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Accountability and Accreditation: Putting Information Systems Accreditation into Perspective

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ACCOUNTABILITY AND ACCREDITATION:
PUTTING INFORMATION SYSTEMS ACCREDITATION INTO PERSPECTIVE

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ABSTRACT

Higher education in the United States has recently come under pressure from federal and state legislatures for failing to provide "value for money" because of an alleged lack of accountability and quality [U.S. Department of Education 2006]. This article will argue that, contrary to this view, institutes of higher learning have a rigorous quality assurance and accountability mechanism in place, namely accreditation, and that, moreover, the recent shift in accreditation from an input-based approach to an outcomes-based approach has resulted in improved programs that prepare graduates better than ever before for the workforce and/or further studies. These measures in fact are well applied in the field of information systems. The paper focuses on accreditation and the role of accreditation in ensuring quality in education. The work of agencies that are of most interest to information systems programs, namely the Association to Advance Collegiate Schools of Business (AACSB) and the Computing Accreditation Commission of ABET Inc (ABET CAC) is reviewed. The paper also describes a process to aid those interested in improving educational quality.

I. INTRODUCTION

A recently promulgated report from the Commission on Higher Education, established by the U.S. Secretary of Education, Margaret Spellings [U.S. Department of Education 2006] identifies a number of problems with the education system in the United States, including among other things the cost and the quality of higher education. Compounding these concerns is a lack of awareness about the cost and relative quality of postsecondary institutions, along with a remarkable absence of information about accountability mechanisms that ensure colleges succeed in their "business,," i.e. educating students. [U.S. Department of Education 2006, p vii].

It is our contention that higher education has in fact a fairly well-developed accountability mechanism in place, namely accreditation, and that the accreditation process, by adopting evaluation techniques common to the business community, supports continuous improvement in program quality. In essence, accreditation agencies now insist that institutions or programs seeking accreditation

- in consultation with a range of stakeholders, including students, employees of graduates, other similar institutions or programs, funding agencies, etc., clearly specify what they expect graduating students to know and be able to do and their alumni to achieve in their professional careers;

- design a curriculum that allows graduating students to acquire the specified knowledge and skills and prepares them to achieve the specified professional career goals as alumni;

- set up a documented assessment mechanism to determine (a) how successful the curriculum is in allowing graduating students to acquire the specified knowledge and skills; (b) how relevant the specified knowledge and skills are to the various stakeholders; and (c) how successful alumni are in achieving the specified professional career goals;

- use the results of this assessment process to improve the program; and

- do so on a continuous basis.

Accreditation thus asks institutions and programs to state explicitly what they wish to achieve in terms of student learning and to measure how well they are achieving these goals. Since student learning outcomes are expected to be set in consultation with stakeholders, institutions are accountable in formulating their own goals. Moreover, the assessment and continuous improvement process insisted on by accreditation agencies also holds institutions accountable for the extent to which they achieve these goals.

This paper is an extended argument for the above position. It is organized as follows. Section II distinguishes between different types of accreditation, while in section III, we discuss the primary goals of the accreditation process and reasons that institutions may have to pursue accreditation. Section IV discusses the fairly recent shift in the approach to setting accreditation standards. Section V discusses the work of two accreditation agencies that are most relevant to programs in information systems, namely the Association to Advance Collegiate Schools of Business (AACSB) and the Computing Accreditation Commission of ABET Inc (ABET CAC) both of whom evaluate Information Systems degree programs, albeit indirectly in the case of AACSB.   Section VI recommends a set of steps that an institution or program seeking accreditation may want to follows in its pursuit of accreditation, while section VII concludes.

II. TYPES OF ACCREDITATION

There are several types of accreditation, namely

- Institutional accreditation (also called regional accreditation in the U.S.)

- Specialized accreditation

    o Program accreditation (accreditation applied to specialized programs)

    o School accreditation (accreditation applied to an administrative unit within an institution, such as a college, school, department)

As the name implies, institutional accreditation applies to the institution as a whole, whereas specialized accreditation applies to subunits within the institution. In a sense, specialized accreditation builds on institutional accreditation in that agencies that offer specialized accreditation typically only consider subunits within institutions that have achieved institutional accreditation.

One can distinguish between two types of specialized accreditation, namely program accreditation and school accreditation. Program accreditation applies to specific programs offered by an institution, such as a degree program in information systems. School accreditation pertains to an entire administrative unit within an institution, such as a school, college or department. School accreditation implicitly implies program accreditation for all programs offered

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within the unit that received the school accreditation. For example, when a College of Business receives school accreditation all the programs offered within that college are implicitly accredited as well.

In the United States, institutional accreditation is generally the responsibility of a regional accreditation body, such as SACS (Southern Association of Colleges and Schools, www.sacs.org) or the Middle States Commission on Higher Education (www.msche.org), although many online institutions are accredited by the Distance Education and Training Council (www.detc.org).

The United States is somewhat unusual in that institutional accreditation has to be renewed periodically, typically 5 to 10 years. Many other countries, notably the UK, award so-called charters to institutions of higher education. Once a university or college has received its charter, it is entitled to award degrees and thus has received a de facto institutional accreditation.

Specialized accreditation applies to specific programs of study or subunits within an institution of higher education. Program accreditation started in the professions, such as medicine, nursing, and engineering, although some established academic disciplines, most notably computer science, have had a long tradition of program accreditation as well. The reach of program accreditation has fairly recently been widened to other computing disciplines, in particular information systems and information technology. The body with primary responsibility for accreditation in the technical and engineering disciplines, including computing, in the United States is ABET (www.abet.org), and ABET has been accrediting programs in Information Systems since 2002.

Another important and coveted type of accreditation is that offered by the Association to Advance Collegiate Schools of Business (AACSB) (www.aacsb.edu).   AASCB accredits schools of business by considering both undergraduate and graduate business programs offered by a school. If successful, the school is accredited, thus implicitly accrediting all the programs offered within the unit. For the many excellent information systems programs being offered outside of business schools, AACSB accreditation is not relevant.

As previously stated, agencies that accredit programs or units only accredit programs offered within institutions that have received institutional accreditation. However, this relationship is one-directional and it is entirely possible for accredited institutions to offer programs that are not accredited by relevant program accreditation agencies.

III. ACCREDITATION GOALS AND REASONS TO PURSUE ACCREDITATION

A primary goal of accreditation is to ensure educational quality by making certain that an institution or academic program meets certain quality standards, called accreditation criteria. In the United States, accreditation is to a large extent a voluntary process, although, as we shall see, there are good reasons that institutions and/or programs choose to seek accreditation. Accreditation is typically carried out through a peer review process in which teams, consisting of academics and/or other professionals, normally from the private sector, determine whether the institution or program meets the accreditation criteria. The process is intended to identify areas that need to be improved and subsequently to monitor the progress being made to address weaknesses or deficiencies. Lidtke et al. [2002] and Gorgone [2006] describe the process that a program goes through to obtain ABET CAC accreditation in detail, and while the descriptions are specific to ABET CAC, other accreditation agencies follow very similar processes.

Accreditation criteria are typically set through a collaborative effort of a range of stakeholders, including academic institutions, professionals, both from the private and public sector, and where appropriate a range of professional societies. Proposed changes in the criteria are widely disseminated by the organization responsible for administering the accreditation process. This dissemination process provides feedback from a wide range of stakeholders, with changes approved after a fairly rigorous review process.

More general information on accreditation in the United States is available on the Web (see www.chea.org).

There are a number of reasons for institutions, institutional units, and programs to pursue accreditation. One reason is the fact that accreditation is in a sense a seal of approval. An institution or program that has earned accreditation complies with established criteria, proving that it has attained a measure of quality. This is clearly an important factor for students and parents when seeking an institution or program to attend. A survey conducted by [Hardin and Stocks 1995] determined that at least in the accounting profession, AACSB accreditation does positively impact the recruiting process. A closely related reason for accreditation is the desire on the part of many institutions and programs to genuinely compare program quality to externally set guidelines.

Necessity is another reason that institutions or programs pursue accreditation. United States institutions are only eligible for federal funds, including student grant and loans, if they are institutionally accredited. Also, many states only allow individuals to enter say the medical, nursing or engineering profession if they graduated from an accredited program. In a sense, program accreditation replaces the professional exams common to other professions, such as the legal or accounting profession.

A final reason that institutions or programs seek accreditation is that they are genuinely interested in quality improvement.

IV. OUTCOMES-BASED ACCREDITATION

There has been a significant shift in recent years away from input-based accreditation to outcomes based accreditation. Under the input-based approach to accreditation, quality was measured through a checklist of attributes that describes minimal standards for the various inputs into the learning process. These typically included curriculum, teaching faculty, laboratory, and other facilities, the library and so on. Thus, a typical input-based accreditation criterion might state that 60 percent of the faculty teaching in an information systems program must have a doctorate in information systems or that the curriculum must include nine semester hours of quantitative analysis beyond pre-calculus and include statistics and calculus or discrete mathematics, as well as at least 12 semester hours of broad-based courses in information systems. The definition of quality implicit in this approach to accreditation is that of meeting specific standards, which are meant to be followed by every institution. Although this approach did meet with some success, it had the drawback that it forced conformity among institutions, preventing innovation and the consideration of specialized needs of constituencies.

More recently, accreditation agencies have moved to an outcomes-based approach to formulating accreditation criteria, adopting a definition of quality more in line with that adopted by many quality improvement approaches, namely "fitness for purpose" [Garvin 1984]. After consultation with a range of stakeholders, including students, employees of graduates, other similar institutions or programs, funding agencies, etc., programs or institutions are expected to state explicitly for what careers they intend to prepare their graduates, either in the form of a mission statement or in the form of what ABET calls "educational objectives," descriptions of the career and professional accomplishments for which the program is preparing its graduates. From these longer-term educational objectives, an institution or program is expected to derive a set of program outcomes or learning outcomes, statements describing what the students can be expected to be able to do and know by the time of graduation. An institution or program is also expected to establish an assessment process to determine how well its graduates are achieving its educational objectives and program outcomes and how relevant the educational objectives and program outcomes are to the institution's or program's various stakeholders, and a quality enhancement program that uses the data collected through this assessment process to improve the program. All the other accreditation criteria follow from this. Thus, an outcomes-based faculty criterion might state that the individuals teaching in the program have the skills, knowledge

and educational background to design and deliver a program that allows students to achieve the program outcomes.

It will be clear that the focus of outcomes-based accreditation is student learning, blending both the concepts of assessment and continuous quality improvement. [Frye 2003] promotes good assessment as encompassing the following assumptions:

1. The first precept of good assessment practice is to *assess what is most important*;

2. Anything that can be taught or learned can be assessed;

3. Assessment should be applied at course, program, and institutional levels;

4. Every program and every course should be organized around clearly articulated learning goals and objectives, explicit assessment methods, and measurable outcomes;

5. An assessment process should be logistically feasible and practically manageable to ensure that it is regular and ongoing.

If one subscribes to the previous assumptions, outcome-based accreditation is the more supportable approach and learning outcomes become central to the process. Programs that are not explicit about what they expect graduates to know and be able to do, or that do not collect data on student attainment of skills or do not use that data to improve and hence enhance student learning will simply not be accredited.

While the international community moved towards outcomes based accreditation and/or quality assurance for higher education in the early nineties, U.S. accreditation agencies were somewhat more cautious. The shift in the U.S. was partly driven by the federal government [Banta 2001] and occurred because accreditation bodies wished to allow educational institutions and programs greater opportunities to be innovative and more reactive to stakeholders. At the same time it was perceived that quality improvement approaches, proven so successful in other industries, would benefit academia. Outcomes-based assessment radically changes how academics approach education and how its success is determined. There was a feeling that prescriptively specifying inputs into the learning process led to a cookie-cutter approach to program design. This seemed inappropriate in a system of higher education that had always embraced diversity and innovation and consisted of diverse institutions with different missions and constituencies. Thus, an institution that is primarily interested in preparing its undergraduates for postgraduate studies should be able to offer a program that is different from an institution that is primarily interested in preparing its graduates for private sector positions. For example, while the former would probably want to include a course on research methods somewhere in its curriculum, the latter may not.

This shift to outcomes-based accreditation coincided with research in education that supported the premise that an outcomes-based approach to program and course design was likely to result in increased learning [Diamond 1998], [Knowles et al. 1998; Sork and Caffarella 1989], and there was a realization that simply delivering a set curriculum was inappropriate especially for adult learners (defined as any students over 18 years of age). These studies support the premise that the adult learning process improved if students were told explicitly upfront what skills and knowledge they could expect to acquire in a particular course or program of study, i.e., if they were informed of the learning outcomes to be pursued in the course or program of study.

However, the move to an outcomes-based approach has generated a certain amount of anxiety among academics, partly because the reasons for this move are poorly understood. Some educators fear that the change will result in deterioration in the quality of programs, while others are concerned that the required assessment processes will be extremely time consuming.

The fear that the move to an outcomes based approach to accreditation leads to lower quality program is not borne out by the facts. ABET recently commissioned a study on the effect of a shift to outcomes based accreditation for programs in engineering [Lattuca et al. 2006]. The results indicate that, according to employers of graduates from engineering programs, current

graduates have much better "soft" skills in such areas as communication and team work, while their technical skills are as good as those of graduates from engineering programs accredited before the change. The overwhelming majority of employers feel that the more recent graduates from programs in engineering are considerably better prepared for the workplace than the graduates from engineering programs some 10 years ago.

The fear that the required assessment processes are extremely time consuming also seems exaggerated. The experience of programs or institutions that have set up the type of assessment and quality improvement processes that accreditation agencies require indicates that, while the design and establishment of an assessment process is time consuming, a well-designed assessment process imposes minimal additional workloads on faculty [Aasheim et al. 2007]. What is time consuming is the analysis of the collected data and the design and implementations of measures to counteract any weaknesses revealed by the results of the assessment process. However, since the focus here is on an improvement of the quality of the institution or the program, and most academics, like most other professionals, take pride in the quality of the product they have designed and are delivering, there have been few complaints about the time-consuming nature of this aspect of the process.

It is important to note that the shift to outcomes-based accreditation criteria does not mean institutions or programs can simply set whatever learning outcomes they desire. The accreditation criteria of many accrediting agencies include a set of achievements that minimally is expected of all graduates of a program or institution, and in section VI we discuss the minimum expectations that ABET and AACSB include in their accreditation criteria. Institutions and programs are strongly encouraged to add to those expectations; however, they must meet the minimal expectations considered to be relevant to all graduates. Moreover, institutions or programs are required to show that educational objectives and program outcomes adopted are relevant to institutional stakeholders. Thus, institutions or programs are not free to simply set whatever educational objectives and program outcomes they want. They are required to take into account the views of the different stakeholders, including for example employers of graduates. This requirement enforces accountability to stakeholders as far as the relevancy of the educational experience is concerned

V. INFORMATION SYSTEMS ACCREDITATION

There are two agencies whose work is relevant to the accreditation of programs in information systems, namely ABET and the Association to Advance Collegiate Schools of Business (AACSB). The Association for Information Systems plays a prominent role in both organizations. Thus, AIS is a member of CSAB and appoints members to CSAB, the board that represents computing professional organizations to ABET CAC. AIS also partners with AACSB and provides input to that organization regarding IS.

Although based in the United States, both AACSB and ABET CAC are also active elsewhere. In this section, we first discuss the agencies before we compare the accreditation criteria that they have formulated. In a sense, this section is an update of Impagliazzo and Gorgone [2002] and reflects the changes that have taken place in the accreditation standards formulated by AACSB and ABET CAC

ABET

In the United States, programs in computing are accredited by the Computing Accreditation Commission of ABET, Inc (ABET CAC). ABET also accredits programs in engineering, technology, and applied science.

Until fairly recently, ABET CAC had only formulated accreditation criteria for programs in Computer Science (CS) and Information Systems (IS). However, as ABET CAC became aware of growing number of programs in emerging computing areas that were not able to pursue accreditation under CAC's accreditation standards, it revised its accreditation standards to allow

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such program to benefit from accreditation as well. In particular, it reorganized the accreditation criteria into a set of general criteria that apply to all programs in computing, and program specific criteria for programs in computer science, information systems, and most recently information technology. Any program in one of these specific disciplines must meet both the general and the associated program specific criteria in order to be accredited. Gorgone [2004] reviews the concept of general and program specific criteria. One of the reasons for this reorganization is that emerging areas can now be accredited under ABET CAC's general criteria, and do not have to wait until criteria specific to this area have been formulated and accepted by ABET. As we shall see following, as part of the revision, ABET CAC also put a greater emphasis on outcomes and the need for explicit assessment and quality improvement processes.

The draft of the revised criteria for programs in computing is available for inspection and comment from the ABET Web site (www.abet.org).

AACSB

The other agency that is relevant to accreditation of programs in Information System is the AACSB. AACSB International accredits programs in Information Systems only as part of its evaluation of all business programs and does not review IS specifically. AACSB accredits business programs by promoting continuous improvement in both undergraduate and graduate education. It differs from ABET in two ways. First, it accredits the entire unit (department, school, or college) that offers programs in business administration and management, and, with the exception of accounting, does not specifically accredit business programs in information systems (or any other specialization). However, by accrediting the unit that offers the various business related programs, it indirectly accredits any information systems programs offered out of that unit.

Second, whereas ABET CAC limits itself to undergraduate programs, AACSB considers both undergraduate and graduate programs in making its accreditation decisions, However, like ABET CAC, AACSB recently reformulated its accreditation criteria to put greater emphasis on the need for explicit program outcomes, and assessment and quality improvement processes. The AACSB accreditation criteria are available at http://www.aacsb.edu/accreditation/standards.asp.

It should be noted that information systems programs offered through institutions accredited by AACSB may still be accredited by ABET. Indeed, there are a handful of ABET accredited programs in information systems that are offered in AACSB accredited business schools. Programs that are accredited by both offer constituencies the added benefit of knowing that information systems is offered within a high-quality business program and also that it has the rigors associated with a high-quality technology program.

SIMILARITIES AND DIFFERENCES

There are many similarities between accreditation criteria formulated by ABET CAC and AACSB. Both stress the need for explicit learning outcomes for graduating students, and explicitly documented assessment and quality improvement processes. Both also recognize the need for graduates to be well-rounded with qualities beyond skills needed to understand specialized areas.

Both agencies include in their accreditation criteria similar sets of attributes that they expect graduating students to achieve. For instance, AACSB includes a management of curricula criterion that requires an undergraduate degree program to include learning experiences in such general knowledge and skill areas as:

- communication abilities
- ethical understanding and reasoning abilities
- analytic skills

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- use of Information Technology

- multicultural and diversity understanding

- reflective thinking skills

ABET is piloting new computing criteria that includes the requirement that every student of a computing program should possess by the time of graduation, the following attributes (www.abet.org):

- an ability to apply knowledge of computing and mathematics appropriate to the discipline

- an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

- an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

- an ability to function effectively on teams to accomplish a common goal

- an understanding of professional, ethical, and social responsibilities

- an ability to communicate effectively

- an ability to analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues

- recognition of the need for and an ability to engage in continuing professional development

- an ability to use current techniques, skills, and tools necessary for computing practice.

To these general attributes, information systems adds the following:

- an understanding of processes that support the delivery and management of information systems within a specific application environment

The difference in level of detail between the minimal learning outcomes in the ABET CAC accreditation criteria and those in the AACSB accreditation can be explained by the fact that the ABET CAC criteria are more focused. Rather than being designed for a class of programs, as the AACSB criteria are, they focus on a single type of program. They can therefore be more specific about the expectations of graduates. Note, however, that both ABET CAC and AASCB merely formulate a minimal set of attributes. Specific programs, whether they go up for accreditation under the ABET CAC criteria or under the AACSB criteria, are expected to formulate their own sets of outcomes. Moreover, both insist that the specific outcomes that are adopted are based on the needs of their specific constituencies rather than on the whims of others.

While ABET CAC is more specific in the specification of minimal outcomes, AACSB is in general more specific when it comes to some of the other criteria. For example, ABET CAC provides relatively general requirements for faculty. The faculty responsible for the program must have the required skills to deliver the program and to modify it and some of them must also possess a terminal degree in information systems. AACSB, on the other hand, provides a set of detailed guidelines that spell out the qualifications that faculty must have and what percentage of courses within a program must typically be covered by full-time faculty etc. However, such differences should not detract from the fact that in both cases, outcomes, assessment, and quality improvement are of central importance.

VI. PREPARING FOR ACCREDITATION

Although there are differences in detail between AACSB and ABET CAC, the process that an institution or program goes through to prepare itself for accreditation is essentially the same for

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both agencies. In both cases, the process of preparing for accreditation requires essentially eight steps.

Step 1 requires the institution or program to consider the longer term goals and objectives. ABET CAC insists that the program has a set of educational objectives, which it defines as "broad statements that describe the career and professional accomplishments that the program is preparing its graduates to achieve." They essentially describe what the program expects its graduates to have accomplished a few years after graduation. AACSB requires institutions to formulate a mission statement, which must, inter alia, specify the student populations the institution intends to serve. Both insist that a wide range of stakeholders, including (potential) employers of graduates, are consulted in the formulation of the educational objectives or mission statement.

The formulation of the mission statement or the program educational objectives is perhaps the most critical step in the process of preparing for accreditation. It is these longer-term aims and objectives that drive the rest of the process. Thus, an information systems that wishes its students to go into postgraduate programs and become successful academic researchers is likely to have vastly different program outcomes and hence a different curriculum than one that states that it wishes to prepare its students for success in the IT industry.

It is also worthwhile to point out that the mission statement or program educational objectives are not static. Both AACSB and ABET CAC recognize that many organizations operate in a very dynamic environment and that institutions and programs may have to react to these changes. For example, a business school located in an area where manufacturing dominates the local economy may include in its mission statement that it prepares its students for management careers in manufacturing firms, but is likely to want to change its mission statement as manufacturing is replaced by service industries, such as financial services.

Step 2 involves the formulation of program outcomes in ABET CAC terminology or learning goals in AACSB terminology. Both refer to knowledge and skills that students are expected to have acquired by the time of graduation. The formulation of the program outcomes or learning goals has to be driven by the program educational objectives or mission statement. After all, program educational objectives describe what graduates from the program are expected to achieve a few years after graduation and the program itself presumably prepares students to achieve these longer-term goals. Thus, a program that wishes its students to go into research careers may want its graduating students to be able to critically evaluate a research paper or to select an appropriate research method to tackle a given problem. Programs that prepare students for successful careers in the IT industry may be less concerned about these skills but may want graduating students to be able to analyze a business problem and recommend an appropriate IT solution to its resolution.

Step 3 in the process involves the creation of a mapping between program educational objectives and program outcomes. Through this mapping, the institution or program demonstrates that students who acquire all the program outcomes are likely to be able to achieve the program educational objectives and, vice versa, that each program outcome makes a contribution to at least one educational objective.

Once the program outcomes or learning goals have been formulated and in a sense validated in step 3, step 4 involves showing that the curriculum is designed to allow students to achieve the program outcomes or learning goals. Again, the motivation for this will be clear. The program outcomes describe what students know or are able to so as they graduate, and the curriculum is what the institution or program delivers to help students achieve the program outcomes. In general, the easiest way to show that the curriculum does indeed allow students to achieve the program outcomes is to create a mapping from courses to program outcomes. Each program outcome should be mapped to at least one course. One useful tool to achieve this is through the formulation of course-level learning outcomes, as they can often be seen as finer grained

specification of the skills and knowledge specified at the level of the program outcomes or learning goals.

Step 5 involves a review of faculty resources. After all, a curriculum, no matter how well designed, is of little value if it is not delivered in the appropriate way, or revised appropriately as for example new technologies emerge. As faculty have the primary responsibility for the delivery and revision of the curriculum, it is clear that a thorough review of faculty qualifications and skills is called for.

As we said earlier, there are significant differences between ABET CAC and AACSB when it comes to specifying faculty related accreditation criteria. ABET CAC essentially asks the program to demonstrate that there are a sufficient number of appropriately qualified faculty members to ensure that the curriculum is delivered in such a way that graduates can achieve the program outcomes. On the face of it, AACSB's faculty criteria are very similar. However, in what it calls "interpretive information," in which it, for example, describes the basis for judging whether a particular criterion has been met, AACSB turns out to be far more specific and indeed prescriptive. For example, it insists that the institution demonstrate that 90 percent of faculty members are either academically or professionally qualified, that at least 50 percent are academically qualified, that at least 75 percent of the teaching is done by other than adjunct faculty, and so on. It will be clear that showing compliance with faculty-related criteria is likely to be far more onerous for an institution seeking AACSB accreditation than it is for a program seeking ABET CAC accreditation.

Step 6 involves a review of the other resources available to the institution or program. Again, the motivation will be clear. No institution or program can expect to deliver a quality curriculum if it does not have the required resources in place.

While the first six steps involve relatively static information and do not need to be conducted too frequently, the same cannot be said of steps 7 and 8, namely the design and implementation of an assessment process and the design and implementation of a process that uses information gathered through the assessment process to effect program improvements.

There are a whole range of assessment instruments that institutions or program can use to assess the relevance of their program educational outcomes or mission statement and of their program outcomes or learning goals, or the extent to which alumni have achieved the program educational objectives and the graduating students are achieving the program outcomes. Neither AACSB nor ABET CAC prescribes a specific assessment or quality improvement process. However, there are a few themes that are emerging as accreditation agencies become more comfortable with an outcomes-based approach to accreditation.

First, a well-designed assessment process uses both indirect and direct assessment methods. Indirect assessment involves assessing perception, while direct assessment tries to measure actual achievement. Thus, a program educational objective that graduates engage in lifelong learning and professional development can be assessed indirectly by asking alumni (or their employers) whether they believe they have engaged in professional development, or directly by asking them how many professional development workshops they have taken part in over the last three years. It has become clear that assessing the achievement of program educational objectives and especially program outcomes solely through indirect measures is no longer acceptable.

Second, it is absolutely crucial that any actions undertaken as a result of the assessment process be documented. Documentation serves a number of purposes, including convincing the institution or program of the soundness of its assessment and quality improvement processes, enabling new faculty to develop an understand of the curriculum, its evolution and the reasons for the evolution more rapidly, and allowing the accreditation team to determine how well the institution or program has actually implemented its assessment and quality improvement

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processes. Undocumented assessment and program improvement processes are unlikely to be acceptable to an accreditation agency.

Third, institutions and programs have a wide range of options available to affect program improvements based on the assessment data. In many cases, the program improvements are relatively minor tweaks in the program, such as changes in the prerequisite structure of the curriculum. In other cases, program improvements may be more dramatic and lead to the inclusion or deletion of sets of courses. This is most likely to happen when the institution or program reformulates its educational objectives and program outcomes for example because it discovers that its current set of educational objectives and program outcomes does not meet the need of certain groups of stakeholders, such as potential employers.

VII. SUMMARY AND DISCUSSION

Accreditation is the primary quality assurance mechanism that institutions and programs of higher education have developed. Recently, most U.S. accreditation agencies, recognizing this, have adopted an approach to quality improvement that has proven extremely successful in the manufacturing and services industries. In order to receive accreditation, educational institutions and programs are asked to focus on the skills and knowledge they are trying to impart in their graduates, to set up an assessment process to determine how relevant the goals are to the different stakeholders of institution or program and how successful graduates are in achieving these goals, and to use the results of this assessment process to improve the institution or program. Accreditation is thus an excellent accountability mechanism: Programs or institutions that pursue accreditation are directly accountable to stakeholders both in the formulation of their program outcomes, and through the mechanism that they forced to put in place to measure their success and to these measurements for quality improvement. We find it difficult to imagine a better mechanism to both celebrate the diversity that has been the hallmark of higher education in the United States while at the same time ensuring that the programs offered through these institutions produce high quality graduates.

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EDITOR'S NOTE: The following reference list contains the address of World Wide Web pages. Readers, who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that:

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