Chapter 8
Learning From the Best: Implications From Successful Companies for Higher Education Management

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8.1 Introduction

At the end of the first decade of the new millenium, the circumstances for both academic institutions and the marketplace could be easily described as adverse. A global financial crisis had increased pressure on the budgets of universities and on their actual as well as prospective students. Companies that had traditionally supported higher education were struggling with survival. In many cases, public money had been shortened or just distributed over an increasing number of recipients in the last years. In Austria and Germany, the university sector had also experienced a shift toward privatization of state universities and the foundation of private universities. By all means, competition for scarce resources in the academic environment—budgets, excellent staff, and students among others—had increased, forcing higher education institutions to become more market oriented. As in business, agility is demanded for universities if they want to win a competitive edge (Shattock 2000).

In their book on enduring success, Bailom et al. (2007) look at the pillars of success of high-performing companies and how they perform in areas such as innovativeness, market orientation, core competencies, leadership, and entrepreneurship culture. In their large-scale study of over 1,100 companies in 10 countries they reveal that success does not depend so much on market characteristics or industry attractiveness. A company's fate is largely self-determined—it depends on a few internal features that can be influenced by the top management.

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Assuming that the same could be true for universities, this contribution strives at showing parallels between the academic and entrepreneurial sphere in order to derive viable solutions for the 'university of the future'.

8.2 Succeeding in Changed Conditions

As long as universities had a predictable future with public funding and resources oriented at student numbers, universities have been focused on planning. Now, with declining state funding and an increasing need for market orientation, there is a shift toward strategic management of universities. It has been suggested that in this changed environment the following characteristics are key for successful universities, 'requiring universities to take a holistic view of their activities, to coordinate institutional strengths so that they reinforce one another and to create machinery whereby academic, financial and physical planning strategy is decided on an integrated basis' (Shattock 2000):

- Competition. Competition between universities has highly increased through the reliance of funding on student numbers and especially international full-tuition paying students. Furthermore, there is competition for research-active staff and research funding from public and private sources. Membership to leagues and respective accreditations increasingly determine an institution's reputation.
- Opportunism. When resources are declining, the ability to seize opportunities becomes vital. This ability is highly dependent on an institution's management structure and decision-making processes, retaining crucial elements of collegial participation. In the world outside universities, 'time has become the competitive strategy of the firm' (Schoenberger 1997). Clear mission statements and goals provide a helpful framework within which opportunistic decisions may be taken.
- Income generation and cost reduction. The necessity of generating external income for institutions of higher education has become a matter of fact. An analysis of the costs of realizing income and the real benefits to the organization becomes crucial and demands a strong strategic input. Universities are expensive and the best universities appear to be the most expensive. They have to prioritize, cultivate niche markets, cut out weak departments, and build up strong units.
- Relevance. 'Relevance' and 'excellence' can be considered contradictory concepts. Still, universities need to demonstrate that they are not only ornamental but also useful to society. In need of public support they need to train students adequately and to address issues of public concern—such as regional unemployment, collaboration with industry, or commitment to the community—in order to justify public funding and support.
- Excellence. 'Universities traditionally claim excellence, whether or not they possess it' (Shattock 2000). A reputation for excellence secures a university's

financial security, provides opportunities for growth and development, and forms the basis for consensus on aims, missions, and values. Still, being excellent at some academic functions is no excuse for not being excellent in all facets of performance such as excellence of service provision or effective communication.

- Reputation. Excellence still is no guarantee for reputation. Reputation is built from public image, the perceptions of influential people, the media, and from the reactions of students and employees.

8.3 Serving Different Masters

A study undertaken by the TUM-Tech GmbH in Munich describes the university of the future as relying on individual's strategic, responsible, and individual actions when serving our complex society's diverse and concurring interests (TUM-Tech GmbH 2003). As such, institutions of higher education are positioned between the contradictory contexts of market regulation and autonomy requirements of ivory tower, workbench, and lighthouse (Faulstich and Graessner 2008).

The primary goal of a university is frequently defined as the advancement of science and/or society through research and teaching. For example, the mission of the University of Cambridge is "to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence" (University of Cambridge online). The mission of the California Institute of Technology is "to expand human knowledge and benefit society through research integrated with education" (California Institute of Technology online). A stronger focus on either research or teaching can have tremendous implications on the institution's strategic orientation, its organizational values, and preferred performance indicators. The primary orientations of universities may be as diverse as a product orientation, competitor orientation, or customer orientation. The focus of performance indicators can be on the revenue earned, the research output, or the number of graduates. As an antecedence or consequence, organizational values can be directed at social, market, financial, achievement, or research values (Fig. 8.1).

As a result, comparing the performance of community-based universities serving the regional stakeholders, achievement universities being oriented toward their competition or research universities striving for academic excellence, can prove to be a difficult exercise. Harvard College,[1] stating its mission as striving "to create knowledge, to open the minds of students to that knowledge, and to enable students to take best advantage of their educational opportunities" (Harvard College 1997), can be described as education-based and customer-oriented,

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[1] Harvard University (comprising the undergraduate college, the graduate schools, other academic bodies, research centers, and affiliated institutions) does not have a formal mission statement.
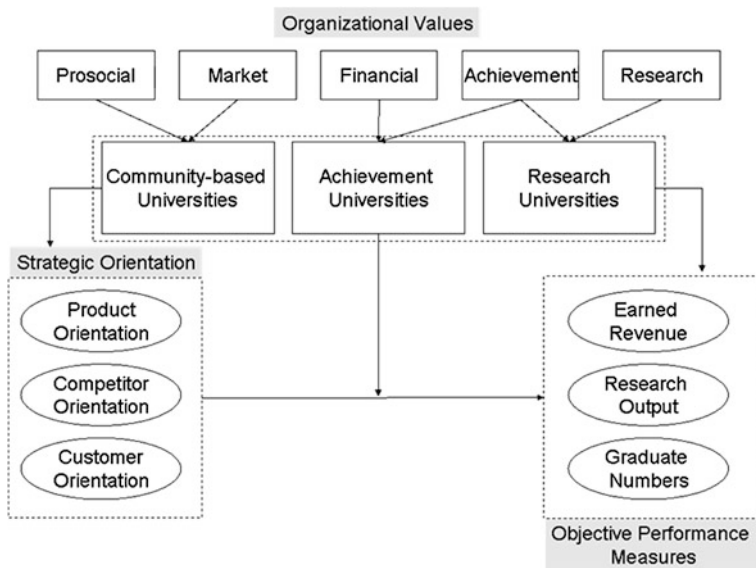
Fig. 8.1 Conceptual model of the interactions between organizational values, strategic orientation, and objective performance measures. (*Source* Adapted from Voss and Voss 2000)

whereas the London School of Economics' R&D division provides an example for research orientation: "A commitment to provide professional advice and support to the academic community, to assist colleagues to identify appropriate funding opportunities, and advise on the development of research grant proposals and research policy issues. We also provide support and advice on the management of the research projects and administration of the grant awarded." (London School of Economics online). The City University London is "providing students, the professions and business with the knowledge and skills essential to the success of London as a world city" (City University London online) and classifies as a community-based university. These examples also show how difficult it is to integrate competing values into a single institution-wide mission statement for universities.

8.4 University Performance

Albeit adverse circumstances, some universities appear to be more successful than ever. But what is success in a higher education context? This is the basic question to be answered when universities are forced to be accountable for their achievements: "Measuring for success and failure has to begin with identifying the 'right thing'. (This) is where the art of performance measurement begins" (Hodsoll 1998). In the 1980s, Alexander Astin (director of the Higher Education Research

Institute at UCLA) distinguished between education benefits, such as knowledge or skills, existential benefits referring to a stimulating and positive study experience, and fringe benefits, as later advantages from an institution's reputation or acquaintances picked up during the studies (Astin 1985). All these benefits are difficult if not impossible to operationalize for measurement. As a result, performance indicators, rankings, and other tools aimed at the comparability of higher education output have been developed. The following section deals with the difficult matter of performance measurement for higher education.

8.4.1 Performance Measurement for Higher Education

Companies are frequently evaluated on financial performance measures, mostly profit or return on investments (ROI).[2] For institutions of higher education, however, there is no single, ultimate criterion of effectiveness as they pursue multiple and often contradictory goals. Relevant criteria can also change over the life cycle of an organization, and so can the roles of influential constituencies (Cameron 1978). Performance indicators (PIs) have emerged as a method used internationally to manage and assess higher education (Gaither et al. 1994). The Higher Education Funding Council for England (HEFCE) has published sets of higher education PIs to cover

1. access and participation,
2. retention and progression,
3. research, and
4. employability (HEFCE 2007).

Cameron (1978, 1981) identified nine dimensions of organizational effectiveness for universities, clustering them into four groups: external adaptation (comprising the dimensions student career development, system openness, and community interaction), morale (including student educational satisfaction, faculty and administrator employment satisfaction, and organizational health), academic orientation (composed of student academic development, professional development and quality of faculty, and ability to acquire resources), and an extracurricular dimension (with the single factor student personal development).

Governments are progressively adopting strategies of information provision as a means of assuring academic quality and a foundation of their funding decisions. 'By specifying the performance indicators that will be publicly available and by subsidizing the development of measures of academic process and outputs, government can help improve the quality of information available to both student

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[2] There is extensive literature and discussion on how to measure firm effectiveness in a more appropriate way considering complexity in a firm environment as well. This discussion, however, is not part of the present contribution.

consumers and universities. This in turn will help assure the more effective functioning of competitive academic markets.' (Dill and Soo 2005).

Some of the proposed performance indicators are the basis of university or higher education rankings that use information derived from subjectively perceived 'quality,' statistics and/or surveys of scholars, educators, students, or others in order to compare higher education institutions.

8.4.2 University Rankings

The worldwide expansion of access to higher education has created an increasing demand for information on academic quality, and thus led to the development of university ranking systems or league tables. 'Rankings serve as signals for attracting new faculty and retaining older ones in highly ranked institutions and also help attract the best graduate students. Such rankings are often used by university administrators to allocate scarce education funds to different departments according to their success in these rankings.' (Kalaitzidakis et al. 2003).

Although most rankings and leagues are done on a national scale, there seems to be increasing international consensus about how to measure academic quality adequately. For example, the Times Higher Education Supplement (THES) World University Rankings uses

1. peer review,
2. ranking by major graduate recruiters,
3. citations of published academic papers,
4. teaching staff : student ratios, and
5. international orientation as indicators.

The Shanghai Jiao Tong Academic Ranking of World Universities focuses strongly on research output, using

1. the number of Nobel Prizes and Field Medals won by alumni and faculty members,
2. the number of highly cited researchers,
3. the number of articles published by staff in academic journals, and
4. the academic performance with respect to the size of an institution as indicators.

As a result, a shift from focusing on teaching activities to (rewarded) research activities has been observed (Taylor 2001). Most rankings avoid subjective assessments of excellence and peer reviews and rely on rather objective quality and quantity of research output (Taylor and Braddock 2007).

University rankings are also heavily criticized. Publication and citation data often lack quality and rigor. 'The most serious problem of these rankings is that they are considered as 'quasievaluations' of the universities considered. This is not acceptable' (Van Raan 2005). Very often, indicators are criticized for not capturing the full qualitative and quantitative dimensions of research performance (Taylor 2001). Further problems include subjectivity of rating, the quality of the

technical system, the (non-)matching of citing publications with cited publications, affiliation-related problems as well as a strong US bias in citation data, type of article, and language (Van Raan 2005). Also, there may be huge differences within various units of a higher education institution. Thus, Taylor and Braddock suggest an ideal ranking system giving scores for teaching and research output on a department-by-department basis (Taylor and Braddock 2007).

A ranking of economics departments throughout the world shows that the US retains its research dominance especially in the top 20 institutions; however, the European academic institutions are well represented in the remaining group of 180 that make up the top 200 universities in the world and so are universities from Asia and the Far East (Kalaitzidakis et al. 2003).

An objective evaluation of performance and effectiveness in higher education organizations has been shown to be difficult (if not impossible) and exposed to diverse criticisms. Still, distinguishing between successful and less-successful organizations can help to identify basic conditions, mechanisms, and processes that increase performance and effectiveness in higher education organizations.

8.5 What Top Companies Do Differently

Franz Bailom et al. (2007) identified high-performing companies as those companies disposing of a performance above-average on ROI, growth, and market position. In analogy, these companies could be compared for the intent of this contribution to institutions of higher education that perform well in university rankings stressing market and achievement indicators.

Both sectors, the business as well as the higher education sector, are characterized by similar market conditions. Hyper competition and isomorphism do not leave much room for differentiation. As a consequence, substantial potential for growth cannot be found in existing markets but in new—not yet discovered—areas. Good regional integration and functioning networks prove to be one of the most valued strategic assets. Successful universities have either established a unique selling proposition, such as distinctive study programs that are difficult to imitate as a result of unique networks and contacts, or perform well in the dimensions valued by university rankings. For example, the ETH Zurich has performed as a regionally anchored but internationally oriented university. The University of St. Gallen develops knowledge in close cooperation with best-practice corporations. The Mannheim Business School, leader of the German CHE ranking (ZEIT 2009), not only employs the best (according to the same ranking) management professor but also seven faculty members who are within the top 100 concerning their lifetime achievement, and eleven faculty members being within the 200 most active researchers since 2005. The University of Mannheim is the only German university being top achiever in all dimensions—research reputation, research funds, library endowment, student-to-teacher ratio, and student situation.
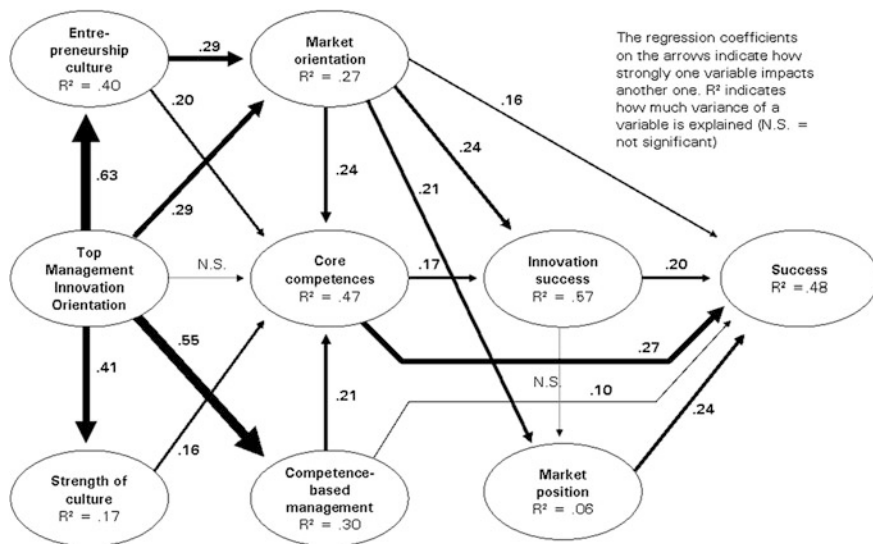
Fig. 8.2 Influence factors on Success of high-performing companies. (*Source* Bailom et al. 2007)

As in business, successful universities of the future will be characterized by fostering strengths, eliminating weaknesses, and niching the market. In the following, the main components of the IMP-Model (Fig. 8.2) of successful companies—market orientation, core competences, organizational culture, innovation, and the role of the top management—are explained in more detail and transferred to the sector of higher education.

8.5.1 Market Orientation

Market-oriented organizations are those which continuously generate knowledge about their markets and stakeholders, systematically distribute this knowledge within the organization, and make it accessible to key decision makers and which base their innovations and strategies on this market knowledge (Bailom et al. 2007).

Research and development is the central task and strategic asset for most universities and higher education institutions. Innovations, addressing and developing new ideas, materials, etc., are at the heart of university production. 'The long-term trend from simple to complex knowledge, arguably more important than the trend from elite to mass higher education, forces universities to position themselves between knowledge expansion and student expansion, with emphasis increasingly placed on the knowledge dimension. Innovative universities explore

new ways of organizing knowledge and of more effectively exploiting the fields in which they are already engaged' (Clark 1996).

In universities as in business, there has been a shift from closed in-house innovation to work in research networks and open innovation processes. Being able to exploit these new sources of innovation is part of a higher education institution's competitiveness. Academic careers are characterized by high mobility and flexibility, which more and more requires the establishment and maintenance of networks that allow for exploitation of knowledge inside and outside of the organization. Conferences and research meetings are an important platform in academia where new ideas, concepts, and innovations are presented, discussed, and shared. In analogy to the lead user concept (von Hippel 1986), listening to and working with 'lead students' can be a way to create innovation in education and increase the graduates' employability. Being aware of and attracting top researchers (and lecturers) inside and outside the organization who can contribute to research and education excellence and establish co-operations becomes a vital task for top decision makers.

The academic market is an extreme example of a networked market, which may render the introduction and acceptance of (radical) innovations difficult as participants will only switch if they believe others to do so well. Therefore, it is important to understand the market as a system and to understand how the system works, what key problems of network partners need to be solved, and to continuously provide benefits to these partners in order to win support and cooperation that are important in order to seize network externalities and efficiently use power structures necessary for the critical mass of market participants that are necessary to implement innovations. Market research is essential for a market orientation but encounters new challenges:

- Very often innovations or developments do not meet the needs of the market (Christensen et al. 2005). In order to orient the organization toward customers' real problems and latent needs, market research can be of help, but innovators have to look ahead of actually expressed needs and wishes.
- As a consequence, it is important to get into contact with the right group of persons, i.e., innovators and early adopters rather than representative samples of the respective population. Innovators are adventurous and prepared to take risks, whereas early adopters—although more cautious—accept new ideas at an early stage and serve as opinion leaders (Rogers 1995).
- Generating useful information on the market is one part of the game, interpreting it in a way that allows for value-enhancing actions is another. Open and critical dialog with discussion platforms across functional and subject/content areas and involving the top decision makers is vital for an open discussion that can gain strategic relevance and influence the organization's fundamental position.
- When searching for the right persons for a university's top management, academic excellence is considered one of the basic job requirements. Still, leading a higher education institution has very much to do with leadership and stakeholder

management, finance, planning, and many other tasks requiring management expertise as well. As such, academic excellence is a necessity but not a sufficient requirement for a top management position. A considerable amount of time has to be devoted for interaction with the various stakeholders in order to establish their picture of customers and markets and become market experts themselves.

- Finally, top decision makers have to support the propensity to experiment and take risks when implementing the generated solutions. Mistakes are an important source of learning that cannot be exploited when employees are afraid to make them.

8.5.2 Core Competences

When searching for the roots of competitive advantage, two main strategic approaches have been developed: While the 'market-based view' considers an organization's success determined by the structure of the market, the 'resource-based view' centers on organization-specific factors.

Strategic resources that are valuable, rare, inimitable, and nonsubstitutable, be it tangible or intangible, are considered core competences (Prahalad and Hamel 1990; Barney 1991). This can be resources, skills, specific knowledge, or relationships. They are frequently based on unique historical conditions and sequences of events. For example, MIT's orientation toward entrepreneurship has been shaped by its founding as a 'land-grant university' or defense contracts issued in times of the cold war, as well as a long tradition developing ideas and commercializing research (O'Shea et al. 2007). Rival institutions cannot easily determine why and—more importantly—how these competences emerged and can hardly imitate them. Their social complexity based on personal relationships, trust, and a specific culture makes them even more unique and difficult to establish and copy. Another example is the University of St. Gallen in Switzerland, integrating a strong network with businesses and practitioners in research, education, and further education (University of St. Gallen online).

Core competencies are decisive for organizational success insofar as competence-based management requires a concentration on strengths and efficient use of resources and, furthermore, should provide the basis for innovations. Thus, a higher education institution should identify its particular strengths (and weaknesses) in order to determine core competences that can be the source of competitive advantage. Identifying and selecting attractive markets where these core competences can be exploited is the next step. Strategies based on the core competences have to be developed for these markets and—finally—implemented. Once core competences have been established and/or identified, they should be enhanced in order to seize new opportunities and further competences applicable to new markets should be developed.

8.5.3 *Organizational Culture*

The sources of value creation and competitive advantage have shifted from tangible assets to intangible assets such as the intellectual capital and relational resources. The 'knowledge-based view of the organization' considers knowledge the most important resource of an organization (Grant 1996). Knowledge workers carry their knowledge with them, taking it with them as they change workplaces. As expert organizations, institutions of higher education face specific challenges for employee retention: employment relations are frequently characterized by contingent and project work and academic careers are inherently flexible forcing academics to change their employing institutions in order to remain employable. Only those universities who succeed in creating value for their employees will be able to commit employees to the organization and to develop and exploit their knowledge potential. There are three sources of values, attitudes, and norms which shape a corporate culture (Schein 1992) and are at the basis of an entrepreneurship culture:

- the beliefs, values, and premises of the organization's founder,
- the employees' experiences in the course of an organization's development, and
- the beliefs, values, and premises that originate from new employees and senior executives.

Entrepreneurial cultures are organizations that think in opportunities and are willing to take risks, focusing on innovation and advancement, and being visionary and dynamic. In his study on five European universities Clark identified five pathways to become entrepreneurial universities (Clark 1998, 2003):

- Universities, which enhance their organizational capacity to respond more quickly and with greater flexibility to changing demands, dispose of a strengthened steering core. This is also characterized by a stronger line authority between rectors, deans, and department heads.
- An expanded developmental periphery describes organizational units across traditional academic departments engaged in outreach activities such as knowledge transfer, the development of industrial partnerships, fundraising, alumni, etc.
- A diversified funding base enhances the financial sources from non-government sources, such as industrial firms, royalty income or earned income from campus services, student fees, or alumni, and thus increases autonomy.
- The stimulated academic heartland refers to academic units that become entrepreneurial units, reaching out with new programs and relationships being stronger directed at third-level income.
- Finally, a blending of traditional academic cultures and values with a new entrepreneurial culture results in an integrated entrepreneurial culture.

Strong cultures are associated with homogeneity of effort, clear focus and higher performance (Cameron and Quinn 1999).

8.5.4 Innovation

Differentiation—be it on the product and services, process, or business model level—has become increasingly difficult. More than 70 % of the company executives interviewed (Bailom et al. 2007) see themselves too similar to their competitors to achieve differentiation. In the higher education sector, this is equally so, considering the increasing need for comparability, quality control, accreditation and agreed standards, as, e.g., established through the Bologna process in Europe. Also, within the last decades, the role of the student has changed, emphasizing his/her role as a customer and creating new demands and requirements.

Universities as institutions only slowly adopt change and innovation—their goal ambiguity and system complexity usually cause different constituencies to be involved in the process. For example, innovation in teaching not only affects students but also faculty and administrative staff. Educational institutions are both a source of supply and demand for innovations.

The idea of 'doing new things' also encounters barriers for institutions of higher education. Traditionally, 'academic institutions are basically conservative in educational purpose and in support structures for innovation programs' (Hefferlin 1969, p. 11). But in an era of decreasing public funding, universities have to respond to challenges resulting from globalization, commercialization, and the increasing availability and capacities of information technologies (Taylor 1998).

According to the model of Noriaki Kano (Kano 1984), customers are neutral when basic requirements are met but dissatisfied when not; they are satisfied to the extent their expected performance requirements are met, and can be delighted by some unexpected and/or unarticulated excitement requirements, without being dissatisfied when they are not met.

- Radical innovations represent an entirely new solution for a basic requirement. They usually result in a long-term competitive advantage for the issuing organization. The introduction of virtual universities and study programs has been such a radical innovation. The open computer conferencing forum at the Open University in the UK proved to generate more traffic than official discussion forums and became the main workspace. Fielding Graduate Institute in the US offered an educational opportunity for a group of geographically dispersed adult professionals with families, who were not able to follow a classical full-time study program. Many other universities have introduced distance-learning programs, and e-learning has become standard now. Also, the first student placement centers met the basic requirement of student employability without being expected.
- Differentiation innovations provide better solutions for explicit customer expectations than the competitor's products. Improved e-learning software and an elaborate exchange program are examples for differentiation programs.
- Incremental innovations solve small, unarticulated customer problems and by surprise delight the customers. Although they generally generate only short-term effect, they are able to create lasting goodwill towards the institution. This is

important for universities as alumni are powerful stakeholders, influencing a university's funding, and—of course—reputation. The improvement of teaching techniques such as 'active learning', 'student peer teaching', or 'writing across the curriculum' had the potential to delight students coming across these techniques for the first time.

8.5.5 The Role of Top Management

A university's top management plays a decisive role for its performance. Ultimately, it is not individual management methods or tools that form the basis for sustained success, but the top management team's attitudes, values, thought patterns, and approach. For good reason, the filling of top management positions is eagerly observed by the public, the media, competitors, and other stakeholders.

In short, top management has to fulfill two roles—a management function and a leadership function. Management and leadership are two different but interdependent concepts. On the one hand, management is 'creative problem solving' (Hinterhuber and Krauthammer 1998) and optimizes existing systems, procedures, processes, products, and services. Thus, management remains within a given paradigm or within a given system and ensures the basic environment and conditions needed for success. In a higher education setting, ensuring the availability of resources, improving administrative workflows or increasing the value of lectures to students are management tasks.

On the other hand, top management needs to create a strong corporate culture that allows for identification and meaning as well as innovation and that eases the employment of creative and unusual approaches. Strategic leadership theory argues that companies are reflections of top managers and of the teams they have built around them (Hambrick and Mason 1984). Being alert to opportunities and disposing of the imagination and vision to exploit them is at the basis of leadership. An interest in people and the creation of an environment of trust, innovation, and endeavor easing necessary changes in the status quo are also vital for good leadership. For this goal, leaders in higher education should be able to inspire researchers, lecturers, students 'to work enthusiastically toward goals identified as being for the common good' (Hunter 1998) and, as a result, achieve more than they thought they were able to (Hinterhuber and Krauthammer 1998).

Management or 'doing things right' is easier to learn than leadership, which is 'doing the right things', but university top executives need both—leadership and management. In turbulent times, however, i.e., when structural and budgetary reforms challenge the higher education sector, when new markets have to be invented and radical improvements in stakeholder satisfaction are needed, leadership is more important than management (Hinterhuber and Krauthammer 1998). You manage things but you lead people. In institutions of higher education, people are the core assets for achieving high performance.
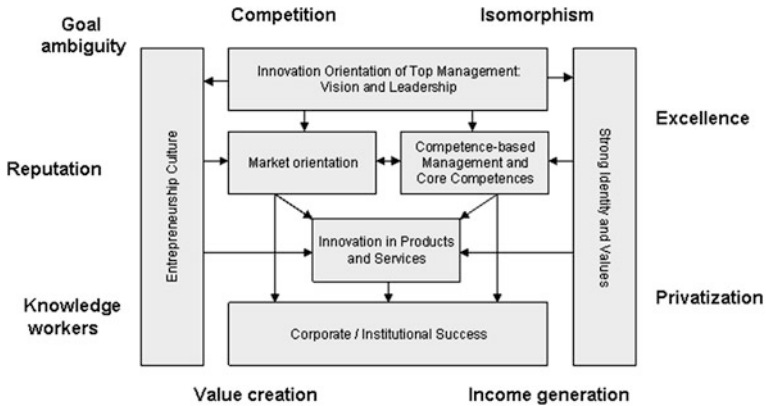
Fig. 8.3 Suggested model of influence factors on Success for higher education institutions. (*Source* Adapted from Bailom et al. 2007)

8.6 Conclusion

The innovation orientation of the top management and its leadership skills can be framed as the main drivers of success—for business companies as well as higher education institutions. They influence the character and strength of the corporate or organizational culture, its innovative ability, and the development of unique resources and skills, which constitute core competencies and serve as a basis for innovation and key strategic decisions. These success drivers only work if combined with each other, which again underlines the importance of appropriate attitudes, values, norms, and top management orientation. Therefore, an influence model in analogy to the IMP model (Bailom et al. 2007) (Fig. 8.3) as well as key questions higher education senior executives should ask to themselves about their institutions are suggested.

Today's competitive environment calls for an increase in the role of the top management of higher education institutions. Those leading teams that shape organizational success have to:

- create a strong corporate culture built on values, employees, and students can identify with and which are meaningful for them;
- create a culture of innovation that stimulates employees to strike new paths that recognizes and rewards creative solutions;
- create a culture of entrepreneurship that incites employees to strike new paths and be willing to take risk;
- set free resources that are dedicated to the development of unusual competences, skills, knowledge, and relationship networks, i.e., core competences;
- be able to understand markets and recognize or even anticipate developments in good time, i.e., have a market orientation;
- be aware of the organization and the environment it is operating in.

"There are no absolute predictors of what makes a university successful" (Shattock 2003), but a strategic orientation as learned from the lessons of Top CEOS can help universities to survive successfully in today's challenging environment. We would like to finish with the key questions, key decision makers in higher education institutions should ask to themselves (adapted from Bailom et al. 2007):

- Innovation orientation of the top management

  - Are we aware of the university's actual core tasks and have we really derived visionary objectives for the next 10 years from this (development plan)?
  - Do we at the top decision-making level have access to knowledge networks inside and outside the university and do we exploit these in order to get a firm idea of changes within the education market system, student, employee, and other stakeholder problems and technological developments?
  - Do our top senior executives constantly look for unusual and different approaches so as to be able to develop really innovative solutions to the company's core challenges?
  - Are we actually prepared to think entrepreneurially, in the sense that we invest in the development and strengthening of new core competencies?
  - Does the leadership work of our top decision makers put researchers, lecturers, and other employees in a position to appreciate the unusual qualities of the institution and to experience them on an emotional level?
  - Do the leaders in our institution possess sufficient skills to embed the spirit of change throughout the entire institution?

- Entrepreneurship culture

  - Is the university's culture characterized by entrepreneurship, dynamism, and the willingness to take risks, rather than standardization, formalization, and risk minimization?
  - Are a propensity to innovate, flexibility and a will to change the dominant forces that hold the university together and give it direction, rather than rules, procedures and plans?

- Strong identity and values

  - Are our employees proud to work for the university and for the realization of its objectives?
  - Do employees trust in the competence of management and their colleagues?
  - Do employees feel and sense that they are an important part of the overall process and that their individual contribution to the achievement of objectives is important?
  - Do the university's culture, the values it lives by, and its employees' daily interaction with one another promote a feeling of well-being for the individual?
  - Are errors tolerated, provided employees abide by the university's core values?

- Market orientation

  - Do employees at all levels within the university exploit the opportunity to generate future-related knowledge about markets, as well as customer/ stakeholder problems, to pass it on and to discuss it?
  - Do we have a network of experts, institutions, partner organizations, and lead users in order to be able to bring new knowledge into the institution?
  - Do we have discussion platforms within the university where the market knowledge that has been generated is discussed with the top decision makers?
  - Are we able to transfer this knowledge into forward-looking strategies, products, and processes, as well as new business models?

- Competence-based management

  - Do we in top management focus strategically on the enhancement and development of new core competences?
  - Do we have a suitable plan for enhancing and systematically developing new core competences?
  - Do we have a process aimed at finding new markets/opportunities for our existing core competences?
  - Do we specifically aim employee training at current or desired future competences?

- Core competences

  - Do we possess skills, technologies, resources, processes, know-how, etc., which are valuable in the market, since they deliver a particular benefit to the customers/stakeholders, are unique, cannot easily be imitated, and also cannot be substituted by other skills, technologies, etc.?
  - Are we able to systematically exploit these core competences for purposes of innovation and opening up new markets?

- Innovative ability

  - Do innovative products/services/research form a greater proportion of total turnover than that in competing universities?
  - When launching new products/services/research, do we pay particular attention to ensure that launches are based on innovative launch concepts?
  - Do constant process innovations enable us to achieve higher customer value and better cost structures?
  - Do we have an innovative business model that is very difficult to imitate?

The proposed model and key questions can be used as a guideline for strategic action in a higher education environment. Of course, the academic environment is highly complex and provides individual challenges and opportunities for different institutions. However, examples of successful institutions have shown that a focus on core competencies, a consistent orientation toward innovation and opportunities as well as a top management that provide the basis and culture for successful development can create sustainable performance in higher education, as it is the case in business.

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