Guri-Rosenblit (2001)</td>
</tr>
<tr>
<td>10</td>
<td>Rise of knowledge society</td>
<td>Rising tuition costs will lead a trend toward privatization of public institutions.</td>
<td></td>
<td>Gumport et al (1997)</td>
</tr>
<tr>
<td>Statement Number</td>
<td>Category</td>
<td>Profound statement</td>
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</tr>
<tr>
<td>11</td>
<td>Rise of knowledge society</td>
<td>Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.</td>
<td>Pressures for commercial success will cause academia to discontinue production of knowledge for the public good and will instead produce knowledge (and protect the knowledge produced) for their self interests. Universities will engage in networked relationships with governments and businesses in a new academic capitalist knowledge model, centered on meeting market demands in the knowledge economy.</td>
<td>Etzkowitz &amp; Leydesdorff (1997); Duderstadt (2004); Slaughter &amp; Rhodes (2004)</td>
</tr>
<tr>
<td>12</td>
<td>Rise of knowledge society</td>
<td>“Siloed” academic disciplines will no longer exist.</td>
<td>In addition to trends toward a transdisciplinary academy, university administrators will welcome the breakdown of the boundaries between disciplines as the process provides administrators greater authority and enhanced flexibility in solving administrative matters.</td>
<td>Menand (1996)</td>
</tr>
<tr>
<td>Statement Number</td>
<td>Category</td>
<td>Profound statement</td>
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<tr>
<td>13</td>
<td>Accelerating change</td>
<td>To enable the survival of the university, the pace of technological innovation will be restrained.</td>
<td>Human nature (and what it means to be human) will dramatically change in the future due to technological advances (esp. in artificial intelligence, genetics, nanotechnology and robotics). The global community will not be able to stop these advances. To survive as a society, we must slow down the pace of technological advancement and carefully consider our future directions. Technological advances will lead to the merging of humans and machines, allowing for almost instantaneous communication, sharing of existing knowledge and the exponential growth of new knowledge.</td>
<td>Fukuyama (2002)</td>
</tr>
<tr>
<td>14</td>
<td>Accelerating change</td>
<td>Universities will no longer cater exclusively to the needs of human knowledge production.</td>
<td>A university commodified through the extensive adoption of technologies will replace teaching staff with technology for the delivery and assessment of student learning.</td>
<td>Kurzweil (2005) and H. Moravec (1988; 1999)</td>
</tr>
<tr>
<td>15</td>
<td>Accelerating change</td>
<td>Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.</td>
<td></td>
<td>Skolnik (2000); Dator (2000); Rooney &amp; Hearn (2000)</td>
</tr>
<tr>
<td>16</td>
<td>Accelerating change</td>
<td>Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.</td>
<td>This trend will be through the result of the economizing of faculty jobs.</td>
<td>Skolnik (2000); Dator (2000)</td>
</tr>
<tr>
<td>Statement Number</td>
<td>Category</td>
<td>Profound statement</td>
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<tr>
<td>17</td>
<td>Accelerating change</td>
<td>Universities will integrate gaming and simulational technologies into teaching and learning practices.</td>
<td>Universities will embrace gaming and simulational technologies as they gain social acceptance. These technologies will be used to eliminate the &quot;drudgery&quot; of traditional curricula delivery and assessment.</td>
<td>Prensky (2002); Dator (2005)</td>
</tr>
<tr>
<td>18</td>
<td>Accelerating change</td>
<td>Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.</td>
<td>By using technology to replace student-teacher relationships with co-constructivism, &quot;democratic&quot; communication and knowledge production will transform learning and research in universities.</td>
<td>Hakken (2003) and J. Moravec (2006)</td>
</tr>
</tbody>
</table>
Appendix B: Prenotice letter

[DATE]

Dear [PARTICIPANT],

I am writing to ask for your help in a study on the future of knowledge production in Minnesota higher education. This study is for my doctoral dissertation research on the same topic in the Department of Educational Policy and Administration at the University of Minnesota. I also hope this research will be useful for higher education leaders as Minnesota progresses toward the future.

I ask for your helpful participation because of your relationship with [INSTITUTION] as its [PARTICIPANT JOB TITLE]. I am employing a Delphi methodology that allows you, other college and university presidents and me to have a virtual discussion on the futures of knowledge production, their implications, their consequences, and the actions we might take today to ensure that higher education institutions in Minnesota remain competitive. The discussion will take place through the use of a successive series of emailed questionnaires that allow you to participate whenever it is convenient for you. I expect the conversation to be finished (or mostly finished) at the conclusion of the third round of the Delphi process.

Within the next week, you will receive an email containing a brief questionnaire for the first round of the study. Participation in this study is, of course, voluntary; but, because the population of this study is limited, it is very important that you participate. If for any reason you cannot participate, you are invited to designate an individual to serve as your proxy. **If you choose to delegate your responses to another person, please let me know how to contact that individual.**

Results from this study will be shared with state and national leaders. It is my hope that the research will lead to better-informed decision making that will help us plan for successful higher education futures in Minnesota. I will send you a draft and then a final copy of the completed dissertation for your review and comments, if you choose.

Because this study involves “unknowns” of the future, I am taking extra care to ensure that your confidentiality is completely protected. The records of this study will be kept private. In any sort of report that I might publish, I will not include any information that will make it possible to identify you.

Thank you in advance for your time and participation. If you have any questions or comments in regard to this study, please feel to call me at 612-325-5992 or email me at moravec@umn.edu. I am also available to meet with you to discuss any aspect of this study.
Sincerely yours,

John Moravec  
Ph.D. Candidate, Educational Policy and Administration  
University of Minnesota  
104 Burton Hall  
178 Pillsbury Drive, SE  
Minneapolis, Minnesota  55455

P.S. The complete prospectus for this study will be made available online at  
http://www.educationfutures.com/dissertation (password: “knowledge”) within the next few days.
Appendix C: Round one Delphi instrument and consent statement

[DATE]

Dear [PARTICIPANT],

Thank you for participating in my doctoral dissertation research study on knowledge production in Minnesota higher education. This document contains the first round questionnaire – the first of three expected rounds in this Delphi study. I hope the reflective, virtual discussion provided by this research will be a useful exercise for you and for other higher education leaders as Minnesota progresses toward the future.

The purpose of this exercise is to identify the level of importance, level of acceptability and possibility of occurrence for eighteen futures identified through a thorough review of the literature related to the future of knowledge production in higher education. **I expect this round will take you only 20 minutes to complete.**

Many of the items in this questionnaire may seem obvious, profound or audacious. They are abstracted from some of the more provocative findings in my literature review, and they are intended to stimulate your imagination. Don’t be worried about providing the most “correct” response. Please give each of them your full consideration and rank them fairly.

Delphi studies consist of an iterative process whereby a group consensus for each item may ultimately be reached. In the next round, you will be given an opportunity to re-rate these items given the group mean. Follow-up questions in the final round of this Delphi process will help us to identify leadership implications, consequences and policy actions for the group’s consensus on the future of Minnesota higher education. As a reminder, if for any reason you cannot participate, you are invited to designate an individual to serve as your proxy. **If you choose to delegate your responses to another person, please let me know how to contact that individual.**

Please note that in this questionnaire, the term “university” is used generically to reference any postsecondary institution in Minnesota.

For your reference, a document containing an introduction to this study, a glossary of key concepts and a review of the relevant literature related to this study is available for download at: [http://www.educationfutures.com/wp-content/uploads/2006/08/moravec-new-paradigm-intro.pdf](http://www.educationfutures.com/wp-content/uploads/2006/08/moravec-new-paradigm-intro.pdf)

Once again, thank you for your participation in this study. If you have any questions or comments in regard to this study, please feel to call me at 612-325-5992 or email me at moravec@umn.edu. I am also available to meet with you to discuss any aspect of this study.

Sincerely yours,

John Moravec  
University of Minnesota  
104 Burton Hall  
178 Pillsbury Drive, SE  
Minneapolis, MN 55455 USA  
[www.educationfutures.com](http://www.educationfutures.com)
“A New Paradigm of Knowledge Production”

Delphi – Round One

Part I – Instructions

1. Please review the IRB consent statement at the end of this document.

2. Read each statement on this questionnaire.

3. Rate the level of importance, level of acceptability and possibility of occurring for each issue according to the rating scales, below.

4. Feel free to make comments, suggestions, points of clarification, etc., on any of these items in the space for comments following each section.

5. Save a copy of this response sheet for your own records.

6. By no later than September 15, please return this completed form by email to John Moravec at moravec@umn.edu or fax: 612-626-7496.

Rating scales:

<table>
<thead>
<tr>
<th><strong>Level of Importance</strong></th>
<th><strong>Level of Acceptability</strong></th>
<th><strong>Possibility of Occurring</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(for future Minnesota higher education)</td>
<td>(for the future of Minnesota higher education)</td>
<td>(in Minnesota higher education)</td>
</tr>
<tr>
<td>4: Highly important</td>
<td>4: Highly acceptable</td>
<td>4: Highly likely</td>
</tr>
<tr>
<td>3: Somewhat important</td>
<td>3: Somewhat acceptable</td>
<td>3: Somewhat likely</td>
</tr>
<tr>
<td>2: Somewhat unimportant</td>
<td>2: Somewhat unacceptable</td>
<td>2: Somewhat unlikely</td>
</tr>
<tr>
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</tr>
</tbody>
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<tbody>
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<td><strong>Trend I: Globalization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>1. Universities will balance progress and economic prosperity with maintaining tradition. Higher education institutions will lead in the management of tensions between global and the local, homogenization and heterogenization, and between modernity and tradition.</td>
<td>???</td>
<td>???</td>
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<td>2. Universities will create new traditions to enable progress and economic prosperity in a globalized future.</td>
<td>???</td>
<td>???</td>
<td>???</td>
</tr>
<tr>
<td>3. Universities will align their programs toward the development of global citizens. Higher education institutions need to embrace and promote the building of civil society to modernize and enable themselves, and their students, to compete in an increasingly globalized and competitive environment.</td>
<td>???</td>
<td>???</td>
<td>???</td>
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<tr>
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<td>???</td>
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<td>???</td>
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<td>???</td>
<td>???</td>
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<tbody>
<tr>
<td>Trend II: Emergence of the Knowledge Society</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>???</td>
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<td><strong>8</strong> University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization. Organizational knowledge production in the 21st century is both reconfigurable and self-organizing. The role of managers and leaders in a knowledge-based system is to support the system, not manage it.</td>
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<td><strong>9</strong> Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices. Such technologies have already transformed course delivery in higher education. Further use of ICT will enable institutional collaboration and an increase in the quality of education provided.</td>
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<td>???</td>
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<tr>
<td><strong>11</strong> Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states. Pressures for commercial success will cause academia to discontinue production of knowledge for the public good and will instead produce knowledge (and protect the knowledge produced) for their self interests. Universities will engage in networked relationships with governments and businesses in a new academic capitalist knowledge model, centered on meeting market demands in the knowledge economy.</td>
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<td>???</td>
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<td><strong>12</strong> &quot;Siloed&quot; academic disciplines will no longer exist. In addition to trends toward a transdisciplinary academy, university administrators will welcome the break-down of the boundaries between disciplines as the process provides administrators greater authority and enhanced flexibility in solving administrative matters.</td>
<td>???</td>
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Do you have any comments on any of the items in this section? If so, please elaborate:
**Statements**

<table>
<thead>
<tr>
<th>Trend III: Accelerating Change</th>
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<td>13 To enable the survival of the university, the pace of technological innovation will be restrained.</td>
</tr>
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<td>14 Universities will no longer cater exclusively to the needs of human knowledge production.</td>
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<td>16 Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.</td>
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<tr>
<td>17 Universities will integrate gaming and simulational technologies into teaching and learning practices.</td>
</tr>
<tr>
<td>Universities will integrate gaming and simulational technologies into teaching and learning practices. Universities will embrace gaming and simulational technologies as they gain social acceptance. These technologies will be used to eliminate the &quot;drudgery&quot; of traditional curricula delivery and assessment.</td>
</tr>
<tr>
<td>18 Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.</td>
</tr>
<tr>
<td>Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities. By using technology to replace student-teacher relationships with co-constructivism, &quot;democratic&quot; communication and knowledge production will transform learning and research in universities.</td>
</tr>
</tbody>
</table>

Do you have any comments on any of the items in this section? If so, please elaborate:
Part II

Is there anything missing from this questionnaire related to the trends of *globalization*, *emergence of the knowledge economy* or *accelerating change*? If so, please let me know, and I will incorporate your items into the next version of the questionnaire.

Statement:
Description:
Which trend is this related to? Please select one...

Statement:
Description:
Which trend is this related to? Please select one...

Statement:
Description:
Which trend is this related to? Please select one...

Do you have any overall comments in regard to this study? If so, please elaborate:

AFTER COMPLETING THIS QUESTIONNAIRE, PLEASE SAVE THIS DOCUMENT AND EMAIL IT TO moravec@umn.edu OR FAX: 612-626-7496
CONSENT STATEMENT

The New Paradigm of Knowledge Production in Minnesota higher education

You are invited to be in a research study of the future of higher education. You were selected as a possible participant because of your role as a higher education leader in the State of Minnesota. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: John W. Moravec, Ph.D. Candidate, Department of Educational Policy and Administration, University of Minnesota

Background Information

The purpose of this study is to identify potential futures for higher education and their related implications, consequences and policy actions in light of the driving trends of globalization, rise of the knowledge society and accelerating change in the New Paradigm of Knowledge Production in higher education.

Procedures:

I respectfully request that you do the following: Please complete the above questionnaire and return it to John Moravec at moravec@umn.edu or by fax to 612/626-7496. Questionnaires will be iteratively redistributed until a group consensus on the items contained emerge from the participants. This phase of the study is expected to last for at least two rounds.

You will also receive a draft copy of the dissertation, prior to finalization of the thesis, in addition to your individual, raw data. Your response will be invited and appreciated.

Risks and Benefits of being in the Study

There are no risks or benefits associated with participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study:
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is: John Moravec. You may ask any questions you have now. If you have questions later, you are encouraged to contact him at 104 Burton Hall, 178 Pillsbury Drive, SE, Minneapolis, MN 55455, 612/625-3517, moravec@umn.edu. You may also contact his advisor, Dr. Arthur Harkins at 612/624-5244, harki001@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects’ Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

Completion of the survey implies consent to participate in the study.

You are encouraged to keep a copy of this information for your records.
Appendix D: Round two Delphi instrument

September 25, 2006

Dear [PARTICIPANT],

Once again, thank you for participating in my doctoral dissertation Delphi study on the future of knowledge production in Minnesota higher education. It is currently in the second round (of three rounds). I ask that you please complete this round’s questionnaire by October 13.

Response to the study has been great—and highly thought-provoking. Participants in this study include leaders from Minnesota’s public colleges and universities, private regional colleges, proprietary institutions, and online education providers.

In this round, you are provided with the participant group’s mean response score for each item, along with respondents’ comments. The format of the instrument has been altered slightly from the previous round to allow for easier rating and commenting. Given the group’s mean score, you are provided an opportunity to re-rate each item so consensus might be reached. Also, six new items are introduced to be rated for the first time. Don’t be worried about providing the most “correct” responses. Please give each of them your full consideration and rank them fairly. I anticipate this round will take you only 20-30 minutes to complete.

All the comments received have been highly constructive and are incorporated into this round’s instrument. A couple of concerns were raised; however, and I should make some clarifications. First, please view this series of questionnaires as more of an anonymous, virtual group discussion than a formal survey. Items in the first round questionnaire were intended to serve as a starting point for our discussion. Six new items, suggested by the previous round’s participants are incorporated into this round. Second, the scope and impact of the selected items are macro in nature, and may affect each institution differently. For this second round, please rate how you believe these items relate to Minnesota higher education in general. In the third and final round, I will ask questions on how you and your institution might respond to the futures identified.

Finally, as I try my best to be respectful of your time constraints and ability to commit to this study, not all the “hot” issues affecting higher education in Minnesota are explored in this study (e.g., visionary leadership, what it means to be educated, and changing beliefs from higher education as a public good to higher education as an economic tool). Using this study’s findings as a starting point for discussion, would you be interested in participating in a half-day to full-day summit with other higher education leaders and policy makers toward the end of this academic year to explore the futures of Minnesota higher education?

Once again, thank you for your continued participation in this study. If you have any questions or comments in regard to this study, please feel to call me at 612-325-5992 or email me at moravec@umn.edu. I am also available to meet with you to discuss any aspect of this study.

Sincerely yours,

John Moravec
University of Minnesota
“A New Paradigm of Knowledge Production”

Delphi – Round Two

Part I – Instructions

1. **Read each statement** on this questionnaire.

2. Considering the group mean and comments for each item, **re-rate** (if necessary) the level of importance, level of acceptability and possibility of occurring for each issue according to the rating scales, below, for items 1-18.

3. **Rate** the level of importance, level of acceptability and possibility of occurring for each issue according to the rating scales, below, for items 19-24.

4. Feel free to **make comments**, suggestions, points of clarification, etc., on any of these items in the space for comments following each section.

5. Save a copy of this response sheet for your own records.

6. **By no later than October 13**, please **return this completed form** by email to John Moravec at moravec@umn.edu or fax: 612-626-7496.

**Rating scales:**

<table>
<thead>
<tr>
<th>Level of Importance (for future Minnesota higher education)</th>
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<tr>
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<td>2: Somewhat unacceptable</td>
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<tbody>
<tr>
<td><strong>Trend I: Globalization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1  **Universities will balance progress and economic prosperity with maintaining tradition.**  
Higher education institutions will lead in the management of tensions between global and the local, homogenization and heterogenization, and between modernity and tradition.  
On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat likely. | Group Mean 3.25 | 3.20 | 2.70 |
| Your Rating                                                               | n          | n             | n           |
| New Rating                                                                | ???        | ???           | ???         |
| 2  **Universities will create new traditions to enable progress and economic prosperity in a globalized future.**  
On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely. | Group Mean 3.55 | 3.10 | 2.65 |
| Your Rating                                                               | n          | n             | n           |
| New Rating                                                                | ???        | ???           | ???         |
| 3  **Universities will align their programs toward the development of global citizens.**  
Higher education institutions need to embrace and promote the building of civil society to modernize and enable themselves, and their students, to compete in an increasingly globalized and competitive environment.  
On average, the response group rated this item as highly important, highly acceptable and somewhat likely. | Group Mean 3.85 | 3.45 | 3.10 |
| Your Rating                                                               | n          | n             | n           |
| New Rating                                                                | ???        | ???           | ???         |

**General comments from items in this section:**

- Incentives are key, if only directives of society will not change. I see the State of Minnesota going backwards, retreating from these upfront issues. More resource investment must be made…

**Do you have any additional comments on any of the items on this page?**

If so, please elaborate:
### Trend I: Globalization (continued)

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<td><strong>4</strong> Universities will adopt an “anywhere-anytime” model of educational products and services.<strong>&lt;br&gt;Universities will need to make themselves more readily accessible just as ATMs have made banks more accessible and fast-food chains have democratized the reach of restaurants.</strong>&lt;br&gt;&lt;br&gt;On average, the response group rated this item as highly important, somewhat acceptable and neither likely nor unlikely.</td>
<td>3.70</td>
<td>2.70</td>
<td>2.50</td>
</tr>
<tr>
<td><strong>Your Rating</strong></td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td><strong>New Rating</strong></td>
<td>???</td>
<td>???</td>
<td>???</td>
</tr>
<tr>
<td><strong>5</strong> Colleges and universities will reorganize to allow students to take credits at any combination of universities.<strong>&lt;br&gt;Future higher education systems will allow for maximum student mobility and selections of learning opportunities. Accreditation will occur at the course-level, not the school level.</strong>&lt;br&gt;&lt;br&gt;On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat unlikely.</td>
<td>3.20</td>
<td>2.85</td>
<td>2.25</td>
</tr>
<tr>
<td><strong>Your Rating</strong></td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td><strong>New Rating</strong></td>
<td>???</td>
<td>???</td>
<td>???</td>
</tr>
<tr>
<td><strong>6</strong> Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.<strong>&lt;br&gt;Changing economic realities (viz. decrease in funding from governments, decrease in discretionary spending, growing importance of science and technology fields, and increased importance on intellectual property) require universities to seek new sources of revenue.</strong>&lt;br&gt;&lt;br&gt;On average, the response group rated this item as highly important, somewhat acceptable and neither likely nor unlikely.</td>
<td>3.65</td>
<td>3.10</td>
<td>2.50</td>
</tr>
<tr>
<td><strong>Your Rating</strong></td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td><strong>New Rating</strong></td>
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**General comments from items in this section:**

- Incentives are key, if only directives of society will not change. I see the State of Minnesota going backwards, retreating from these upfront issues. More resource investment must be made…

**Do you have any additional comments on any of the items on this page?**

If so, please elaborate:
### Trend II: Emergence of the Knowledge Society

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<tbody>
<tr>
<td><strong>7</strong> The future purpose of the university is to facilitate the globalization of knowledge. On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat unlikely.</td>
<td>2.90</td>
<td>2.85</td>
<td>2.35</td>
</tr>
<tr>
<td>Your Rating</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>New Rating</td>
<td>???</td>
<td>???</td>
<td>???</td>
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</table>
| **8** University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization. Organizational knowledge production in the 21st century is both reconfigurable and self-organizing. The role of managers and leaders in a knowledge-based system is to support the system, not manage it. On average, the response group rated this item as somewhat important, neither acceptable nor unacceptable and somewhat unlikely. Comments from respondents:  
  - This may be unrealistic; the more mandates federal & state governments place on colleges and universities to “perform,” the more “managing” is needed.  
  - Systems built to remain the same. | 3.15       | 2.50          | 2.15        |
| Your Rating                                                               | n          | n             | n           |
| New Rating                                                                | ???        | ???           | ???         |
| **9** Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices. Such technologies have already transformed course delivery in higher education. Further use of ICT will enable institutional collaboration and an increase in the quality of education provided. On average, the response group rated this item as highly important, highly acceptable and somewhat likely. | 3.90       | 3.35          | 3.20        |
| Your Rating                                                               | n          | n             | n           |
| New Rating                                                                | ???        | ???           | ???         |

**General comments from items in this section:**

- Everybody talks about it – but again, unless monetary incentives, criteria for evaluation and visionary leadership takes – will not happen.

**Do you have any additional comments on any of the items on this page?**

If so, please elaborate:
### Trend II: Emergence of the Knowledge Society (continued)

<table>
<thead>
<tr>
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<th>Statements</th>
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<tr>
<td>10</td>
<td><strong>Rising tuition costs will lead a trend toward privatization of public institutions.</strong> Responding to pressures for accountability, decreased external support, market pressures, and competition, public institutions will respond by privatizing to gain greater control of their institutions. On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat likely. Comments from respondents: I agree with the description, but not the conclusion, what about a response of increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and building utilization? (Note from John: Item #24 asks this question)</td>
<td>2.65</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>11</td>
<td><strong>Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.</strong> Pressures for commercial success will cause academia to discontinue production of knowledge for the public good and will instead produce knowledge (and protect the knowledge produced) for their self interests. Universities will engage in networked relationships with governments and businesses in a new academic capitalist knowledge model, centered on meeting market demands in the knowledge economy. On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.</td>
<td>2.70</td>
<td>n</td>
<td>n</td>
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<td>12</td>
<td><strong>&quot;Siloed&quot; academic disciplines will no longer exist.</strong> In addition to trends toward a transdisciplinary academy, university administrators will welcome the break-down of the boundaries between disciplines as the process provides administrators greater authority and enhanced flexibility in solving administrative matters. On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely. Comments from respondents: This is nearly impossible because teacher credentials and accreditations in some fields (e.g., nursing, engineering) require specialization.</td>
<td>3.50</td>
<td>n</td>
<td>n</td>
</tr>
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</table>

**General comments from items in this section:**

- Everybody talks about it – but again, unless monetary incentives, criteria for evaluation and visionary leadership takes – will not happen.

**Do you have any additional comments on any of the items on this page?**

If so, please elaborate:
### Trend III: Accelerating Change

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<td><strong>13</strong> To enable the survival of the university, the pace of technological innovation will be restrained. Human nature (and what it means to be human) will dramatically change in the future due to technological advances (esp. in genetics, nanotechnology and robotics), and that the global community will not be able to stop these advances. To survive as a society, we must slow down the pace of technological advancement and carefully consider our future directions. On average, the response group rated this item as somewhat unimportant, somewhat unacceptable and somewhat unlikely.</td>
<td>2.20</td>
<td>2.00</td>
<td>1.85</td>
</tr>
<tr>
<td><strong>14</strong> Universities will no longer cater exclusively to the needs of human knowledge production. Technological advances will lead to the merging of humans and machines, allowing for almost instantaneous communication, sharing of existing knowledge and the exponential growth of new knowledge. On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.</td>
<td>3.00</td>
<td>2.11</td>
<td>2.16</td>
</tr>
<tr>
<td><strong>15</strong> Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs. A university commodified through the extensive adoption of technologies will replace teaching staff with technology for the delivery and assessment of student learning. On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat likely. Comments from respondents: This is unrealistic; most students prefer NOT learning online; most 18-21 year-olds crave the socialization of a campus.</td>
<td>2.55</td>
<td>2.00</td>
<td>2.65</td>
</tr>
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Do you have any comments on any of the items on this page? If so, please elaborate:
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<td><strong>Trend III: Accelerating Change (continued)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>16</strong> Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement. This trend will be through the result of the economizing of faculty jobs. On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely. Comments from respondents: This is important for only one reason: performance measurement. Customers and governing bodies want to see what they get for their money and compare providers.</td>
<td>2.79</td>
<td>1.84</td>
<td>2.26</td>
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<tr>
<td>Your Rating</td>
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</tr>
<tr>
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<td>3.16</td>
<td>2.79</td>
<td>3.05</td>
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<td>3.32</td>
<td>3.00</td>
<td>2.79</td>
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Do you have any comments on any of the items on this page?

If so, please elaborate:
<table>
<thead>
<tr>
<th>Statements</th>
<th>Importance</th>
<th>Acceptability</th>
<th>Possibility</th>
</tr>
</thead>
</table>

NEW STATEMENTS SUBMITTED FROM PARTICIPANTS
Please rate these new items.

19 **Revenues and savings generated by distance learning will free public universities from their dependence on public funding.**
Higher education takes in revenues greater than $200 billion each year—five times the revenue generated by the steel industry. Distance based courses are on the rise, increasing 400% from 1998-2001. If for-profit education can make money and grow exponentially from distance education, cannot public education eliminate its dependence on public funding?

20 **Universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases.**
"Colleges and universities, in general, are grossly inefficient and ineffective in terms of how they manage their enterprises. You've got underutilization of the physical plant--you've got tenure--which basically ties your hands on how you can manage your work force. You have irrelevant research. You've got extremely low teaching loads for tenured and untenured full-time faculty," James Carlin, former head of the Massachusetts Board of Higher Education.

21 **Universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to.**
Business in the U.S. is expected to make money or die. As a result, business leaders look for efficiencies through ICT, the elimination of non-value-added activities, the closing of facilities, and/or the elimination of dwindling product lines or services. We as stockholders expect this. University leaders must do the same (e.g., expect 40+ hour work-weeks common in industry, close under-enrolled programs).

Do you have any comments on any of the items on this page? If so, please elaborate:
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Please rate these new items.

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<td>???</td>
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Do you have any comments on any of the items on this page? If so, please elaborate:
Part II

Do you have any overall comments in regard to this study? If so, please elaborate:

AFTER COMPLETING THIS QUESTIONNAIRE, PLEASE SAVE THIS DOCUMENT AND EMAIL IT TO moravec@umn.edu OR FAX: 612-626-7496
### Appendix E: List of additional Delphi statements contributed by participants

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<thead>
<tr>
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</tr>
</tbody>
</table>
October 29, 2006

Dear [PARTICIPANT],

Once again, thank you for participating in my doctoral dissertation Delphi study on the future of knowledge production in Minnesota higher education. It is currently in the final round. This is the last questionnaire related to this study you will receive from me. I ask that you please complete this round’s questionnaire by November 17.

As of the conclusion of the second round, moderate-to-high levels of consensus have been measured on all items. Of the 54 items carried over from the first round, group consensus increased in 33 of them. Group consensus decreased in only one item. If you are interested in reviewing the data collected, a summary Excel spreadsheet is attached; it details the level of consensus for each item in addition to the relevant descriptive statistics.

Also attached, please find a “Baker’s Dozen” article on educational challenges in K-16 education written by Dr. Judith Ramaley, president of Winona State University. With her permission to share this study and her identity with you, I hope that you will find this to be a useful resource in both our continued virtual conversation on the future of knowledge production in Minnesota higher education and in your own practice.

The 31 short response questions contained in this round will take more time to complete than the previous two rounds. I thank you in advance for contributing your time to complete this round, and I hope that you will find the reflective consideration of these questions useful in your own leadership practice. This spring, I will also invite all participants who complete this round to the University of Minnesota to engage in an active roundtable discussion on the futures of Minnesota higher education, using this study’s results as a starting point.

Once again, thank you for your continued participation in this study. If you have any questions or comments in regard to this study, please feel to call me at 612-325-5992 or email me at moravec@umn.edu. I am also available to meet with you to discuss any aspect of this study. A draft of my dissertation and final copy will be made available online in early 2006. Your review and comments are always invited.

Sincerely yours,

John Moravec
University of Minnesota
104 Burton Hall
“A New Paradigm of Knowledge Production”

Delphi – Round Three

Part I – Instructions

7. **Read each statement** on this questionnaire and comments on page 17 before writing your responses.

8. Please **respond** to each of the 31 questions.

9. Feel free to **write as much as you wish**.

10. Feel free to **make comments**, suggestions, points of clarification, etc., on any of these items.

11. Save a copy of this response sheet for your own records.

12. **By no later than November 17**, please **return this completed form** by email to John Moravec at moravec@umn.edu or fax: 612-626-7496 (email is preferred for this round).
Statements related to Globalization

Statement 1

Higher education institutions will lead in the management of tensions between global and the local, homogenization and heterogenization, and between modernity and tradition.

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat likely.

1. What are the implications for this item at your college or university?

2. What can be done to best support this item today at your institution?

Statement 2

Universities will create new traditions to enable progress and economic prosperity in a globalized future.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.

3. What are the implications for this item at your college or university?

4. What can be done to best support this item today at your institution?
Statement 3

*Universities will align their programs toward the development of global citizens.*

Detail: Higher education institutions need to embrace and promote the building of civil society to modernize and enable themselves, and their students, to compete in an increasingly globalized and competitive environment.

**On average, the response group rated this item as highly important, highly acceptable and somewhat likely.**

5. What are the implications for this item at your college or university?

6. What can be done to best support this item today at your institution?

Statement 4

*Universities will adopt an “anywhere-anytime” model of educational products and services.*

Detail: Universities will need to make themselves more readily accessible, just as ATMs have made banks more accessible and fast-food chains have democratized the reach of restaurants.

**On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.**

7. What can be done in regard to improve the likelihood of this item today?
Statement 5

Colleges and universities will reorganize to allow students to take credits at any combination of universities.

Detail: Future higher education systems will allow for maximum student mobility and selections of learning opportunities. Accreditation will occur at the course level, not the school level.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

8. What can be done in regard to improve the likelihood of this item today?

Statement 6

Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.

Detail: Changing economic realities (viz. decrease in funding from governments, decrease in discretionary spending, growing importance of science and technology fields, and increased importance of intellectual property) require universities to seek new sources of revenue.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.

9. What are the implications for this item at your college or university?

10. What can be done to best support this item today at your institution?
Statements related to Knowledge Society

Statement 7
The future purpose of the university is to facilitate the globalization of knowledge.

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat unlikely.

11. What can be done in regard to improve the likelihood of this item today?

Statement 8
University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization.

Detail: Organizational knowledge production in the 21st century is both reconfigurable and self-organizing. The role of managers and leaders in a knowledge-based system is to support the system, not manage it.

Comments from respondents:
• “This may be unrealistic; the more mandates federal & state governments place on colleges and universities to ‘perform,’ the more ‘managing’ is needed.”
• “Systems built to remain the same.”

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat unlikely.

12. What can be done to improve the likelihood of this item today?
**Statement 9**

*Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices.*

Detail: Such technologies have already transformed course delivery in higher education. Further use of ICT will enable institutional collaboration and an increase in the quality of education provided.

On average, the response group rated this item as highly important, highly acceptable and somewhat likely.

13. What are the implications for this item at your college or university?

14. What can be done to best support this item today at your institution?

---

**Statement 10**

*Rising tuition costs will lead a trend toward privatization of public institutions.*

Detail: Responding to pressures for accountability, decreased external support, market pressures, and competition, public institutions will respond by privatizing to gain greater control of their institutions.

Comments from respondents:
“I agree with the description, but not the conclusion, what about a response of increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and building utilization?”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:
Statement 11

*Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.*

Detail: Pressures for commercial success will cause academia to discontinue production of knowledge for the public good and will instead produce knowledge (and protect the knowledge produced) for their self interests. Universities will engage in networked relationships with governments and businesses in a new academic capitalist knowledge model, centered on meeting market demands in the knowledge economy.

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

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Statement 12

"Siloed" academic disciplines will no longer exist.

Detail: In addition to trends toward a transdisciplinary academy, university administrators will welcome the break-down of the boundaries between disciplines as the process provides administrators greater authority and enhanced flexibility in solving administrative matters.

Comments from respondents:
“This is nearly impossible because teacher credentials and accreditations in some fields (e.g., nursing, engineering) require specialization.”

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

15. What can be done in regard to improve the likelihood of this item today?
Statements related to Accelerating Change

Statement 13
*To enable the survival of the university, the pace of technological innovation will be restrained.*

Detail: Human nature (and what it means to be human) will dramatically change in the future due to technological advances (esp. in artificial intelligence, genetics, nanotechnology and robotics). The global community will not be able to stop these advances. To survive as a society, we must slow down the pace of technological advancement and carefully consider our future directions.

On average, the response group rated this item as somewhat unimportant, somewhat unacceptable and highly unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

Statement 14
*Universities will no longer cater exclusively to the needs of human knowledge production.*

Detail: Technological advances will lead to the merging of humans and machines, allowing for almost instantaneous communication, sharing of existing knowledge and the exponential growth of new knowledge.

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:
Statement 15

Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.

Detail: A university commodified through the extensive adoption of technologies will replace teaching staff with technology for the delivery and assessment of student learning.

Comments from respondents: “This is unrealistic; most students prefer NOT learning online; most 18-21 year-olds crave the socialization of a campus.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat likely.

16. What are the implications and policy actions at your college or university?

17. What can be done in regard to the item now to produce an acceptable outcome?

18. What if competing institutions accept this item and reorient their policies aggressively around it?
Statement 16

Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.

Detail: This trend will be through the result of the economizing of faculty jobs.

Comments from respondents:
“This is important for only one reason: performance measurement. Customers and governing bodies want to see what they get for their money and compare providers.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

Statement 17

Universities will integrate gaming and simulational technologies into teaching and learning practices.

Detail: Universities will embrace gaming and simulational technologies as they gain social acceptance. These technologies will be used to eliminate the "drudgery" of traditional curricula delivery and assessment.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.

19. What are the implications for this item at your college or university?

20. What can be done to best support this item today at your institution?
Statement 18

*Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.*

Detail: By using technology to replace student-teacher relationships with co-constructivism, "democratic" communication and knowledge production will transform learning and research in universities.

**On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.**

21. What are the implications for this item at your college or university?

22. What can be done to best support this item today at your institution?
Statements submitted by participants

Statement 19

Revenues and savings generated by distance learning will free public universities from their dependence on public funding.

Detail: Higher education takes in revenues greater than $200 billion each year—five times the revenue generated by the steel industry. Distance based courses are on the rise, increasing 400% from 1998-2001. If for-profit education can make money and grow exponentially from distance education, cannot public education eliminate its dependence on public funding?

Comments from respondents:
“I have some major concerns with [items] 19 and 21. If one focus is exclusively on the bottom line, public education will be adversely affected because it will be affordable to the few and only the hot topics will be offered for sale.”
“I would agree that there are opportunities to save money by being more efficient by upgrading processes and reducing waste. Streamline, streamline, streamline.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

Statement 20

Universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases.

Detail: "Colleges and universities, in general, are grossly inefficient and ineffective in terms of how they manage their enterprises. You've got underutilization of the physical plant—you've got tenure—which basically ties your hands on how you can manage your work force. You have irrelevant research. You've got extremely low teaching loads for tenured and untenured full-time faculty." (James Carlin, former head of the Massachusetts Board of Higher Education.)

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

23. What can be done in regard to improve the likelihood of this item today?
**Statement 21**

*Universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to.*

Detail: Businesses in the U.S. are expected to make money or die. As a result, business leaders look for efficiencies through ICT, the elimination of non-value-added activities, the closing of facilities, and/or the elimination of dwindling product lines or services. We as stockholders expect this. University leaders must do the same (e.g., expect 40+ hour work-weeks common in industry, close under-enrolled programs).

Comments from respondents:
“I have some major concerns with [items] 19 and 21. If one focus is exclusively on the bottom line, public education will be adversely affected because it will be affordable to the few and only the hot topics will be offered for sale.”
“I would agree that there are opportunities to save money by being more efficient by upgrading processes and reducing waste. Streamline, streamline, streamline.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat likely.

24. What are the implications and policy actions at your college or university?

25. What can be done in regard to the item now to produce an acceptable outcome?

26. What if competing institutions accept this item and reorient their policies aggressively around it?
**Statement 22**

*Faculty employment rules, such as tenure and work hours, will be abolished or changed radically.*

Detail: Many union contracts limit student contact hours and mandate tenure as an expectation, neither of which allow efficient management of the workforce.

*On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.*

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

---

**Statement 23**

*New types of innovative institutions grow in public acceptance and in status within the higher education community.*

Detail: Fully online universities, educational integrators and other kinds of innovative institutions that are able to bring access to and meet the needs of an increasingly diverse group of learners are recognized by the general public and by employers as important alternatives to traditional institutions.

*On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat likely.*

27. What are the implications for this item at your college or university?

28. What can be done to best support this item today at your institution?
Statement 24

*Rising tuition costs will lead to increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization.*

(Based on comment received regarding item #10.)

Comments from respondents:
“Question 24 cannot be responded to unless broken down.”

On average, the response group rated this item as highly important, somewhat unacceptable and somewhat likely.

29. What are the implications and policy actions at your college or university?

30. What can be done in regard to the item now to produce an acceptable outcome?

31. What if competing institutions accept this item and reorient their policies aggressively around it?
Overall comments received from participants

- “The problem with predictions is that the likelihood of any particular outcome is such a complex blend of institutional culture, the types of students we serve, our overall mission and the resources available as well as the inclinations and expectations of our faculty.”

- “As someone who researched Delphi methods for months and months, I find the structure of this one concerning. Delphis are best for generating conversations (as you state in the beginning), but this is the first I have seen that generates conclusions for future scenarios. The resources I have found (e.g., http://www.is.njit.edu/pubs/delphibook/index.html) and the studies I reviewed before tackling my Delphi indicated exploring issues that might impact the future during the first round, then exploring possible effects of those in future rounds. The construction of this study may provide false-positive results on some statements. For example: "Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments." Although I believe assertive leadership is required before "universities will become entrepreneurial, innovative, and adaptive to their environments," I more firmly believe pressure from governing bodies will force university leaders to change the status quo, which will force them in this direction.

Something to think about during analysis.”

RESPONSE FROM JOHN- Thanks for citing this concern. The first two rounds are designed to measure the level of importance, level of acceptability and possibility of occurrence for each issue identified in my literature review (in addition to collecting comments, additional items, points of clarification, etc.). The purpose of the third round is to ask relevant follow-up questions given group consensus for the items. This is intended to create a galaxy of responses, and not intended to create conclusions regarding the future. I hope that we can use this final round as a jumping point for further exploration of these issues.

General comments in regard to the trend of globalization:

- “I agree that the state will need to invest more in higher education to make some things happen. However, the higher ed institutions will need to show a major change in attitude. It can’t be business as usual.”

- “The private and proprietary institutions are changing and becoming extremely customer driven –i.e., flexible schedules, anywhere, anytime, etc.”

General comments in regard to the trend of the emergence of knowledge society:
• “I think that the privatization of public institutions is a dangerous outcome. It will create a wider gulf between the haves and the have nots. The strength of our society over time has been access to education.”
Part II

Do you have any overall comments in regard to this study? If so, please elaborate:

AFTER COMPLETING THIS QUESTIONNAIRE, PLEASE SAVE THIS DOCUMENT AND EMAIL IT TO moravec@umn.edu OR FAX: 612-626-7496
Appendix G: Anonymized summary of round three responses

Statements related to Globalization

Statement 1

Higher education institutions will lead in the management of tensions between global and the local, homogenization and heterogenization, and between modernity and tradition.

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat likely.

1. What are the implications for this item at your college or university?

- **AD**: We must be able to make changes in curriculum that will result in faculty exploring with students a more global perspective. We must be able to motivate our students to think more globally. We must provide opportunities for faculty to visit teach and learn in universities abroad.
- **AI**: I expect that we will focus on the local while at the same time “bring in” the global through expanded opportunities in our programs of study.
- **AK**: Colleges and universities have a responsibility to prepare global citizens who understand the core tensions in the international arena and how they impact daily life.
- **AL**: For our college I don’t see much change.
- **AM**: This points to how extensive technology will be in delivering coursework, both from the perspective that the traditional regional focus of CC’s now have the capability to reach out internationally & as a result of that reach, the consideration of what will comprise the academic program mix will change.
- **AN**: Community colleges are in all likelihood dealing with students who are under-prepared to deal with globalization and change. Community colleges need to work with the students to build a level of awareness and relevancy before providing them strategies to deal with the world as exists today and the future.
- **AO**: My university is owned by a global education company (XXXX); we own 25 universities around the world, all except XXX, on the ground and “in culture” and “in language” in the various countries, serving largely but not exclusively traditional aged students; in other words, XXX is the US member of a large international family that works together to bring a diversity of opportunities to upwards of 300,000 students around the world to prepare to contribute to a global economy in a “flat” world. We balance the tensions noted above every day, since all of our universities are not only focusing on globalization within the context of their own cultures and higher education systems, but also encouraging cross-cultural understanding through joint research, joint programs, and innovation, particularly related to the integration of technology into educational processes.

This item is one of just three major strategies that unpins the University’s strategic
plan for the next three years. We believe that we are building new models of how to think globally but act locally, to respect the traditions of higher education, but contribute to systemic change for the higher education community.

- **AP**: Hopefully this will happen. Requires both curriculum and faculty development.
- **AT**: Frankly, with all the priorities, initiatives and work facing two-year colleges, I don’t see this task rising to the top of the priority list. Realistically, to expect community colleges to have a role to play in the management of tensions noted in the question is, in my opinion, a long shot.
- **AW**: There will be minimal impact of this trend on a small, rural college such as mine. Where it will have an impact will be on graduates in their work lives after they leave.
- **AZ**: The implication is that we need to be active in the global context, to make sure that we are part of the conversation to the benefit of our students and the communities we serve. In our town, this university is certainly one of the most global enterprises, so we have a special duty to convene and conduct the conversation.
- **BB**: None. Our institution is small and unimportant in the larger scheme of things
- **BG**: Building stronger partnerships between university sectors and between external partners local and global
- **BH**: Higher ed institutions will do this only to the extent that they educate students to live in a global society and/or are arenas where competing ideas and the people holding those ideas come together. Personally, I think it unlikely that higher ed institutions will lead in the management of tensions. They may help in creating a climate in which others (govts.) find it easier to manage tensions.

2. **What can be done to best support this item today at your institution?**

- **AD**: One is to encourage and provide resources for faculty to have an international experience. Having faculty exchanges so students learn from faculty from other universities.
- **AI**:
  - understanding the impact of globalization on our future work force (as we prepare them)
  - adding global-awareness dimensions to our programs of study
- **AK**: Presently, we have a global requirement in the liberal education curriculum. We also continue to focus on developing international partnerships. Our study abroad program is robust and we have an international faculty program on the campus each year.
- **AL**: We will continue with what we have been doing.
- **AM**: Resources to allow colleges to adapt the most current applications. Resources to allow for face-to-face relationship building with potential international partners. Strategy to educate faculty & staff about the reality & how to function in the new way.
AN: Giving them the tools—critical thinking, awareness and appreciation for other cultures, a sense of place. The basis for all this is a firm foundation that includes reading, math, and writing skills.

AO: We have both the commitment of our leadership and faculty at our university, and increasing resources to achieve our strategies. The needed ingredient is patience, since bringing a diversity of institutions together across cultures and educational systems is time-consuming and evolutionary, although its outcomes will be revolutionary. Persistence and focus are also needed.

AT: Our institution sponsors and coordinates a “Global Education Week” and this topic has found its way, though very indirectly, on the agenda of activities offered and conversations held on campus. Planners of this activity might ask a specific presenter or those appearing as part of expert panel presentations to address the initiative.

AW: Awareness-raising for students of globalization and its effects.

AZ: More outreach to the local community concerning the many international opportunities that exist here.

BB: Not applicable here.

BG: The initiation of a university wide strategic plan

BH: Focus on diversity, internationalize the curriculum, and bring more international students to campus.

Statement 2

Universities will create new traditions to enable progress and economic prosperity in a globalized future.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.

3. What are the implications for this item at your college or university?

AD: Where will the resources come from for the faculty exchanges? How do we motivate our current students of the importance of a global perspective?

AI: The “new traditions” will likely be expansion of the traditional role of this two-year college as the “nerve-center for economic vitality” in this region of the state.

AK: We recognize this area as a responsibility and include globalization as a signature theme of the university.

AL: New traditions take a while.

AM: I’m not sure. This may be lead at least initially by the state system office.

AN: I think it is important that higher ed institutions prepare students for the future by providing them opportunities to understand the present, the world, and to welcome and value change. Students need to learn to think beyond themselves and their comfort zones.

AO: As a university founded 37 years ago to lead by example the way to standard university outcomes through different educational models, XXX has always stood for new traditional. This item represents one of our “mantras”. In fact the theme of my
inauguration a few years ago was “Celebrating a Tradition of Innovation”.

Entrenched organizations like the AAUP, the American Council on Education, and highly selective/elite brand institutions will continue to attempt to define the hegemonic higher education culture as an exclusionary one, based on traditions that simply are irrelevant in a global economy. We continue to work to broaden the understanding and acceptance of diversity among institutions in the general public, as well as within the higher education community.

- **AP**: This is very likely to happen overall and at my institution since higher education is continuously morphing.
- **AT**: With globalization here to stay, it’s likely that our college will increase opportunities available for faculty, staff and students. Colleges and universities who desire to focus on this growing, but quite costly opportunity, will have to pick and choose what and where they engage. It’s too early to tell whether or not this will be a future focus for our college.
- **AW**: My college will have to develop a new tradition of even closer integration with K-12 partners in the region, particularly in science and technology areas.
- **AZ**: We need to expect our students to have global understanding and to participate in international experiences.
- **BB**: Programs will cater to students who need lifelong learning to survive. Transfer options will need to be built into the curriculum without minimizing the technical credits students earn. Schedules will need to be flexible.
- **BG**: That the university has become university-minded rather than DOMINATED BY COLLEGE LIBERAL ARTS AND LAW SCHOOL
- **BH**: I would think that these “new traditions” would grow out of the knowledge generation function of the university. As a teaching university, our role would be more in the dissemination of such new traditions, more than their creation.

### 4. What can be done to best support this item today at your institution?

- **AI**: Continued partnership-building with the local, regional, national and international community that we are networked with.
- **AK**: Encourage more students and faculty to study and travel abroad.
- **AM**: ?
- **AN**: We can provide student opportunities to explore the world, to clarify their values, to think beyond their current paradigms to except others who are different than themselves and to understand that there are alternative ways to approach the world.
- **AO**: We have many efforts underway to support increased understanding within the higher education community and the public at large that a for-profit, online institution offers the same quality and integrity that other types of institutions offer. These efforts include more transparency as to our outcomes, public relations about our accomplishments, benchmarks with the traditional institutions, as well as advocacy on the state and federal level for policy initiatives to create a level playing field.
• AT: We recently approved a 12-month sabbatical for an academic dean to study our international studies programs, explore new opportunities and make recommendations on what international programs or activities we should continue, eliminate or initiate. Our Business and Workforce Development staff is exploring opportunities to expand non-credit workforce development beyond our traditional service area.

• AW: Increase incentives and remove barriers to college-school collaboration.

• AZ: Expansion of scholarships available to students to participate in international activities. Some curricular redesign to go along with the international experiences.

• BB: Implement the above.

• BH: Again the university wide strategic planning [sic] initiated this summer

• AL: Assist faculty in remaining current in their fields (and insist that they do so); create an open intellectual environment

Statement 3
Universities will align their programs toward the development of global citizens.

Detail: Higher education institutions need to embrace and promote the building of civil society to modernize and enable themselves, and their students, to compete in an increasingly globalized and competitive environment.

On average, the response group rated this item as highly important, highly acceptable and somewhat likely.

5. What are the implications for this item at your college or university?

• AD: We must support relationships with international institutions that will bring students to our campus. They need to be integrated into classes, laboratories, student life, student organizations.

• AI: Increased attention – through General Education and career & technical education – will be necessary.

• AK: The university understands our responsibility to provide educational opportunities that develop globally responsible citizens.

• AL: We will expand out partnership with the B&I that have international interests and ask for their guidance as we enhance curriculum.

• AM: Changes to curriculum, including world languages, general education requirements – hiring practices need to reflect this.

• AN: There needs to be awareness on the part of the administration, faculty, and staff that the mission of the institution needs to be sufficiently broadened to include educating the student to be a world citizen. This needs to be reflected in the required courses and in the courses themselves. Additional courses need to be developed and delivered including courses in world religions, world history, global politics, etc.

• AO: One of the three tenets of our mission is to promote positive social change. At XXX, we have a specific definition of what that means, and a clearly articulated set
of outcomes for and hallmarks of all of our programs. These hallmarks align with our mission of social change, and underpin our university-level outcomes and outcomes assessment program. For instance, we assess the civic engagement of our graduates, and benchmark their achievements against national civic engagement outcomes from the Pew Foundation.

- **AP**: As above, we need to work on this.
- **AT**: I don’t believe a student should leave our institution without having experienced an instructional unit of study, better yet, a personal community or service learning opportunity related to global citizenship. This means that existing curriculum would need to be expanded or current offerings replaced to make room for this new learning, funding would be needed to either develop or purchase this new curriculum and students would be expected to meet another graduation requirement that would require them to spend more time and money.
- **AW**: Within the curriculum, we should incorporate information on the global environment and marketplace to raise students’ understanding of the nature of the market they will face after graduation. We should also promote more citizenship education.
- **AZ**: Students will need to think of themselves as global citizens as well as local citizens.
- **BB**: Help students create an understanding of the world in which they work and live. Help them see how what they do and how they do it must constantly improve to keep work in the US, keep the environment healthy, and keep citizens safe.
- **BG**: Continue to develop our college global studies program, international student retainment and increased opportunities for international study; sustain with increased support our well respected center for global environmental education
- **BH**: We are already trying to do this. One implication is the need to redirect attention from the western intellectual and cultural tradition. In a Catholic institution, this encounters resistance in some quarters.

6. **What can be done to best support this item today at your institution?**

- **AD**: Encouragement from faculty. Hire individuals to provide support for international students. Encourage U.S. students to have an international experience.
- **AI**: Expand General Education offerings, provide additional opportunities for international partnerships and exchange of programs and students.
- **AK**: We need to have a greater emphasis on working with students to develop these core values that will be their moral compass for their decision-making.
- **AL**: See above.
- **AM**: Re-examination of the MnTC [Minnesota Transfer Curriculum].
- **AN**: Administratively, the college needs to encourage and support faculty research and development of courses and offerings. Resources need to be made available to support these activities and to expand service learning projects that have a global component. This really needs to be a transformational activity that draws the entire college community together to reflect and to respond.
• AO: We need to review our university level outcomes (now 5 years old) which do not focus enough on global citizenship, and then augment our curricula and outcomes assessment program to better assess not only civic engagement within the local spheres of influence of our graduates, but to more specifically address the issue of global citizenship. We have the support of the faculty for this initiative, so now just need time and focus to get it done. Although we know anecdotally about the positive social change that our graduates foster, we need to find a better way to aggregate and communicate this information.

• AT: Academic leadership should take responsibility for engaging faculty in a conversation about how we might best help our students develop as global citizens. If this initiative is found to have merit, and I believe it will, those interested in moving this agenda forward should be supported with release time, incentive funds or grant money. Ultimately, by offering a series of classes, campus activities and/or service learning opportunities, our students would be better global citizens.

• AW: Allow creative responses in instruction to incorporate these concepts into the routine technology curriculum.

• AZ: Infused curriculum, more opportunities for international travel, and more interactions between domestic students and international students.

• BB: Develop ways of integrating these concepts into the curriculum without minimizing the technical proficiency employers demand from graduates.

• BG: above

• BH: We are already trying to do this. One implication is the need to redirect attention from the western intellectual and cultural tradition. In a Catholic institution, this encounters resistance in some quarters.

More attention to internationalizing and diversifying the curriculum; more emphasis on study abroad; more access for international and immigrant students.

Statement 4

Universities will adopt an “anywhere-anytime” model of educational products and services.

Detail: Universities will need to make themselves more readily accessible, just as ATMs have made banks more accessible and fast-food chains have democratized the reach of restaurants.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

7. What can be done in regard to improve the likelihood of this item today?

• AD: Increase the number of non-tenured faculty. These individuals will provide more flexibility. Increase number of online offerings. More offerings in the evening to meet different schedules for households where both adults are working.
• **AI:** This will be a difficult and time-consuming effort in light of existing terms and conditions of faculty contracts. Union mentality is status quo … protection of the membership – without a keen awareness of the changing landscape and marketplace of higher education.

• **AK:** We must exercise caution to not abandon those processes that are the basis for sound learning. I agree that higher education needs to be more sensitive to changing lifestyles, but not at the expense of compromising quality.

• **AL:** It is already happening and our college will make major investments to make this happen. Particularly in technology.

• **AM:**
  - Educating faculty – 2 think this is likely to happen
  - Best practices/sustainable models need to be widely disseminated
  - Clarity of how this model impacts academic quality/standards and financial implications

• **AN:** This really means that the institution needs collectively to get beyond its comfort zone. This would mean that the union contract needs to be more flexible to allow faculty and staff to be assigned to non-traditional activities that would provide the opportunity to meet the emerging demands. Students could be the driving force and their lives become more complex. It also seems that the younger generation of students is more demanding and will cause this to happen. The advent of online instruction is providing flexibility that will cause everyone to reassess policy, procedures, and eventually contracts.

• **AO:** XXX was founded N years ago as a distance learning institution, bringing together faculty and mid-career professionals from around the country using the technology available at the time: telephone and the US mail. We have expanded our definition of “distance education” as the technology has expanded, and today XXX is a fully online university, using asynchronous as well as synchronous technologies to support a far-flung but engaged academic community. The investment in technology to make this a reality is significant, and we need even more resources than we have to accomplish a fully personalized, “anytime-anywhere” educational experience for our students. For our institution, the ability to quickly integrate multiple technological functions (both outsourced and home grown) is key to our ability to keep pace with our students and faculty’s needs and interests.

• **AP:** This is now happening and will continue to happen since our students and other constituents demand these types of changes.

• **AT:** I believe this 24/7 notion of learning and service is already occurring with ever-increasing frequency. Web based instruction and online student support services are growing exponentially. Today, faculty and staff are converting courses and services to make them universally acceptable anywhere-anytime, Web sites are being redesigned to be more user-friendly, help desks are being bolstered to assist users, and the 24/7 accessibility is being marketed and promoted.

• **AW:** Increased use of simulation of various forms to expand area of what can be taught ‘anytime anywhere.’

• **AZ:** [I don’t think I regard increasing the likelihood of this as “improvement.” I think whether it is an improvement or not is very specific to the type of content and the...
type of student. For some students, and for some fields, this would be a worsening of the educational experience. So, I can’t buy into the premise of the question.]

- **BB**: Consumers must first demand it. Not all are at the moment, particularly recent HS grads. Many want that campus experience.

If demand is there, then universities need to find the resources to make it happen. It isn’t easy to do within some programs that require hands-on experiences or lab work, for example, or need experienced, educated teachers.

- **BG**: For us it means to continue to develop our online offerings, our commitment to individualized and group independent study; increased project based and internships; and the continued use of online and face to face learning communities

- **BH**: Market pressures will cause many programs to adopt this model – certification programs, retraining, adult learning. For the 18-21 year-old, however, the personal interaction with their peers and with faculty is a critical part of the educational process. My hope is that we do not increase the likelihood of “anytime-anywhere” learning for that group.

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**Statement 5**

*Colleges and universities will reorganize to allow students to take credits at any combination of universities.*

Detail: Future higher education systems will allow for maximum student mobility and selections of learning opportunities. Accreditation will occur at the course level, not the school level.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

8. **What can be done in regard to improve the likelihood of this item today?**

- **AD**: For some universities it may be a survival strategy. If they are unable to meet student needs; the students will find other institutions. Design curriculum so it is complimentary to area institutions. Encourage; not discourage students from taking courses from other institutions. Some people shop at both Target and Wal-Mart. Both are growing their customer base and business.

- **AI**: This is a critical alignment issue, and begins with K-12, moves through higher ed and finishes with lifelong learning (post-degree). Again, faculty attitudes of “if I haven’t taught it, you haven’t learned it” will slow progress to what should be a comprehensive approach to learning.

- **AK**: We must guard against compromising our principles and not become “credit factories.” However, we must also recognize society is more mobile and move away from some traditional practices. I am concerned about suggesting that accreditation will occur at the “course level.” The pathways to learning are varied.
• **AL**: Colleges and universities will market on a national and international scale agreements to make this happen. Private entities such as Google University may drive this or be a broker.

• **AM**: Already happening. State-level policies need to facilitate as well as system student information systems.

• **AN**: I think that this is already happening. As Dr. Ramaley points out, there is a growing percentage of students who are taking credits at a variety of college and universities, often during the same semester. The MnSCU (Minnesota State Colleges and Universities) system is providing the structure to allow this to happen. The more liberal transfer policies that seemingly exist between institutions are helping this to happen. In Minnesota, the transfer curriculum for liberal arts courses provides ease of transfer between the University of Minnesota, MnSCU, and, to some degree, the privates.

• **AO**: XXX espouses three values: quality, integrity and student-centeredness. Student-centeredness for our university means that our curricula and transfer of credit policies are designed to meet students where they are in their educational journeys. While we believe that we have created liberal transfer policies that recognize both institutional and extra-institutional learning and expertise that our students have achieved before coming to XXX, we find that it is difficult to establish equivalencies between our curricula, all of which include a social change imperative, and the multiple venues that our students have studied in before coming to us. Although states like Florida that “mandate” a common course numbering system are often targets of criticism for “dumbing down” higher education to its lowest common denominator, I find that these kinds of policies really do provide transparency and mobility. More collaboration among the varying sectors within a state regarding learning outcomes would facilitate mobility and militate against the “not invented here” mentality that most faculty bring to the table. There is a creative tension, since diverse institutions do provide value-added content and pedagogies that contribute to the fulfilling their diverse missions. Creating a “business model” that accounts for mobility would also assist. Business models that assume all students are empty vessels and need to take their full programs with the offering university do not facilitate mobility. Restrictive transfer of credit policies, or the failure of will to provide the opportunity to integrate prior learning, on some level are protectionist strategies for institutions to generate more revenue. They are not about student learning, and its outcomes.

• **AP**: I hope that accreditation does not occur at the course level. Simply can’t imagine how that would work cost-effectively. If anything, accreditation needs to move from program level to institutional level.

• **AT**: Talk about a universal credit bank has been ongoing for more than a decade. I believe its time will come. Students expect, legislatures demand and employers encourage improved transfer of credit and more wide spread acceptance of coursework from any institution that’s regionally accredited or programs that are nationally accredited. Student frustration with duplication of effort, time and money spent to retake coursework, and the unwillingness of higher education institutions to accept credit for life experiences has never been higher. I believe that in response to
this frustration, institutions have implemented better transfer-in, credit for life experiences, and test-out policies.

- **AW**: Remove institutional barriers that limit simultaneous enrollments in multiple institutions. Align business practices to create a smoother and easier student interface.

- **AZ**: [Again, from my perspective, I don’t buy into the question – this would not necessarily be an “improvement” for all students and all programs. This would be a very good thing for non-trad students and for programs of study that lend themselves to quilted assembly, but for many traditional students and for certain disciplines this is undesirable. A university education is not merely the transfer of knowledge. Students can do that by reading books and webpages. A university education is as much about a cohort of students who share the same place at the same time, and have a focus and set of coherent experiences that bond them together. The “cobbling” approach implicit in the question is not conductive to that – it would be a disaster (for example) for 18-year-old engineering students, who need to be together to provide mutual support. Cobbling is fine for some fields, though, and could work for non-traditional-age students with clearly articulated goals. What we really should be working on are ADAPTABLE systems to serve the students in the best way possible for each student and each field. And such systems would certainly include the traditional model of education.]

- **BB**: The system needs to be set up to do this. There is not a database available, for example, that allows registrars to easily cross-reference courses and say “this is the same as ours”. It current takes an extreme amount of time to manually cross reference courses. You either must automate this or adopt a credit banking system like Thomas Edison in New Jersey. Most colleges like the prestige associated with their degrees and don’t approve of credit banking.

- **BG**: We are a member of Associated Colleges Twin Cities where this already occurs; we seek out transfer students (23% of our college students are transfers); we accept/encourage outside credit from other institutions on MAED and EDD levels

- **BH**: Accrediting bodies and state governments mandating or encouraging articulation agreements might help. I’m not convinced of the desirability of this.

**Statement 6**

*Through assertive leadership, universities will become entrepreneurial, innovative, and adaptive to their environments.*

Detail: Changing economic realities (viz. decrease in funding from governments, decrease in discretionary spending, growing importance of science and technology fields, and increased importance of intellectual property) require universities to seek new sources of revenue.

*On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.*
9. What are the implications for this item at your college or university?

- **AD**: Increase in research funding likely, but due to small faculty number and emphasis on teaching won’t be a large source of revenue. Online courses and degree offerings will provide better opportunity to increase revenue. Increasing the number of international students will increase revenue.

- **AI**: The two major sources of funding for state colleges and universities will continue to be tuition and state investment. Private support is necessary and important, but public investment must increase.

- **AK**: As an ASCU institution I recognize that attracting outside revenue is increasingly important. The cultivation of non-government resources is a high priority.

- **AL**: We will expand our ENT. Program. This is a key economic driver for all of us. Look at the research

- **AM**:  
  - Leadership succession plans need to reflect this reality  
  - Processes need to be streamlined

- **AN**: I think that this is beginning to happen. New programs, new modes of delivery, partnerships between four-year and two-year institutions, public-public, and private-public institutions are allowing students to access higher education within their home locations. The implication is that this requires more resources to accomplish and the mind-set of the institution needs to change. We are usually not risk-takers nor do the auditors and the public relish public institutions taking risk at taxpayer expense.

- **AO**: We have to make our money the old-fashioned way, we have to earn it, every day in every way with every transaction with our students and our faculty.

- **AP**: As a for-profit institution, this is a current reality.

- **AT**: Last year, for the first time in our 90-year history, tuition revenue exceeded state appropriation. After several years of double-digit tuition increases, students are demanding a tuition freeze. Minnesota’s two-year college tuition rates are now ranked somewhere in the top five in the country (#2 in a recent CHRONICLE OF HIGHER EDUCATION survey). The Board of Trustees, Chancellor and our students are demanding that we seek alternative sources of funding. This demand for outside fund raising means that activities of our Foundation and Alumni Association are more important than ever, the president’s role and responsibilities have changed to make fundraising more a higher priority and this responsibility is consuming more time for college leaders, grant writing is critical and colleges have been forced to become more innovative and entrepreneurial.

- **AW**: Greater rewards for successful innovations built into core funding system - - not just added on or packaged as a grant application.

- **AZ**: We are becoming more responsive to the constituencies we serve. I just came from a luncheon where we work in partnership with a private software firm and a large IT multinational. They pay us for a service, and we pay students to work on projects. The students get incredible real-world learning and a shot at a great job when they graduate. We will be doing more and more such initiatives.
• BB: None. We are entrepreneurial and change annually to meet the needs of employers and students.
• BG: The recent hire of a new president (woman) who is entrepreneurial and innovative and a Chair of Board of Trustees (former vice chair of major corporation and president of highly innovative subsidiary)
• BH: My institution is already pretty entrepreneurial. One implication is that the faculty (because it moves slowly) gets bypassed in major decisions, having an adverse effect on morale.

10. What can be done to best support this item today at your institution?

• AD: Strengthening infrastructure for service to international students. Increase relationships with international universities. Increasing development of online courses and degree offerings. Support marketing of these programs.
• AI: Strengthening results of an education … placement rates, student/employee satisfaction, faculty ratings (from students and admin), increased classroom rigor, greater articulation of programs: (K-16 moden).
• AK: As a public university, the state needs to recognize and support its historical covenant and responsibility to higher education. At the same time, this is a new day that requires greater resource access imagination.
• AL: State wide ENT. Programs on the web with State entities.
• AM: Allow for salary ranges to reflect the competitive demand to leaders who can do this.
• AN: By finding the resources and encouraging the faculty and staff to think creatively and by letting them benefit from their success, they will become more innovative and entrepreneurial. Because many of our faculty and staff are not experience with this way of doing things, there may need to be some training and education that will assist the faculty, staff, and administration to accept their new role.
• AO: As part of a publicly traded company we face daily pressures to be entrepreneurial. I would hate to think that there are things that we are not already doing to spur us on to greater innovation and achievements in the entrepreneurial realm. We do have a very small number of “old guard” faculty that we revere and respect, but who do consume a disproportionate amount of our time as they try to drag us back to the “old days” and we try to encourage and engage them with new models. However, they are in the minority and our whole culture is based on innovation.

My two cents: For traditional institutions, the most daunting barrier to entrepreneurialism, innovation and adaptation to emerging new environments is the faculty and entrenched systems of faculty governance and tenure.
• AT: Our college has implemented several initiatives aimed at bolstering alternative revenue. Our Foundation recently kicked off its first major fundraising campaign. College leadership, faculty and staff are reviewing more potential grant opportunities and writing more grant applications than ever before. Business and Workforce
Development is has become an entrepreneurial innovator, creating products and services for purchase. These initiatives have forced us to communicate this change in culture and expectation, provide staff development training in grant writing and revenue generation, provide release time or stipends for the writing of grants or development of innovative curriculum, and instill a mind-set in employees that risk-taking is not only acceptable, it’s encouraged.

- **AW**: Same as above.
- **AZ**: More awareness in and encouragement of the faculty. There are no major barriers to doing this, just awareness and encouragement.
- **BB**: Keep doing what we are doing.
- **BG**: Reorganization of administration; empowerment of faculty to lead making decisions at levels where those decisions effect production
- **BH**: Encourage ideas. Hold people accountable for their budgets, encouraging the search for revenue-generating innovations

**Statements related to Knowledge Society**

**Statement 7**

*The future purpose of the university is to facilitate the globalization of knowledge.*

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat unlikely.

11. **What can be done in regard to improve the likelihood of this item today?**

- **AD**: Response to question 10 will increase the likelihood of statement 7. Increasing study abroad opportunities for our students will help make this happen.
- **AI**: Two year colleges will be limited here to those “centers of excellence” that have potential for the global opportunity.
- **AK**: The evidence supporting “the flat Earth” concept is overwhelming. Universities and colleges have long been engaged in the shaping and creation of new knowledge on a global basis. We have global issues that require shared discovery to resolve.
- **AL**: Our response will be driven by B&I.
- **AM**: Partnerships at discipline level
- **AN**: I am not quite sure what this means. I think that we have to see ourselves as part of the global community, make the structural, curricular, and pedagogical changes to support globalization.
- **AO**: With information technologies already advancing faster than universities are able to invest, it is interesting to me that this was rated as only “somewhat important”. Encouragement for interdisciplinary programs, for cross-disciplinary programs, for cross-cultural programs and for any other kind of programmatic or research initiatives that draw faculty our of their disciplinary and departmental silos will assist in facilitating a broader and more global view of knowledge and knowledge management. Thus the “reign” of disciplinary societies, the AAUP and other
organizations that depend for their livelihood on supporting the status quo must move to new models. Tenure systems also support silos, rather than knowledge management at the enterprise level for universities.

- **AP**: I am not sure what this item means.
- **AT**: As stated earlier, I believe that converting curriculum and services to a Web-based platform has facilitated the globalization of knowledge for students not currently enrolled in the college or unable to physically attend the institution. Our own students have many more opportunities in global education today than ever before. In addition to the many courses that provide a component of global education and knowledge, students and staff are exposed to global issues through programs and speakers, have an opportunity to network with a student population today comprised of almost 20 percent persons of colors, and are participating in record numbers in a vast array of student/faculty exchange opportunities around the world.
- **AW**: It will happen organically through proliferation of the Internet and Web further into daily life in developed countries and finally into developing countries.
- **AZ**: I think the response group is incorrect that this is “somewhat unlikely.” Clearly, it is already happening. Our faculty, through websites and publication and international travel, are in the “globalization of knowledge” business, as they should be. And we benefit greatly from the globalization of knowledge on other campuses. The key is to be a part of these global conversations, as any good university is and should be. Perhaps some of your respondents are not part of those conversations … which is understandable if they are two-year colleges, which are not expected to be a part of this to the same extent.
- **BB**: Share, share, share. Think MIT OpenCourseWare. Think OpenOffice.
- **BG**: Technology that simultaneously translates; requirement for all students to have multiple multicultural and international learning experiences
- **BH**: I would have said that this is a current purpose of the university, so I must be missing something. It is not the only purpose, however.

**Statement 8**

*University leadership will place less emphasis on managing and will place greater emphasis on supporting the organization.*

Detail: Organizational knowledge production in the 21st century is both reconfigurable and self-organizing. The role of managers and leaders in a knowledge-based system is to support the system, not manage it.

Comments from respondents:
- “This may be unrealistic; the more mandates federal & state governments place on colleges and universities to ‘perform,’ the more ‘managing’ is needed.”
- “Systems built to remain the same.”

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat unlikely.
12. What can be done to improve the likelihood of this item today?

- **AD**: Universities will need to be managed better; not less well managed.
- **AI**: Configuration of knowledge will remain the domain of faculty. There will be very significant pressure to maintain the status quo in this area!
- **AK**: Leadership has the responsibility for transforming institutions. If we adopt a management philosophy, we will become more reactive to changing societal needs rather than a proactive leadership approach.
- **AL**: I don’t see this moving our way.
- **AM**: The graduate program that produces the future leaders need to develop the knowledge or curriculum to ensure the colleges have prepared candidates.
- **AN**: It is something that may be starting to happen. The privates and especially the proprietary schools are ahead of us in terms of entrepreneurship, innovation, and leadership by the boards of directors and administrators. Their reward systems are different as are their contracts.
- **AO**: College and university boards seem to be going in the opposite direction from what this item suggests, looking for chief executives from outside the academy to bring management skills to the institutions, writing presidential contracts that are performance based. Gaining clarity at the institutional level about leadership expectations that are based on multiple measures of performance, including serving both external constituencies (states, feds, accreditors) and internal constituencies (students, faculty, alums) would be one step in the right direction.
  
  My two cents: Although I don’t face this, since I work for a publicly traded company, my sense is that leadership is not evaluated on either performance or service, but fund-raising.
- **AT**: It all might be a matter of definition and semantics…doesn’t managing the organization include supporting the organization? If supporting the organization deserves more emphasis, then search teams might want to define the characteristics needed by this new kind of leader and hire accordingly. Managing today does not occur from the top down. Rather, shared governance, the delegation of authority throughout the organization and driving decision-making to front-line staff are actions that enhance both the managing and supporting of the organization.
- **AW**: In some senses, managing has always been about supporting - - i.e., getting the right people on the bus and then supporting them in their practice. A wider adoption of this older creed would increase this.
- **AZ**: I don’t remember this question and am not sure how I responded, so I may not give you a consistent answer here! You seem to suggest that leaders will either manage or support an organizational system. I agree that the shift is away from system-management, but it feels more like system-creation than like system-support. Again, I am talking about top level leaders. The legislative and disciplinary environment is so dynamic that it has not yet proven to be self-organizing. But I agree that there is a movement away from management. If by “support” you mean support for talented employees to do their best work, with as few limitations put on them as possible, then yes I agree that this is a good direction for leadership.
• **BB**: I don’t know.

• **BG**: Emphasis that all employees are leaders with concrete work to do; mission and vision that are internalized by all stakeholders; active citizenship in decision making, visioning, planning

• **BH**: I think the trends are in the other direction. Having true academics in leadership positions would help, although such leaders often have weaknesses on the managerial side.

**Statement 9**

*Information and communications technology (ICT) will aid in the distribution of knowledge and new knowledge forms into academic practices.*

Detail: Such technologies have already transformed course delivery in higher education. Further use of ICT will enable institutional collaboration and an increase in the quality of education provided.

**On average, the response group rated this item as highly important, highly acceptable and somewhat likely.**

**13. What are the implications for this item at your college or university?**

• **AD**: More investment in technology infrastructure and more training for faculty and staff will be needed.

• **AI**: Those programs that don’t understand this are at risk of survival.

• **AK**: Technology does enable more access to education and training. Great attention needs to be devoted to accomplishing learning without compromising academic integrity.

• **AL**: A different way to do business and reach more people anytime. Issues of intellectual property will become problematic. Commercial entities will move into this market and continue to be very successful. Public colleges will partner with them.

• **AM**: More resources will go for IT departments.

• **AN**: This is already occurring and is accelerating. Most faculty, staff, and students are becoming savvy at using technology. This will allow for better learning, economies of scale, and faster adaptation to change. The implications include budgets to support technology, support to make it happen, the time to train and education the faculty and staff on the use of the technology.

• **AO**: Since we are a fully online university, ICT is our life blood, not only for deploying teaching and learning, but for deploying our student support services. It is a “money pit” since it is challenging to keep pace with the emerging technologies and student and faculty needs and interests.

• **AT**: Since I concur that this is not only likely to happen, it’s already happening, it does have ramifications for both students and the college. Most students are coming to campus already equipped with a computer (usually a laptop), cell phone, iPod or
MP3 player. This means they (or some else) has provided the resources for the purchase. Although a computer is not required, students who arrive on campus without one often move quickly to purchase the technology they think they need. These purchases have serious financial ramifications, including an impact on credit card debt, financial aid and employment conditions. As a result of the increased use of technology on campus, the college has experienced a significant impact on our operating budget due to the demand for better and faster technology. Large computer labs are considered essential, computer equipment replacement and repair is a significant budget item, converting the campus to a wireless environment has proved costly, and most instructional space has now been upgraded to “smart classroom or smart lab” space. In addition, the infusion of technology in higher education has required additional hiring in IT programming, tech support and instructional/curriculum design.

- **AW:** Greater partnerships with institutions unlike our college.
- **AZ:** It means we need to provide support for those using ICT or trying to do so.
- **BB:** We have added web resources to help students find their own answers, and we will be adding program options that allow students the opportunity to reduce seat time.
- **BG:** Development of technology learning center university wide; wireless campus; all student use computers
- **BH:** This is already the case. Bookless libraries, the tyranny of IT, as well as many positive things like class discussion via chat room

### 14. What can be done to best support this item today at your institution?

- **AD:** Training for faculty to improve teaching and learning with goal of increasing learner outcomes.
- **AI:** Faculty and administrative leadership and focus on achieving new technological advances through planning and investment.
- **AK:** We are investing in more faculty development opportunities and reflective assessment programs.
- **AL:** Stronger B&I partnerships and more re training.
- **AM:** Funding
- **AN:** Procure the resources, provide the support, involve the faculty and staff when making technology decisions that directly affect them.
- **AO:** We continue to need increasingly sophisticated ICT leadership and team members need to assist in more rapid deployment of applications and functionality; competition for such staff is fierce, so a stronger supply chain of qualified IT professionals would help. Also, technological systems that support higher education functions that better integrate with one another would be welcome. We have had to develop a whole “layer” in our systems just to integrate multiple applications from multiple vendors. More “universal design” frameworks for all system vendors would be very helpful.
• **AT**: The percent of the college operating budget spent on technology purchases, enhancements, repair and replacement and staffing has been increased significantly to help cover the increased costs associated with enhanced use of technology. The technology fee currently charged students is at the maximum allowed by Board policy. Students enrolled in Web-based courses pay a surcharge that supports the Minnesota Online initiative and helps defray some of the college’s technology cost. Some courses or programs with a technology emphasis or extraordinary use of technology differentiate tuition and charge students a tuition rate higher than the college rate.

• **AW**: Core funding system reconfigured to drive this trend.

• **AZ**: We’ve been investing in peer-fellows who are accomplished in ICT to help their colleagues make use of these news [sic] ways to produce and distribute knowledge.

• **BB**: Implement the above.

• **BG**: Strategic planning including technology and communication and learning

• **BH**: It takes lots of money and lots of technical staff to support up-to-date technology.

### Statement 10

*Rising tuition costs will lead a trend toward privatization of public institutions.*

Detail: Responding to pressures for accountability, decreased external support, market pressures, and competition, public institutions will respond by privatizing to gain greater control of their institutions.

Comments from respondents:

“I agree with the description, but not the conclusion, what about a response of increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and building utilization?”

**On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.**

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

• **AD**: There has been and will continue to be a decline in the percent of tenure and tenure track faculty. Public funding will demand greater efficiency of utilizations of facilities.

• **AI**: Public institutions will remain public institutions. However, the issue of economics must be addressed. We can no longer continue to pay faculty more money for less work (i.e., reduced credit loads, contact days, etc. [union contract]).

• **AK**: The privatization approach may well miss important learner segments in society.

• **AL**: we have already done this with two programs and will continue to create profit centers when state support is not there.
• **AN:** This has been the trend and some of the major public research universities are almost there. However, for the majority of public institutions, especially at the two-year college level, this is not a good thing since it places an unmanageable burden on the students who we are most trying to help.

• **AO:** *My two cents:* This trend will continue to increase and will “blur” the boundaries between the “sectors” of higher education, the public, the independent, and the for-profit. They will all become more alike, and we will need to find different ways to describe our enterprise.

• **AT:** Personally, I don’t believe that rising tuition costs will lead toward privatization of public institutions. I believe the long-term sustainability of public higher education hinges on financial, political and public perception ramifications. It appears that, at least from a political and financial perspective, the pendulum of support for higher education as a public good, versus a private good, is on the upswing.

• **AZ:** This is already happening in South Carolina, where several state institutions are being allowed to pilot the transition to being private institutions. This would be a bad thing if it becomes to [sic] widespread, however, due to access issues. We have already had to increase tuition by huge jumps just to maintain current services. The U.S. traditionally led the world in the proportion of its population who went to college, but we have slipped dramatically. Privatization would further reduce the proportion attending college. America needs a wide range of higher ed options … including low-cost public institutions.

**Statement 11**

*Universities will orient themselves toward the market-based capitalization of knowledge, and will no longer be able to separate themselves from corporations or states.*

Detail: Pressures for commercial success will cause academia to discontinue production of knowledge for the public good and will instead produce knowledge (and protect the knowledge produced) for their self interests. Universities will engage in networked relationships with governments and businesses in a new academic capitalist knowledge model, centered on meeting market demands in the knowledge economy.

*On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.*

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

• **AD:** There will be more public private partnerships that will provide some of the resources to support research. New policies will be developed to help ensure that public good is protected. Competition from health care, K-12, corrections will continue to put pressure on budgets for higher education. University leadership will need new models to respond.
• AK: I can envision that such activity will occur. However, whether there will be more of this activity than presently exists is the question. We may well see more research centers that have a quasi relationship with the universities.

• AN: This would be unfortunate since we need academic freedom to allow for free expression and creative ideas. We cannot afford to sacrifice the common good for the bottom-line.

• AO: My two cents: Academic integrity will be challenged as research motives and findings used for commercial purposes become more acceptable, in fact become a point of competition among major research universities.

• AZ: This is a very interesting conjecture. I think there already are a few universities whose global power would rival that of some nation-states.

Statement 12
"Siloed" academic disciplines will no longer exist.

Detail: In addition to trends toward a transdisciplinary academy, university administrators will welcome the break-down of the boundaries between disciplines as the process provides administrators greater authority and enhanced flexibility in solving administrative matters.

Comments from respondents:
“This is nearly impossible because teacher credentials and accreditations in some fields (e.g., nursing, engineering) require specialization.”

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

15. What can be done in regard to improve the likelihood of this item today?

• AD: Cluster departments or disciplines around important issues i.e. environment, economic development. Reward group accomplishments rather than individual.

• AI: I don’t believe this is a critical area. Academic disciplines are important … and in those areas where “linkage” is important, it is occurring.

• AK: Interdisciplinary or transdisciplinarity fits better in some areas than others. This approach has great merits in the liberal education core and in problem based curriculum. There are traditional barriers that will create challenges to this approach.

• AL: Some of this will happen, but it will be slow.

• AM: Changes in policy regarding credentials more interdisciplinary opportunities in graduate school.

• AN: I think that this is happening. There is more interdisciplinary activities going on that are being facilitated by technology. I think that there is a moving away from the strict reductionism to a more holistic world-view that sees interconnectivity rather than the silos. At a micro level, encouraging faculty from different disciplines to
team teach would encourage the transdisciplinary academy. Other issues such as union agreements that call for specific faculty credentials will need to be changed.

- **AO**: The tenure system needs to be rethought, revised or replaced.
- **AP**: For this to become a reality, there will need to be a move away from specialized accreditation that exists to promote and sustain existing silos.
- **AT**: The integration of learning across disciplines occurs, I think, because students and employers demand it. Doesn’t it begin with faculty talking to other faculty, departments interacting with other departments? Couldn’t we bolster integrated learning by implementing team teaching opportunities? I believe that we’re not just referring to subject disciplines, but career and technical programs are incorporated liberal arts and general studies into their curriculum, lib arts faculty are finding that applied learning does have merit, and service and community learning opportunities have proved valuable in a wide variety of offerings.
- **AW**: Create multi-disciplinary collaboration work environments – ‘skunk works’ – which stimulate the conversations and relationships that lead to the destruction of siloes.
- **AZ**: Well, for starters, be very careful off [sic] statements that say “no longer exist.” I don’t buy that. Most human cultural evolution is additive, not replacement. The introduction of digital cameras do not mean that film cameras will “no longer exist” just as the introduction of film cameras did not mean that paintings would “no longer exist.” The internet hasn’t killed television, and television didn’t kill radio, and radio didn’t kill the theater – they all still exist. And silos will still exist. They exist for reasons that will remain important: depth of knowledge by its very nature creates silos. But the cutting edge of research will be interstitial, at the intersection points. Of course, over time these new interstitial zones tend to become their “own” silos! Almost every current “silo” started as an interstice. In addition, universities still teach ancient Greek, and we still teach Socrates.
- **BB**: Change the accreditation and credentialing systems first. Then work on ways to reward departments for shared degree programs.
- **BG**: Our college emphasizes interdisciplinary learning; our MAED and EDD are interdisciplinary integrating liberal arts and human sciences/studies
- **BH**: My institution has encouraged interdisciplinary and multidisciplinary teaching and learning for years. It has not provided greater authority to administrators; rather it has led to new interdisciplinary departments and programs, operating on the same old siloed model.

**Statements related to Accelerating Change**

**Statement 13**

To enable the survival of the university, the pace of technological innovation will be restrained.

Detail: Human nature (and what it means to be human) will dramatically change in the future due to technological advances (esp. in artificial intelligence, genetics,
nanotechnology and robotics). The global community will not be able to stop these advances. To survive as a society, we must slow down the pace of technological advancement and carefully consider our future directions.

On average, the response group rated this item as somewhat unimportant, somewhat unacceptable and highly unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

- **AD**: It would be hard to describe a time when efforts to slow down change haven’t been resisted and eventually overcome.
- **AK**: We will not be able to slow the advancement of technology in the global society.
- **AL**: It will continue to expand.
- **AN**: I don’t think that the pace of technological innovation will be restrained to help the university survive.
- **AZ**: History has shown that there is no way to restrain technological innovation, certainly not in a market-driven consumer economy with relative political freedom.

**Statement 14**

*Universities will no longer cater exclusively to the needs of human knowledge production.*

Detail: Technological advances will lead to the merging of humans and machines, allowing for almost instantaneous communication, sharing of existing knowledge and the exponential growth of new knowledge.

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

- **AK**: I concur with the detail statements. How we accommodate change and develop new paradigms will be of extreme importance.
- **AO**: My two cents: *Technology provides the opportunity more much more personal interactions, albeit, in a different mode, namely an intellectual mode rather than a social model. Humans will not become machines, but rather machines will facilitate our humanity and connection to one another, across cultures.*

**Statement 15**

*Advances in technology and rapid virtualization of the university will result in the reduction of academic jobs.*
Detail: A university commodified through the extensive adoption of technologies will replace teaching staff with technology for the delivery and assessment of student learning.

Comments from respondents:
“This is unrealistic; most students prefer NOT learning online; most 18-21 year-olds crave the socialization of a campus.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat likely.

16. What are the implications and policy actions at your college or university?

- **AD**: While full time on campus enrollment numbers may increase slightly or remain stable, more students will access courses and degrees online.
- **AI**: Reality is that there will be growth in some areas – we will need to segment those market opportunities and grow them, but not at the expense of traditional forms.
- **AK**: Technology, at this point, will not replace the content providers. The role of faculty will continue to evolve as knowledge producers and instructional navigators.
- **AL**: Not a reduction, but a different type of teacher and delivery system.
- **AM**: Conceptual framework for what is a college faculty will need to be explored. Unionized environment will work against the [???]
- **AN**: This is possible. However, over the years other innovations that were going to change dramatically change the nature and numbers of academic jobs (teaching machines, branched learning, computers) have not resulted in a reduction. I think that the nature of the instructors’ job will change. Faculty will have to be technologically savvy and will need to better understand how the student learns. The individual faculty member may be more of a technologist and instructional designer and developer. Expanded skill sets will be needed.
- **AO**: As the leader of a fully online university, I am happy to report that “virtualization” of the university calls forth greater needs for enlightened faculty who are focused on facilitating student learning. The teaching and learning environment that has integrated technology creatively into its pedagogy and delivery will be more effective at generating expected learning outcomes, but it will not be without the same cadres of faculty and academic support staff. The major implication for our university is the need to continually recruit excellent faculty to support our students, as the university expands.
- **AP**: I do not agree that staff will be replaced. Or positions eliminated. Roles will change. As for the comment that most prefer not to learn online, that is because we socialize to the idea that learning must be face-to-face and we don’t do a very good job of online education. One way that online changes roles is that it allows faculty to focus on the most valuable parts of their roles—provide coaching and substantive feedback. Some like this, some don’t.
• **AT**: I’m not convinced that advances in technology and virtualization will result in an elimination or reduction of academic jobs. I do believe it will mean that academic position descriptions will change. Our college is already experiencing this change as the job of teaching has moved from the “Sage on the Stage” to the “Guide on the Side.” Students who enroll in a traditional four-year residential institution might be craving the socialization of a campus. However, most students enrolled a two-year commuting campus, even 18-24 year olds, are not doing so to socialize. Rather, they are seeking a “just in time” and “just enough” learning experience that will assure them of gainful employment.

• **AW**: A shift in focus from teaching as production and revenue-creation to a more intensive approach to student support --- counseling, tutoring, aptitude testing, career guidance, mentoring, etc.

• **AZ**: I agree with the respondent’s comment above. I don’t know of any parent of a high school student who wants them to spend their college years online, nor do I know any high school students who want to do so. For such students, the technology is really an enhancement of the personal learning experience. This is still a labor-intensive business. For non-trad students in some fields, this is a bit different.

• **BB**: None.

• **BG**: Already seen with 80-20 80% tenure 20% rolling contract; no tenure in graduate schools

• **BH**: I think other trends and pressures are already leading to a reduction in traditional academic jobs (e.g. use of adjuncts because they are cheaper.) Advances in technology, at the undergraduate level, have led to new ways for faculty to interact with students and for students to interact with each other, and to offer alternative ways to present some forms of information. I don’t think technology will replace the faculty member, especially when the newer breed of student (and parent) seems to require a higher degree of hand-holding.

Advanced and graduate programs are more amenable to online teaching. But the real impetus there is in distance learning that uses technology to “collect” students for an instructor, not to reduce the number of instructors.

17. **What can be done in regard to the item now to produce an acceptable outcome?**

• **AD**: Learner outcomes must be the same regardless of delivery method. Attitudes that some senior faculty have about online delivery methods will need to change.

• **AK**: We need to invest in producing the faculty for the future in our doctoral degree granting universities. In addition, we need to encourage and support faculty in their emerging roles in the 21st Century.

• **AL**: Partnerships and retraining of teachers and sell the new future

• **AM**: Serious attention to quality of online environment. Different workload/pass structure.
• **AN:** More education, training, and support to assist faculty to transition to the new way of doing things will be needed. I don’t think there will be great reductions in numbers of faculty.

• **AO:** Faculty development. Whoever said that most students prefer not learning online is not in touch with reality. If you look at institutions that offer both traditional undergraduate, classroom-based delivery, and online delivery of undergraduate education to appeal to adult learners, you will find that the most consumers of the online programs are the traditional undergraduates who prefer to learn at their own time and pace.

• **AT:** Most higher education faculty treats technology as a tool rather than a method of teaching. As such, I don’t believe they feel overly threatened by either the use of technology or the loss of jobs. Open communications, policies and procedures that limit the number of students enrolled in a single section of online instruction, and incentives that encourage faculty to convert live classes to a distance education format will help produce and acceptable outcome.

• **AW:** Reward support functions at same level as instruction.

• **AZ:** I don’t understand what this is asking, at least I hope not. It seems to suggest that reducing academic jobs is a desirable outcome. I don’t agree with that at all. Universities have been the engines of knowledge and learning for a millennium, and reducing the number of academic jobs would push universities toward teaching-only and not knowledge-production and maintenance. So, I do not see that we would want to do something to produce the frankly undesirable outcome you suggest.

• **BB:** Unappplicable.

• **BH:** I don’t think the outcome will happen.

18. What if competing institutions accept this item and reorient their policies aggressively around it?

• **AD:** That is already happening. Having a campus that provides an outstanding student experience will continue to attract students.

• **AI:** It would be great if this would happen. In fact it is in some areas. There are still issues of institutional funding and faculty job security as we move through these actions. Fact is, as we increase productivity, jobs might (and should be) at risk.

• **AK:** We all must change to prepare future generations to be competitive in the global society. It is important that we are creative and resourceful in revising higher education while others adopt our “best practices.”

• **AL:** Good for them

• **AM:** Not sure – they will continue to compete?

• **AN:** I suppose the institution will need to respond. Even with the University of Phoenix, I do not see massive changes in staffing.

• **AO:** A rising tide lifts all boats. . .as long as competing institutions are able to deploy technology enabled programs with sufficient quality that they do not undermine the public confidence in these programs, come one, come all. Competition usually increases quality, and does create some casualties. I remember about a decade ago
Chester Finn proposed a new taxonomy of institutions that included the “elite” (which will be immune to competition), the “boutique” which cater to the needs and interests of the students of all ages, (which will flourish with increased competition), and the “mass market” institutions that have neither the brand nor the imagination and will to compete. It is this group that stands to experience the most casualties. This taxonomy seems to be holding up even after a decade of unprecedented change in higher education.

My two cents: I imagine a time in the next couple decades when the physical plant of college and university campuses are really like academic “resorts” where students look for lifestyle amenities and co-curricular enrichment, and the academic program is delivered exclusively through technology. Somewhat changes the definition of the campus of the future.

- **AT**: Competition is the nature of the higher education business as we know it today. One can’t continually manage one’s operation solely because other competitors find acceptance of technology or revise policies and procedures to enhance or use it.
- **AW**: Those who do will prosper. Students crave socialization -- but they can get that a large number of other places. It is the support safety net and the warm environment that will win in the new market.
- **AZ**: That’s fine. Some are already doing so – Phoenix, etc. The assumption that one size fits all in higher education is faulty. Different providers serve different niches, and I can tell you that we don’t compete much with Phoenix. Walmart and Nordstrom coexist. Jerry Springer and The Sopranos coexist. Hyundais and Rolls Royces coexist. Oh, and there are also those things in the middle, the Targets and “24”s and Toyotas. All those industries have market segments, and higher ed does too. If we want 100% of our population well-educated, there is room for a lot of education providers!
- **BB**: They will lose to those who have already mastered it. Institutions should focus on their niche, not someone else’s.
- **BH**: To some degree, this is happening. Institutions compete on many fronts.

**Statement 16**

*Advances in technology will result in a marked decrease in academic freedoms and in an increase in performance measurement.*

Detail: This trend will be through the result of the economizing of faculty jobs.

Comments from respondents:
“This is important for only one reason: performance measurement. Customers and governing bodies want to see what they get for their money and compare providers.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.
There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

- **AD**: Being accountable for learner outcomes isn’t a threat to academic freedom.
- **AI**: Performance measurement is important, but all over the board at this time. We will need to build baseline performance categories and data … soon!
- **AK**: I do not agree that higher education will not lead the way in performance measurements. The “efficiency movement” is a challenge that can also create opportunities.
- **AO**: *My two cents*: Academic freedom and accountability for student learning and engagement are not opposite ends of a continuum. Faculty play the “academic freedom” card as a defense against being accountable for how they support their students’ learning.
- **AT**: If technology’s considered a tool, the anticipated marked decrease in academic freedom is most likely unfounded. The public is demanding, and rightfully so, return on investment, value add, pay for performance and accountability. Today’s catch phrase seems to be to do more, do it faster, do it at less cost and with fewer people.
- **AZ**: Performance measurement is definitely on the increase, although what it’s measuring is somewhat in question. Most often it measures inputs, not value-added. I don’t see how increasing performance measurement reduces academic freedom, though. It reduces freedom write large, perhaps, but academic freedom is a fairly specific thing, conferring the right to teach a prescribed subject in the manner the instructor sees fit. Measurement, in good practice, is a feedback loop to improve that process.

**Statement 17**

*Universities will integrate gaming and simulational technologies into teaching and learning practices.*

Detail: Universities will embrace gaming and simulational technologies as they gain social acceptance. These technologies will be used to eliminate the "drudgery" of traditional curricula delivery and assessment.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.

19. What are the implications for this item at your college or university?

- **AD**: Teaching methods and delivery will need to respond to today’s student. A 50 minute class period where the instructor lectures for the whole time without interaction from students won’t be acceptable.
- **AI**: Adoption of gaming in appropriate programs will be critical as we look to engage the next generation of learners.
• **AK**: We are investing in gaming and simulations technologies as our approach to teaching and learning. Alternative learning strategies should be addressed to better educate students.

• **AM**:
  - Hiring
  - Technology purchases
  - Facility implications
  - Equivalency course expense

• **AN**: I think we are just starting to sense that this change is coming. There is discussion of this and we are starting to see this show up as conference topics. The implication will be financial and providing support.

• **AO**: XXX has a well developed “program development” division made up of instructional designers and media producers. We are too tied to former video-based technologies, and, even as an innovative institution, need to be more innovative ourselves in the use of multi-media in our online classrooms.

• **AP**: We use these approaches now to some extent. We do it to provide a sense of context and create engagement. As it becomes more cost efficient, we will do more.

• **AT**: Today’s students, especially the traditional 18-24 year olds who grew up with television, computers, PacMan, Intendo, Game Cube and PlayStation are simply unwilling to accept lecture education. Since they expect to be entertained, the use of gaming in the classroom is here to stay. Simulation, too, is now accepted as a viable learning strategy because it is financially viable, eliminates safety risks, is student-friendly, and can supplement the need for real patients, much in-demand clinical sites and reduces potential liability issues while students are perfecting skills.

• **AW**: Increased use of these technologies. We are already there with VR and serious gaming.

• **AZ**: Pedagogy is the place where we can have the greatest impact on students. Games and simulations are very powerful, students find them engaging, and they are proven effective. We have set up a Game and Sim group to look at this. I’ve written a Sim myself.

• **BB**: Need to think of ways to make this happen, but it is a few years off yet.

• **BG**: No knowledge or comment

• **BH**: Unless I misunderstand the statement, this has been going on to a limited degree for a long time. What’s the issue?

20. **What can be done to best support this item today at your institution?**

• **AD**: Investment in faculty development.

• **AK**: There is a need to invest and reinvest in faculty development. External partnerships are also critical to providing additional resources to stimulate learning.

• **AM**:
  - Resource
  - Top thinkers/innovators nationally as consultants
• **AN**: We need to start developing the infrastructure to support these innovations and to identify financial resources.
• **AO**: We need more R & D to support integrating new media into our programs. We may be too focused on operations.
• **AT**: The employment of new faculty with gaming and simulation education and experience, making certain adequate staff development resources are available for faculty interested in enhancing their technical skills in gaming and simulation, providing release time and sabbatical opportunities for faculty to pursue training and assuring that the technology necessary to support gaming and simulation are available are all ways of supporting and encouraging the use of these new technologies.
• **AW**: Funding.
• **AZ**: We’re putting funds into faculty fellowships and a consortium approach to working on Games and Sims.
• **BB**: Start thinking about ways to incorporate it.
• **BH**: Faculty development opportunities?
Statement 18

*Information and communications technology systems will allow for student-student and/or student-technology-student knowledge production in universities.*

Detail: By using technology to replace student-teacher relationships with co-constructivism, "democratic" communication and knowledge production will transform learning and research in universities.

On average, the response group rated this item as highly important, somewhat acceptable and somewhat likely.

21. What are the implications for this item at your college or university?

- **AD**: More investment in faculty development will be needed. Upgrades in technology will also be needed. Design of classroom may need to be changed.
- **AI**: Not significant
- **AK**: First, I do not accept the premise that there will be less interaction between students and teachers unless the option is preferred by the student. Technology can serve as a tool to provide greater interaction, especially with generation next.
- **AL**: I find this exciting and our college intends to move in this direction.
- **AM**: Culture change at same level.
- **AN**: I don’t see as much impact at two-year colleges regarding this item.
- **AO**: Technology does not “replace” student/teacher relationships. That is an unsophisticated and ill informed assessment of the power of technology to empower teachers and learners to collaborate in a highly personalized environment, where each voice can be heard quite distinctly. As indicated earlier, our definition of student-centered learning means that we know our students come to us with a wealth of knowledge and expertise as practitioners; we provide opportunities to them to learn from their faculty and from each other about how to move their practice to an evidence base through research. Our pedagogy is based on constructivism, and we continue to evaluate those most effective pedagogical practices that contribute to increased learning for our students.
- **AP**: This is an example of role-change rather than staff elimination. New roles will emerge around the changes this type of knowledge production will drive.
- **AT**: Without a doubt, today’s students are connected. In many cases, they are, from a communications perspective, significantly more advanced in interpersonal communications than their teachers or student services staff. They are into instant messaging, demand an immediate response and seem willing to pay whatever the price to own the latest in information and communications technology.
- **AW**: It will drive closer ties to partner industries outside the institution where such knowledge can be applied to the market.
- **AZ**: Peer-to-peer education is powerful and should be encouraged. We haven’t done as much of it here as we did at my last place (Ball State) where we employed high-level undergrad students to help teach other students (tutorials, non-credit type, in high-tech areas mostly).
• **BB**: We are currently designing curriculum that requires students to work with other students not in the same class to mimic the many workplaces where employees are all over the world. It is a start.

• **BG**: We’re already there on graduate levels

• **BH**: We are already heavily involved in faculty/student collaborative research and learning.

22. **What can be done to best support this item today at your institution?**

• **AK**: We need to invest in faculty development to enable the development of appropriate pedagogies.

• **AM**: Professional development

• **AO**: We are on it! Our leadership and resources are aligned to continue to improve in this area. We will continue to advocate for clearer understanding of the power of technology within the academy as well as without

• **AT**: The college works hard to support the technology infrastructure necessary to support effective and efficient student-to-student and teacher-to-student communication systems. Surveying to determine what students are currently using, responding to their demands, listening to their needs, and helping staff stay current with both equipment and training best support ICT systems.

• **AW**: Build larger private sector partnerships.

• **AZ**: We need to introduce this concept on a trial basis in selected areas.

• **BB**: See above.

• **BG**: Reorganize ourselves structurally. For example because of chronology of program construction our graduate school of education’s main program is known as MEDAL: masters education, doctorate, administrative license. Change to Doctorate framing Masters framing Bachelors

• **BH**: Faculty/student collaborative research and learning.

**Statements submitted by participants**

**Statement 19**

*Revenues and savings generated by distance learning will free public universities from their dependence on public funding.*

Detail: Higher education takes in revenues greater than $200 billion each year—five times the revenue generated by the steel industry. Distance based courses are on the rise, increasing 400% from 1998-2001. If for-profit education can make money and grow exponentially from distance education, cannot public education eliminate its dependence on public funding?

Comments from respondents:
“I have some major concerns with [items] 19 and 21. If one focus is exclusively on the bottom line, public education will be adversely affected because it will be affordable to the few and only the hot topics will be offered for sale.”
“I would agree that there are opportunities to save money by being more efficient by upgrading processes and reducing waste. Streamline, streamline, streamline.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

- **AD**: Online revenue will enhance university resources not replace public funding.
- **AI**: This is an issue of the economic model … privates (Phoenix, Capella) have it figured out. They are in a union-free environment.
- **AK**: The non-profit colleges and universities [???] long standing contract and arrangements that impact cost.
- **AO**: My two cents: Again, there is a huge misconception that distance learning is more cost-effective. The costs of adequate technological infrastructure are HUGE, perhaps comparable to maintaining a physical plant.
- **AT**: Distance education alone will not free public higher education from its dependence on public funding. Distance education is but a drop in the bucket when compared with the enormity of what higher education delivers. There are opportunities to become more efficient and effective and we must constantly strive to find ways to deliver a higher quality product at a more competitive price.
- **AZ**: What waste? Streamline what? Distance learning has for the most part cost every bit as much here as regular instruction, even more. But we are a collective bargaining institution.

Statement 20

*Universities will streamline processes and improve efficiencies to reduce costs, decreasing the need for dramatic tuition increases and funding increases.*

Detail: "Colleges and universities, in general, are grossly inefficient and ineffective in terms of how they manage their enterprises. You've got underutilization of the physical plant--you've got tenure--which basically ties your hands on how you can manage your work force. You have irrelevant research. You've got extremely low teaching loads for tenured and untenured full-time faculty." (James Carlin, former head of the Massachusetts Board of Higher Education.)

On average, the response group rated this item as highly important, somewhat acceptable and somewhat unlikely.

23. What can be done in regard to improve the likelihood of this item today?
• **AD**: Universities will need to develop measures of efficiency and effectiveness. Those that don’t will receive fewer public resources.

• **AI**: The model must change. Dr. Larlin is correct – tenure and union contract terms and conditions do not reflect the changing marketplace and, in time, will prove to be the downfall of many higher ed institutions in the U.S. We cannot thrive in “new times” with “old rules.”

• **AK**: We need to be attentive to our various constituencies. We also need to better inform them.

• **AL**: Yes, we will see more efficiencies, but we will also see more of a movement to economic growth centers in higher education.

• **AM**:
  - Models in practical areas of the colleges
  - External forces (legislature, board) will likely force this

• **AN**: I think that we have been moving in the direction of becoming more efficient. It is a matter of training and changing mindsets. For those of us in MnSCU, it is a system that needs to adjust. Sometimes it is not having the resources system-wide that prevents us from making the necessary innovations. The taxpayers are demanding more accountability as reflected in legislative appropriations that are driving more efficiency.

• **AO**: Some of the entrenched systems named above by James Carlin have got to change. The academic calendar, the expectations around teaching load, the emphasis on research which often generates studying the thousand angels dancing on the head of a pin . . .

• **AP**: It is becoming increasingly necessary to change from the promotion of good academics into business-type roles to bringing in people who understand business and the use of operational and performance metrics.

• **AT**: I don’t believe that public higher education has reached the crisis situation that it will take to make significant changes in the way we do business. But, I believe this will come in time. Following in the wake of both the U.S. auto industry and, more recently, health care providers, higher education will be forced to streamline processes and improve efficiencies. Failure to do so will result in elimination. Partnerships, sometimes even with competitors, will help us better utilize our facilities, process mapping will improve our effectiveness, eliminating bureaucracy and redrafting union contracts will help in holding down tuition increases and reducing dependence on public funding.

• **AW**: Eliminate tenure or drive up accountability effects.

• **AZ**: I am not sure what the inefficiencies are so I don’t buy the premise of the question. Again, I stumble on the word “improve.” This is, necessarily, a labor-intensive business. The cost per student now is probably lower than it has been, when adjusted for inflation.

• **BB**: It is difficult. A first step would be to adopt a quality philosophy. Such efforts force institutions to examine processes, where the most waste occurs. People often think this applies only to manufacturing, but it does not. An insurance company, for example, reduced the time it took to process claims by more than 80% simply by not
moving claims from in-basket to in-basket. As a business grows, processes often get added on. As leaders come, they add reports they like; but when they leave, those reports do not usually go away. Wasted time equals wasted money.

- **BG**: We’ve just spent a year with outside consultants looking at “branding” – reorganizing, prioritizing which is the basis of this year’s strategic plan to accomplish statement 20

- **BH**: My institution is looking at ways to restructure and re-engineer but the prospects aren’t good. The obvious “fixes” like getting rid of tenure and increasing the teaching load would destroy the universities the futurist expects will globalize knowledge, etc.

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**Statement 21**

*Universities will regard themselves as businesses with commodities (knowledge and skills) to sell, customers (students and employers) to serve, and constituencies (legislators and board members) to answer to.*

Detail: Businesses in the U.S. are expected to make money or die. As a result, business leaders look for efficiencies through ICT, the elimination of non-value-added activities, the closing of facilities, and/or the elimination of dwindling product lines or services. We as stockholders expect this. University leaders must do the same (e.g., expect 40+ hour work-weeks common in industry, close under-enrolled programs).

Comments from respondents:

“I have some major concerns with [items] 19 and 21. If one focus is exclusively on the bottom line, public education will be adversely affected because it will be affordable to the few and only the hot topics will be offered for sale.”

“I would agree that there are opportunities to save money by being more efficient by upgrading processes and reducing waste. Streamline, streamline, streamline.”

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat likely.

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**24. What are the implications and policy actions at your college or university?**

- **AD**: Majors or programs with small enrollments may be eliminated. Resources re-allocated to improve the quality of other programs.

- **AI**: Eighty (80) percent of our costs (as a % of general revenues) are salary and benefits, and the percentage continues to rise. If it does, these eventually will be no funds for technology, equipment, supplies, etc.

- **AK**: Higher education, except for the exclusive institutions, will be expected to engage in future efficiencies activities. However, higher education is not constructed around traditional business models. As some point, efficiency and effectiveness cross each other.

- **AM**: I think this is today’s reality.
• **AN:** Again, this is happening to some degree especially with the privates. Capella and the University of Phoenix are good examples. I think in the public sector, we are beginning to think of students as customers and obviously, we have the legislatures and board to please. I suppose that we see knowledge as a commodity in the continuing education and customized training divisions.

• **AO:** We have multiple levels of analysis of programs’ efficiencies and effectiveness and mission-critical relationships. At our institution, we continue to refine these measures. To analyze programs as a business analyzes a product is not to “commoditize” education; there are certain programs that have become a commodity in our higher education enterprise, but simply to analyze programs for their educational effectiveness and financial viability (including contribution margin) does not make them a commodity.

• **AP:** Commoditization does not seem to be a desirable outcome nor does “make money or die” when it comes to public institutions. While there is likely room for improvement, we need to have non-monetary goals as well as cost-containment.

• **AT:** Colleges must be recognized as “big business.” As such, we must respond more like business and industry than higher education organizations of the past. We must accept and practice a student-centered, user-friendly, customer-service approach. Policies, procedures, processes and practices must focus on what’s best for both internal and external stakeholders.

• **AW:** This is nothing new - - it drives closer examination of process.

• **AZ:** “Commodity” is not the right analogy for our industry. Do doctors and lawyers sell commodities? No, they sell a service. Ideally, they are to give the best advice possible to their clients based on their years of education and experience – and the mantra “the customer is always right” does not apply when it comes to law and medicine. This is a much better analogy for higher ed. That’s not to say that universities don’t sell commodities, because we do in the form of apparel with logos, football or theater tickets, and so on. But the core business is a service, not a commodity.

• **BB:** We already do this.

• **BG:** We understand the interface between business like and a learning community

• **BH:** In many ways, we already see institutions behaving like businesses. Grade inflation (to please the customer) is just one example. Education is not a commodity and treating it like one will eventually destroy the university.

25. **What can be done in regard to the item now to produce an acceptable outcome?**

• **AD:** Each year there has been a re-allocation process and identification of where additional resources are needed.

• **AK:** Higher education should demonstrate effectiveness in a broader scale to our constituencies. There are socio reasons why we education tomorrow’s leaders who drive our democracy and quality of life.

• **AM:** Find new language that communicates.
• **AN**: Treating students as customers especially with regard to services is probably not a bad idea. Cutting down on the bureaucracy is needed to make this happen. When efficiencies are realized, boards and legislators need to be informed. With regard to the commodity aspects of knowledge, cost studies related to delivering the curriculum are becoming common-place. And, I suppose, marketing of programs and learning opportunities could be considered making knowledge a commodity.

• **AO**: Black and white thinking must be changed through important engagement of boards, faculty, students and alums about the issue of efficiency and effectiveness.

• **AT**: Colleges and universities must change the culture of the organization to accept this significant philosophical change from parochial higher education institution to teaching and learning enterprise. Ongoing communications and staff development activities will be necessary to assure a smooth conversion.

• **AW**: Streamlining the items which we do not control - - i.e., federal financial aid process. Adopt some form of lean thinking into staff development.

• **AZ**: We need to get the analogy right. A book is a commodity, and a book is used in education, but a book is not itself education. The notion of education as commodity assumes that education is merely the presentation of knowledge, which 1,000 of experience has shown us is not the case.

• **BB**: I don’t know.

• **BG**: Keep focused and committed to our implementation

• **BH**: Try not to go there.

26. **What if competing institutions accept this item and reorient their policies aggressively around it?**

• **AD**: This is happening.

• **AI**: This will work only if state systems recognize the need to change state funding allocation models at the same time.

• **AK**: Higher education institutions will need to make adjustments to maintain their desired competitive positions.

• **AM**: Increased competition.

• **AO**: There will be an increase in quality and additionally, there will be winners and losers.

• **AT**: Many competing higher education providers, especially the privates, but some pubic institutions as well, have already adopted this businesslike mode of operations. A significant number of our own faculty opt to take their continuing education or further their professional development from these new universities. They are, willing to pay more than they would at their public counterparts in exchange for enrolling in the cohort model, getting credit for life experiences, reducing the number of class meetings and the number of weeks enrolled, applying what they are learning in the classroom to what they are doing on the job and being treated like a customer rather than a traditional student. It is, I believe, a model that we must seriously consider adopting or face a potential decline in enrollment.

• **AW**: They will succeed.
AZ: That’s fine, but then they are not in the education business. They are selling something else, such as a diploma. They would be like a doctor or lawyer who tells the patient of client what they want to hear, rather than the truth. That’s not a very good doctor or lawyer!

BB: They would be more profitable. They would be more popular with the government, but they would need leaders who can make major change happen because it would be an uphill battle. This is a big reason companies often branch off (think Saturn) or move across the country or overseas; they need to make major changes and the current climate makes it too difficult if not impossible.

BG: Good luck – should be a healthy competition

BH: Some are already doing this – e.g. the for-profits. One can hope that high-quality institutions will not do this and that quality will win out.

Statement 22

Faculty employment rules, such as tenure and work hours, will be abolished or changed radically.

Detail: Many union contracts limit student contact hours and mandate tenure as an expectation, neither of which allow efficient management of the workforce.

On average, the response group rated this item as somewhat important, somewhat unacceptable and somewhat unlikely.

There are no follow-up questions related to this statement. If you have any comments, please feel free to share them in this space:

AD: I doubt tenure will be abolished, but the percent of tenured faculty will decline over time.

AI: This is the most critical issue in this entire discussion. The growth of entitlements and protections in union contracts is far beyond center. It (change) must be addressed in this emerging marketplace of higher education.

AK: Future faculty contracts will need to become more flexible and adaptable. Tenure may continue to exist in revise thinking more akin to specific time frames.

AO: My two cents: This is inevitable. The AAUP’s recent statement on part-time and contingent faculty evidence that even they recognize that the US professorate is changing. With less than 50% of current faculty employed on full time, tenure-track positions, the train has left the station.

AT: Some contract language is no longer appropriate if colleges are to be viable and survive in today’s higher education market. In addition to work hours and tenure, such language as claiming of positions after lay-off, sabbaticals and class size are often not conducive to efficient operations. Many contend that the one-year of experience for one-step on the salary schedule has outlived its useful life and that consideration should be given to a pay for performance or merit-pay system of compensation.
AZ: On the balance, tenure is beneficial to the institution, although it is often portrayed as a detriment. Yes, there are “deadwood” tenured faculty, but they can be dealt with. Tenure essentially trades stability for higher salaries. If we abolish tenure, faculty will become much more nomadic, and salaries will skyrocket to levels found in other professions.

Statement 23

New types of innovative institutions grow in public acceptance and in status within the higher education community.

Detail: Fully online universities, educational integrators and other kinds of innovative institutions that are able to bring access to and meet the needs of an increasingly diverse group of learners are recognized by the general public and by employers as important alternatives to traditional institutions.

On average, the response group rated this item as somewhat important, somewhat acceptable and somewhat likely.

27. What are the implications for this item at your college or university?

- AD: We must provide high quality service to online students and a quality educational experience.
- AI: Strong opportunity in a few selected programs.
- AK: The effectiveness of online learning is evolving and needs to be carefully assessed. There is a difference between delivering and effectiveness. Standards must be globally adhered to in providing access.
- AL: A major focus will continue to be innovation. Our college will hire faculty and staff who bring this to the table.
- AM: Colleges need to identify the competitors and clearly communicate their unique niche/strengths.
- AN: We are spending time and money to develop on-line courses and to market them. We are seeking ways to be innovative with our partnerships and delivery of instruction. We are starting to focus on learning outcomes and not so much on the end degree—at least in the technical programs.
- AO: I suggested this item, and we stand to benefit from increased acceptability of innovative institutions.
- AP: This acceptance of innovation is clearly happening and an institution like mine is extending access to new audiences, with over 35% or our enrollment consisting of learning of color.
- AT: Innovation is one of our system’s top priorities and is something our college has embraced. One only has to consider the significant increase in enrollments at several regional and national providers to realize the impact these new entities are having on traditional higher education. Our own enrollments in distance education, particularly Web-based courses are growing like much faster than those of live classes.
• AW: More competition for our core constituency - - the hard-to-serve student.
• AZ: Our niche has been and will largely remain “traditional” because that is what we do well. This niche will continue to exist for the foreseeable future. But we are also creating an online presence and reaching out to serve diverse students on and off campus.
• BB: None.
• BG: We are innovative and adaptable already
• BH: More competition.

28. What can be done to best support this item today at your institution?

• AD: Staff online services well and be sure we use faculty that are committed to online learning.
• AI: Separation from the status quo is necessary. Opportunity for new models must be provided … models free of union restrictions.
• AK: [???] and continuing to engage in providing increased online learning opportunities and service delivery. However, appropriate assessment activities are also used to ensure effectiveness.
• AM: More information of the up-to-date status
• AN: Need to provide the resources and leadership to see this happen.
• AO: We will continue to advocate through multiple channels for this outcome. It is our consuming passion, and we are all aligned to this end: our board, our administration, our faculty, out students, our alums. The real beneficiaries of this advocacy are the professions that we serve who have an increasing group of professionals who base their practice on research and scholarship.
• AT: As an ever-increasing share of our enrollments are delivered via distance education, we are seeking new hires that are innovative and willing to teach online, struggling to keep our technology infrastructure state-of-the-art, and working hard to complement our distance education course work with services that are also provided via the Web. Marketing, recruitment and promotional strategies to reach this new cliental are being developed. Human resources are being deployed to deal with this new teaching model and with the new technology needed to support it.
• AW: Continue to improve our process and support functions.
• AZ: More professional development funds for course development, a greater international presence, and more funds for targeted recruiting.
• BB: We develop transfer agreements with these institions.
• BG: Continue to be committed to our implementation in progress
• BH: Take account of what such institutions do well and meet the competition.
Statement 24
Rising tuition costs will lead to increased efficiencies through ICT, the elimination of tenure, 40-60 hour work-weeks common in industry, and improved building utilization. (Based on comment received regarding item #10.)

Comments from respondents:
“Question 24 cannot be responded to unless broken down.”

On average, the response group rated this item as highly important, somewhat unacceptable and somewhat likely.

29. What are the implications and policy actions at your college or university?

- **AD**: It would make union negotiations very difficult.
- **AI**: Efficiency here is driven (presently) by union contract terms & conditions.
- **AK**: I really do not foresee the elimination of tenure in its totality for some time. Forty to sixty hour weeks are not common for most faculty who would [???] well beyond their level. I agree that how we have traditionally [???] tenure will be modified and that the role of faculty is changing.
- **AM**: This is happening, except for tenure.
- **AN**: I don’t see tenure going away. Fewer will receive it however—again referring to Dr. Ramaley’s article. I think that 40 to 60 hour workplace is happening with a majority of the faculty.
- **AO**: As a publicly traded company, we have accountability to our shareholders for increased margin performance (profits) and for increased effectiveness in our outcomes (value). Although we do not have a traditional tenure-based faculty model, nor do we have a large physical plant, nor do we have a traditional “work week” (operating more on a 24x7 mode), we still focus on efficiencies such as maximum capacity. We continue to work on that issue, so it is not only “buildings” that need to be better utilized, but online classrooms and learning management systems.
- **AP**: W do not have tenure nor do we have buildings. But we also don’t have 60 hour workweeks. Online institutions serve select needs, different than traditional institutions. There is a need and room for both types of institutions and ICT cannot solve all the problems of higher education.
- **AT**: Rising tuition costs are causing our college to look at all aspects of our operation. In addition to implementing a zero-based budgeting approach, we are mapping all processes in an effort to identify and eliminate duplication of effort, streamline operations, and improve return on investment. Policy review at both the system-level as well as the college has led to several changes that impact both the student and college. The most significant is a recent “cancellation for non-payment” policy that automatically cancels a student’s course registration at a predetermined date prior to the start of the semester if tuition isn’t paid, a “safe harbor” deposit made or a payment plan finalized. This cancellation can significantly impact a student’s educational plan, reduce semester enrollment if replacement registrations are not
found, or allow the college to recapture enrollment prior to the start of the semester through new registrations.

- **AW**: It will have an impact on personnel management.
- **AZ**: Improved building utilization is already happening thanks to IT. The faculty and administration already work 40-60 hours so I’m not sure how to answer that. We have no interest in eliminating tenure, which conveys more advantages than disadvantages.
- **BB**: We are doing these things and others to reduce costs and keep tuition rates from rising out of control.
- **BG**: na
- **BH**: As said before, we are looking at efficiencies. Not all the things listed will or should come to pass.

### 30. What can be done in regard to the item now to produce an acceptable outcome?

- **AD**: Compensation would need to be tied to performance measures.
- **AI**: Changes in union contracts **must** be allowed.
- **AK**: We need to work for contract changes, acknowledge the changing role of faculty and improve institutions overall efficiencies without compromising the totality of learning.
- **AN**: I think that the higher tuition and reduced state support is causing thee things to happen.
- **AO**: There needs to be a C-change in the higher education community in regard to long-held sacred cows which are mentioned in the item. Again, faculty development is important, but so is board development and presidential leadership.
- **AT**: The key to increased efficiencies appears to be in the willingness of management to adopt a mode of operations that is more inclusive than exclusive. The ability to bring together a broad-based constituency of frequent users and front-line providers to brainstorm opportunities and problem solve solutions.
- **AW**: This requires statewide change outside one institution’s control - - creating a ‘right-to-work’ environment in public higher education.
- **AZ**: Not sure how to answer this…
- **BB**: Think of your building as a community center. Determine popular courses. Find faculty who want to teach off hours. Cater to the working adult with kids.
- **BG**: na

### 31. What if competing institutions accept this item and reorient their policies aggressively around it?

- **AD**: It would make it more likely that changes could occur on our campus.
- **AI**: This will not occur unless there is movement by statewide faculty unions.
• **AK**: If a substantial number of institutions make significant changes, many of us will be impacted.
• **AN**: We will need to respond.
• **AO**: Again, the fittest will survive and flourish. Although we have no definitive understandings as a community about the price elasticity of a college education, a different taxonomy (such as the one from Finn mentioned above) suggests that there is different elasticity in different sectors. The elites probably have to do nothing, while the mass market institutions have to reinvent themselves.

This is yet another example of the need to consider a theory such as John Rawl’s theory of social justice, which posits that an unequal investment of resources is necessary to achieve equal ends. Will we stand by and let the rich get richer? I find it fascinating that the Chronicle now follows those institutions out to raise over $1 billion dollars; what about those institutions that want to raise up the under-represented in higher education, those disadvantaged over a lifetime by SES and race/ethnicity?

• **AT**: Many competing institutions have already moved in the direction of increasing efficiencies by implementing operational changes. These providers serve as both a reminder of our need to do the same and a model of opportunities to consider. Colleges will either improve instruction and services and flourish or offerings will deteriorate and institutions will decline. Ultimately, our survival depends on our ability to deliver what the customer wants, when then want it and at a price that’s competitive.
• **AW**: They can’t anymore than we can unless the statewide ground rules are changed.
• **AZ**: They already are, and if they bring more students into higher ed, then more power to them. Two generations ago, it became a sine qua non that nearly everyone should have a high school diploma. Our next goal should be nearly-universal higher education. Canada is ahead on this, as are many European countries. We are a long way from saturation, in other words, so there is plenty of room for new competitors to serve new higher ed markets. More power to them!
• **BB**: The focus here is to increase efficiencies, which is always smart business practice. Universities who don’t do this will find themselves financially strapped funding dwindles.
• **BG**: na
• **BH**: That would increase competition, but low cost isn’t the only thing that makes an educational institution attractive.

**Do you have any overall comments in regard to this study?** If so, please elaborate:

• **AL**: I appreciate the opportunity to participate. It would be interesting to have an additional study comparing these responses with that of legislators and CEO’s. Good luck.
• **AZ**: It’s in interesting study and I look forward to hearing about the results. But as you read the responses, please remember that unlike most industries, and unlike the
status quo, higher education could potentially serve every single person in the U.S. QED, there is plenty of room for multiple approaches, multiple providers, and multiple technologies. The university as currently configured will still be around throughout our lifetime, while other new forms of high ed appear that we cannot imagine today. But look at it this way: how many parents of high school students do you know that would prefer to have their young person live at home and earn the baccalaureate online? And how many of those students would like to do so?
Appendix H: Minnesota higher education institutions included in sample pool

**University of Minnesota**
- University of Minnesota - Twin Cities
- University of Minnesota - Duluth
- University of Minnesota - Morris
- University of Minnesota - Crookston
- University of Minnesota - Rochester

**State Colleges and Universities**
- Alexandria Technical College
- Anoka Technical College
- Anoka-Ramsey Community College (Cambridge, Coon Rapids)
- Bemidji State University
- Central Lakes College (Brainerd, Staples)
- Century College (White Bear Lake)
- Dakota County Technical College (Rosemount)
- Fond du Lac Tribal and Community College (Cloquet)
- Hennepin Technical College (Eden Prairie, Brooklyn Park)
- Hibbing Community College
- Inver Hills Community College
- Itasca Community College (Grand Rapids)
- Lake Superior College (Duluth)
- Mesabi Range Community and Technical College (Eveleth, Virginia)
- Metropolitan State University (St. Paul)
- Minneapolis Community and Technical College
- Minnesota State College - Southeast Technical (Red Wing, Winona)

**Minnesota State Colleges and Universities - MnSCU**
- Minnesota State Community and Technical College (Detroit Lakes, Fergus Falls, Moorhead, Wadena)
- Minnesota State University Moorhead
- Minnesota State University, Mankato
- Minnesota West Community and Technical College (Canby, Granite Falls, Jackson, Pipestone, Worthing)
- Normandale Community College (Bloomington)
- North Hennepin Community College (Brooklyn Park)
- Northland Community and Technical College (East Grand Forks, Thief River Falls)
- Northwest Technical College (Bemidji)
- Pine Technical College (Pine City)
- Rainy River Community College (International Falls)
- Ridgewater College (Hutchinson, Willmar)
- Riverland Community College (Albert Lea, Austin)
- Rochester Community and Technical College
Saint Paul College  
South Central Technical College (Faribault, North Mankato)  
Southwest Minnesota State University (Marshall)  
St. Cloud State University  
St. Cloud Technical College  
University Center Rochester  
Vermilion Community College (Ely)  
Winona State University

Private Colleges

Academy College (Bloomington)  
Argosy University (Bloomington)  
Art Institutes International Minnesota (Minneapolis)  
Augsburg College (Minneapolis)  
Bethany Lutheran College (Mankato)  
Bethel College and Seminary (St. Paul)  
Brown College (Mendota Heights)  
Capella University (Minneapolis)  
Carleton College (Northfield)  
College of St. Benedict, St. John's University  
College of St. Catherine (St. Paul)  
College of St. Scholastica (Duluth)  
Concordia College, Moorhead  
Concordia University (St. Paul)  
Crown College (St. Bonifacius)  
Dunwoody College of Technology (Minneapolis)  
Gustavus Adolphus College (St. Peter)  
Hamline University (St. Paul)  
Herzing College  
Luther Seminary (St. Paul)  
Macalester College (St. Paul)  
Martin Luther College (New Ulm)  
Mayo Graduate School  
Mayo Medical School  
McNally Smith College of Music (St. Paul)  
Minneapolis College of Art and Design  
Minnesota School of Business/Globe College  
North Central University (Minneapolis)  
Northwestern College (St. Paul)  
NTI School of CAD Technology (Eden Prairie)  
Oak Hills Christian College (Bemidji)  
Pillsbury Baptist Bible College (Owatonna)  
Rasmussen College  
Saint John Vianney Seminary (St. Paul)  
St. Mary's University (Winona)  
St. Olaf College (Northfield)
University of St. Thomas
Walden University (Minneapolis)
White Earth Tribal and Community College (Mahnomen)
William Mitchell College of Law (St. Paul)

Appendix I: Summary of Delphi sample and participation activity

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