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DEVELOPING AN ASSESSMENT TOOL FOR
ONLINE LEARNING EDUCATION:
the iPace experience

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Come un saggio disse ispirandomi: “You can be anything you want to be, just turn yourself into anything you think you could ever be”

Elisa

Abstract

Thanks to technology development and internet diffusion, Distance Learning in Higher Education is increasing a lot in the last years. The purpose of this work is to investigate the Distance Learning world. Starting from the literature it's clear that the missing point is related to a concrete evaluation of costs needed to develop and deliver these courses and the analysis of the effectiveness of online learning linked with quality and student performances but also student engagement.

In order to fill these gaps, it's been proposed a dashboard of indicators that takes into account all the essential elements for a complete Distance Learning monitoring: student satisfaction, internal efficiency, financial perspective and social & student engagement.

For the sake of completeness the dashboard is been applied to a practical case, the online program of Pace University in New York City: iPace. Data have been collected through interviews and at end, emerged a list of 10 indicators that university's stakeholders consider the most important to measure at the moment.

Executive summary

1. Distance Learning Literature

Distance Learning is a higher education way of teaching and learning where students and faculty communicate each other through internet and computer technologies. The lesson is done completely online and it doesn't require a fixed place, or a fixed time to take place.

Universities introduces this way of learning to reach that students that otherwise would not have attended an higher education instruction. The main point is to satisfy needs of a different students' target, mainly workers, allowing them to study and debating in a comfortable and familiar environment and helping them to reduce costs of transportation and accommodation that its required in traditional learning. Developing distance learning, universities are able to increase their own market share and market positioning, exploit economies of scale and decreasing the overall cost of teaching.

On one side internet increases the possible students' target reachable by a single university, on the other side, if it can help a single institution, can help all institution: every year increases both the number of students and the number of universities who provide distance learning; only in United States, in 2012, has been counted 4,527 online learning programs.

Internet enlarges the competition among universities in a worldwide competition, and in order to succeed, it needs to be better (higher quality of instruction system), cheaper (less expensive) and different (most innovative) compare to others.

The literature found it's mainly focused on United States universities where this phenomenon is widely diffuse. In this work of thesis it has been done a short focus on UK and Netherland environment, in order to understand also the European state of the art. For this reason it has been done a survey that investigate about the general management of the program in different universities and student learning information and performances. From this survey emerges that the main reason, also in United Kingdom is to reach a different target of students; employees that can not attend campus for lectures but also to attract international students.

Each institution can choose the typology of Distance Learning that best fit with its strategy and objectives. It can choose between pure online teaching or hybrid, so with some activities that are done face to face like exams or laboratories; between self-paced system, where the student is free to study when he prefers or professor can organized defined schedule for all students; to organize team work to increase the interaction among students or develop the lesson for the individual study.

Anyway the program is structured, what is important is the platform on which the course is delivered to students.

After the login, students have access to their own agenda with all daily lessons and activities (laboratories, ...) they can be both videotaped, where professors speaks and his voice is synchronized with lecture's slides or live lessons, through the support of tools like virtual blackboard, chat and forum where students can exposes their doubts and other members can answers promptly.

There are 2 essential characteristics that have been introduced in order to meet the different needs of students. The first one is that university has to guarantee the access to the web site 24/7; the second is the possibility to download all lectures and material in different formats like mp3, megavideo or for iPod/iPad.

The final point concerns the exams. Also for evaluation each universities, faculties and professors is free to organize them. There are two main options. Some universities prefer to do exam live, with a face to face interaction and so professors can control that students don't cheat, others prefer to do also exam online and outsource the surveillance to external companies. All marks achieved by a Distance Learning courses have the same legal value of traditional one.

Summarizing, this program is a benefit for students because gives the possibility to study with the higher flexibility in term of time and space but also for university that allows to admit an infinite number of students giving in this way the possibility to increase revenues from a different target of students (without cannibalize traditional education). There are also some cons to distance learning development. First of all the high initial investment that university has to sustain in term of money and time, the quality of instruction could be perceive lower than traditional instruction and the absence of a face to face interaction could be seen like a shortage.

It seemed right to make a focus on a new trend, similar to distance learning that arose in the last years and it's going to expand: MOOCs. The acronym stands for Massive Open Online Courses. These courses, usually concerning subjects like science, technology, engineering and math, are taught by professors of important and famous universities. There are no formal entry requirements because students can enroll even without prior formal education. There are not participation limits (up to 50,000 students per course) for this reason is called massive and it's really encouraged the peer-to-peer learning.

The negative aspect is that a university, in order to provide these courses, has to sustain high costs, especially related to the production phase and production team. To deal this problem, universities can issue a certificate or a badge for which the students have to pay, or can be furnished an extra-service like the secure assessments that allows the students, for a minimum fee, to have their examinations invigilated and for having human tutoring (as opposed to automated) or assignment marking. Another way to reduce cost and exploit economies of scales is to concludes a contract with a company (*Coursera*), to set up a consortium of universities (*edX*), or to rely on companies that have not contractual relationship with the university, but with individual scholars (or other experts) to provide course content (*Udacity*).

Face-to-face contact is the most visible expression of value for money for universities, this is not possible in an Online Program and, because of this, there are some forethoughts that make a successful program that are advisable to follow.

Technology has to be considered like a strategic asset that have to help professor to increase the quality of his lesson and do not think that alone can be sufficient. Sometimes could happen to fight against the resistances of faculties that think these courses are inferior compare to traditional ones but the quality of the program depends on the quality of the instructors. The last forethought to follow is considering students' opinions and feedbacks. Students are the final customers of this "product" so what they think is important for improve the learning system must be considered. For this reason each student must have the same support by tutors and responsiveness by professors as any other traditional student. All these forethought are very important to avoid dropout, sense of isolation and lack of interaction between students.

A topic that is not been considered until this moment is the costs for an online program. When an entity creates a product or provides a service there are not only revenues but also costs and what is more important: the reduction of those costs. If this assumption is obvious in a productive and lucrative environment, few institutions not only don't see Distance Learning as way to reduce costs, but also don't consider all the costs that they incur when they provide this service.

The literature makes different classification of costs. The general ones divide among fixed costs, variable costs and semi variable costs; or between capital and revenues costs. Others authors consider important to distinguish among: capital costs (infrastructure, equipment, materials necessary for the offering of courses) and recurrent costs (occur on an ongoing basis (IT support)); production costs (incurred during the development of the courses) and delivery costs (associated with teaching a course); fixed costs (not change as the number of students) and variable costs (change with the number of students).

Rumble, in 2001, defines a more suited classification. He divides costs of DL in three main sub areas. The first is cost of developing online learning materials: includes the preparation of text, audio, video, computer-based tutoring, intelligent tutoring, exploratory learning, simulations. The second is cost of e-delivery: includes professors and tutors cost, cost for students to acquire the needed equipment. The last one is cost of e-administration or support cost.

Anyway, each classification utilized, has to consider some main costs that occur during distance learning program development: investment in technology infrastructure and bandwidth charges, support personnel cost (technical and administrative), faculty development/training cost, hidden costs (office space, provision for computer system, heating and lighting, etc.), developing of online courses and needed material cost and, last but not least, teaching cost.

In order to have a more comprehensive analysis it could be needed to measure cost efficiency and cost effectiveness. A learning method is cost efficient when its outputs cost less per unit of input and it's cost effective if its outputs not only are less expensive than others but also are relevant to learner's needs. A Distance Learning program is

often considered cost efficient because of its potential to benefit from economies of scale: course enrollments are not restricted by classroom size, “per student” costs decrease as enrollment increases. reaching this potential is based on reputation, quality and costs.

Is an online program really convenient? How expensive is it in comparison to other forms of instruction? Online learning courses are less expensive than face-to-face ones provided the development costs are spread across sufficient numbers of students (possibly over several years) and provided that one takes into account both saving on travel and accommodation costs and the fact that less of an employee’s productive time is lost.

2. Dashboard of indicators: literature

In the literature review the focus is on three main methods of analyzing performances and costs: Balanced Scorecard, Balridge Education Criteria for Performance Excellence and Sloan Consortium Approach.

The Balanced Scorecard method identifies, starting from the strategy and the vision of the company, four different perspective: Customer Perspective, Financial Perspective, Internal Perspective and Learn&Growth Perspective. In each model each perspective includes a set of indicators, with a specific target, that must be monitored by the company in order to exploit all its capabilities in the best way possible.

The second method is specific for Education Sector and identifies 11 core values and tries to embodied them in 7 categories, or perspectives, each one includes different indicators.

The last method analyzed is the Sloan Consortium. It is based on IHEP method and mainly focused on quality aspects of distance instruction. It is classified into 9 subgroup and 25 indicators. Institution has to give to each indicator a score from 0 to 3; from not observed to meets criteria completely. The perfect score is 210 points, if a

university scores 125 points or less is unacceptable; in other cases are needed little or significant improvements.

The Sloan Consortium identified also five important aspects that a university that provide distance learning has to monitor. They are called the Five Pillars of Quality Online Education and they are: learning effectiveness, students satisfaction, scale, access, faculty satisfaction. The 25 quality indicators, can be grouped depending on their characteristics in each of these pillars.

3. methodology

From the models analyzed emerged that there is one big area that is considered very important for business companies and, nowadays, is totally absent in the existing educational methodologies: the financial perspective. Another important aspect to take into consideration is sustainability. It tries to balance influence of the company on economy, society and environment in order to have the highest impact on economic value, in the long-term, for the organization. Being a topic that is becoming more and more important, it could be interesting to analyzes the sustainability also in university's world.

The model is composed by 4 main areas:

- 1) Student satisfaction. A Distance student is a person with a job or family, with multiple commitments and these characteristics influence the motivation of the student and his/her possible dropout. For this reason a University must be focused on distance students' satisfaction more than with other students. In all the typology of dashboard of indicators, the customer and his/her point of view is always considered a priority;
- 2) Another very common set of indicators deal with Internal Efficiency. The basic question is: Is the University efficient in producing, developing and delivering the Distance Learning program? Not only related to technological aspect but also related to staff efficiency (faculty and support);
- 3) Financial perspective. The existent evaluation methods focus more on quality, organizational aspects and students' satisfaction: but the financial perspective is not an area that a good scorecard can leave uncovered;

- 4) Social & Student engagement. the last one is related to the responsibility of the University toward its students; considers the University as a member of a community and its social responsibility therein.

For each of these main areas it has been identified three or four subareas and 56 indicators as a whole.

This dashboard is stakeholder driven. This means that depending on the characteristics, needs, strengths and weaknesses can be suited for each institution.

The university chosen for the first application is Pace University in New York City.

In 2004-2005 Pace University started its online program called iPace. The program is addressed to busy adults who are working full-time or have other obligations that do not enable them the time to be in the classroom during the week or during the working hours.

Online courses at Pace University run on a semester basis, as do most traditional classes. Each course, composed by 20 students as maximum, has a specific start and ending date and, very often, lasts about 15 weeks bringing new lectures and assignments. Depending on the single course assignments might include readings, quizzes, review of websites, participation in discussion boards, problems, projects, papers, midterms and final exams.

At the moment iPace program includes four different bachelors taught by 6 full-time and 15 part-time instructional faculties: BBA in Business Studies, BS in Nursing, BS in Professional communication studies and BS in Professional technology studies.

In 2013 the iPace program was ranking as “best online bachelor’s program” by USnews ranking.

In order to make the analysis for iPace, it has been scheduled, by phone or in person, a series of interviews with different stakeholder of the university itself. In the two weeks of data gathering, it has been interviewed: students; faculties, divided into professors and professors & administrations that includes professors that cover also administrative positions; and administrators, also this one divided into strategic administration: people involved, at different level, in the overall process concerning iPace program, and iPace

function more focused on specific aspect of the program (admissions, service coordination..).

The sample is quite unbalanced and this have a great impact on questionnaire results and requires an analysis of the answers in order to identify if the replies are homogeneous or not, in this second case it would be appropriate to increase the number of people interviewed in some sub-group and, in this way, have a rebalanced situation.

Other possible risks, related to the choice of the sample and the data gathering method, must be taken into consideration in order to identify possible point of strength and weaknesses of the model.

The possibility that some stakeholders may have answer to the questionnaire without showing their own point of view at all, because of their sense of duty to the university, must be verify.

Also the hypothesis that some stakeholders answer to questions in which they are not so familiar must be considered, because in this way the data collected are more difficult to analyses since they are broad and various, and someone without a logical sense.

4. Results

What emerged, from all the interviews is that almost all indicators can be right but the framework must change including a new (sub-) area focused on faculty and on professors' needs and support and moreover, the importance of each answer must be weighted according to the importance and the competences of the single stakeholder.

It emerges that each group consider Student Satisfaction the most important areas with an average of 2.95/3 points. Then there is Internal Efficiency with 2.47/3, Financial Perspective 2,26/3 and the last one Social & Student Engagement with 2,19/3.

Table 1: AVERAGE SCORE OF MACRO AREAS						
Area	General Result	iPace function	Strategic	Professors	Professors& Administration	Students
Student Satisfaction	2,95	3	3	2,75	3	3
Internal Efficiency	2,47	2,75	2,55	2,13	2,5	2,5
Financial Perspective	2,26	2,5	2,4	1,75	2,17	2,5
Social & Student Engagement	2,19	1,75	2,1	2,5	2,17	2,5

The students' group is the one who care more about all the four areas, this can be a clear example of one of the potential problem about the specific knowledge of the interviewed previously discussed and arise questions like: what students know about the financial area of the university? We have to collect more opinion from students in order to have a bigger sample?

Professors give an high score to social and student engagement area and as expected, administrative people consider the financial area as more important than professors do.

In chapter 4, it's described more precisely the results of the single macro areas with a detailed overview on indicators.

The inconsistency observed in two out of four areas doesn't allow considering the ranking of importance made by areas.

In order to know if student satisfaction is really the most important area, all of its indicators have to have higher score compared with others areas. In order to discover if this is a true assumption, it's been created a Top 10 list of indicators.

Table 2: FIRST 10 INDICATORS		
Indicator	Score	Area
4.3.3 Course Design	2,91	Social&Student Engagement
1.2.4 Responsiveness	2,88	Student Satisfaction
1.1.3 Document Access Flexibility	2,81	Student Satisfaction
2.4.5 Completeness	2,78	Internal Efficiency
2.1.1 Continuity	2,74	Internal Efficiency
1.2.6 Technology Support	2,72	Student Satisfaction
2.4.4 Learning Objectives	2,71	Internal Efficiency
2.2.1 Dropout rate	2,71	Internal Efficiency
3.3.3 ROS	2,7	Financial Perspective
3.3.1 ROI	2,68	Financial Perspective

The results that emerged from table 2 are very different from what it should be in theory:

- the first indicator is Course Structure within Social & Student Engagement;
- only three indicators out of ten are in student satisfaction area;
- the area with more indicators in the char is Internal Efficiency (4 indicators).

This outcome confirms the presence of inconsistency, but it's also a positive result, all areas have important indicators to monitor.

Table 3: LAST 10 INDICATORS		
Indicator	Score	Area
1.2.5 Tutor Availability	1,22	Student Satisfaction
1.3.2 International Positioning	1,54	Student Satisfaction
1.2.2 Tutor	1,67	Student Satisfaction
3.2.2 Equity Variation	1,69	Financial Perspective
2.2.3 Salaries of graduated	1,71	Internal Efficiency
2.1.2 Backup Frequency	1,74	Internal Efficiency
3.3.8 ROE	1,8	Financial Perspective
3.3.7 Financial Independence Ratio	1,91	Financial Perspective
4.3.2 Extra-courses Sponsored	1,95	Social&Student Engagement
1.3.1 National Positioning	1,98	Student Satisfaction

Also the list of the 10 less important indicators confirms the hypothesis of inconsistency. Indeed first of all the three less important indicators come from the Student Satisfaction area; secondly the less important area, Social and Student Engagement, has only one indicator in the last 10.

Because of these considerations, in order to start the implementation and the collection of data for the indicators calculation the suggestion is to look at the “top 10 list of the most important indicators” and not at the previous classification of the major areas.

It has been done a final analysis of homogeneity, where emerged that Student Satisfaction is the only homogeneous macro area because the high majority of the values are aligned with the mean value. For the other three areas the heterogeneity is pretty clear. In order to eliminate this problem and to identify a trend in the answers the sample must be enlarged including a more diverse group of respondents.

5. Conclusions

The study ends with a set of suggestions to be implemented in iPace Program: the sample extension, the data gathering for the “Top Ten” and “Last Ten” lists, the categorization with different weight of the interviewed and the necessity of a deeper analysis to avoid responses heterogeneity.

Concluding it is clear that the qualitative nature of the research study can be considered a starting point for every University, at different stages of its lifecycle. This is possible thanks to the adaptability of the model, to its stakeholder driven nature and to its basis created by the strategy and vision of the University.

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1. DISTANCE LEARNING: WHAT IT IS?

In this chapter we want to describe the subject of the analysis, in this way the reader is more aware about what we are talking about. We decide to give a series of definition and interpretation of Distance Learning that different authors gave during the years. The second paragraph analyzes reasons of why this instruction method is important. We recount the history, because this way of learning is not something born in the last years with internet propagation but there was an evolution that has lasted for more than two centuries; and then the state of the art, in which is described the actual situation of this phenomenon.

The fifth step is the description of a distance learning system under a practical point of view: to what students have access and what they can do, after we explain what a university has to do in order to develop a successful distance learning program. Finally we decide to provide some benefits and problems that emerge with this learning typology.

1.1 DEFINITION

There are different terminologies to explain the same concept and the learning method. The asynchronous learning focuses on the difference of time when learning occurs, there are online learning, web-based learning, e-learning and computer-based learning that emphasize the learning defining technology and tools used, the last one is distance learning, that is more concentrate on the difference of places where a learner and a teacher exist.

Of course all of these definitions are correlated. Urdan and Weggen (2000) identify e-learning like a subset of distance learning, online learning as a subset of e-learning and computer-based learning as a subset of online learning. So at the end, it's possible to consider distance learning like the broadest term and, for this reason, it will be used this terminology in this thesis work.

Webopedia (2013) defines Distance Learning *“a type of education, typically college-level, where students work on their own at home or at the office and communicate with faculty and other students via e-mail, electronic forums, videoconferencing, chat rooms, bulletin boards, instant messaging and other forms of computer-based communication”*.

Greenberg (1998) defines contemporary distance learning as “*a planned teaching/learning experience that uses a wide spectrum of technologies to reach learners as a distance and is designed to encourage learners’ interaction and certification of learning*”. Tesaster and Blieszner, one year later, say “*the term distance learning has been applied to many instructional methods: however, its primary distinction is that the teacher and the learner are separated in space and possibly in time*”. The most complete definition was given by Desmond Keegan in his book “Distance education technology for the new millennium” in 1995, distance education and training result from the technological separation of teacher and learner which frees the student from the necessity to travel to “*a fixed place, or a fixed time, to meet a fixed person, in order to be trained*”. It’s understandable that the student and professor are separated by space, but not necessarily by time. Thanks to the use of technology is possible for students to follow lectures through video delivered in real time.

1.1.1 WHY THIS TYPE OF EDUCATION IS IMPORTANT

Distance Learning represents a good way for universities to reach the largest possible market going to achieve those students that otherwise would not have attended an higher education instruction. An institution, thanks to the opportunity offered by internet, can also open to new partnerships decreasing overall costs of teaching. An increase in the number of students has a positive effect on costs because makes possible the exploitation of economies of scale using the same modules over multiple courses and this allows university to be more time saving and flexible. An online course gives benefits also to students, not only can help saving money on travel and lodging but also it offers to each student, even the shyest, the opportunity to participate to debating and asking questions in a more comfortable way than face-to-face instruction; the access to materials is simplified helping students in the learning process. When a distance learning lesson is effectively deploys, it helps to reduce the time and volume of instructional activities necessary for student to complete a course.

Some distance learning and university’s experts argue that provide this type of program will be crucial for institutions to stay in the market. They say that, even if universities

may not save money offering these courses, because of the direct competition and possible decline in student enrollment, they need to. The new tendency of students to choose the course that best fit with their needs (reconcile study and work, study and family, convenience to study at home...) has to be satisfied by institution. Researches indicate that in the next 10 years, there will be a significant drift in attendance from classroom based courses to online courses; so who doesn't offer distance learning risks to lose students.

Table 1 WHY DISTANCE LEARNING IS IMPORTANT

- to reach a largest number of students
- to create partnerships that can help Institutions to reduce cost of teaching
- to reduce costs of transportation and accommodation sustained by students
- to allow students to study and debating in a comfortable and familiar environment
- to maintain or increase Institution's market positioning
- to meet students' needs

1.1.2 HISTORY

In the history, there was three generations of distance learning:

- 1) Correspondence courses generation
- 2) Radio and television generation
- 3) Internet generation

The first university to offer distance learning degrees was the University of London in 1858. The learning programs utilized transport network and postal services in order to deliver paper materials to students. Then there was the audiovisual generation at the beginning of the 1930s. As technology has changed, so has the distance learning definition. Videotaped lessons were sent through the mail and they have been used in correspondence courses to teach subjects like foreign language. The third, and actual, generation is the internet one. The web and compressed video have taken distance learning in new directions, allowing distance learning to occur in real time.

1.1.3 STATE OF THE ART

As it's been described in the paragraph above, the widespread of internet changes the concept of Distance Learning. Like in the past, the aim of Distance Learning instruction

was to serving non-traditional population: provides a higher education, equal to the traditional one, to employees that decide to deeper their studies while they are working, those that are located distance from campus, disable and also to active military students. Internet allows people to communicate each other in every part of the globe. Of course this has effect on education. In order to reach a higher number of students, an institution not only competes with a university in the same country but competes with all universities in the world because, thanks to internet, there are no more barriers.

In this international market where there are more program options than students, Barry Willis, professor of distance learning course at *University of Idaho*, says that there are only three ways to succeed:

- provide the higher quality instruction system (Be better)
- provide the less expensive instruction system (Be cheaper)
- provide the most innovative instruction system (Be different)

in order to survive, always for Willis an institution needs two of them but if it want to thrive, it needs all three.

University prefer use Distance Learning for subjects like business, math and science but a lot of course are related to humanities, social sciences or laboratory ones. According to the Sloan Consortium (2013), the number of students taking at least one online course grew as much in the fall 2011 as it did in the previous year: there were 572,000 more online students for a new total of 6.7 million students. This Consortium established that the average growth, from 2002 to 2011, was about 568.000 students per years.

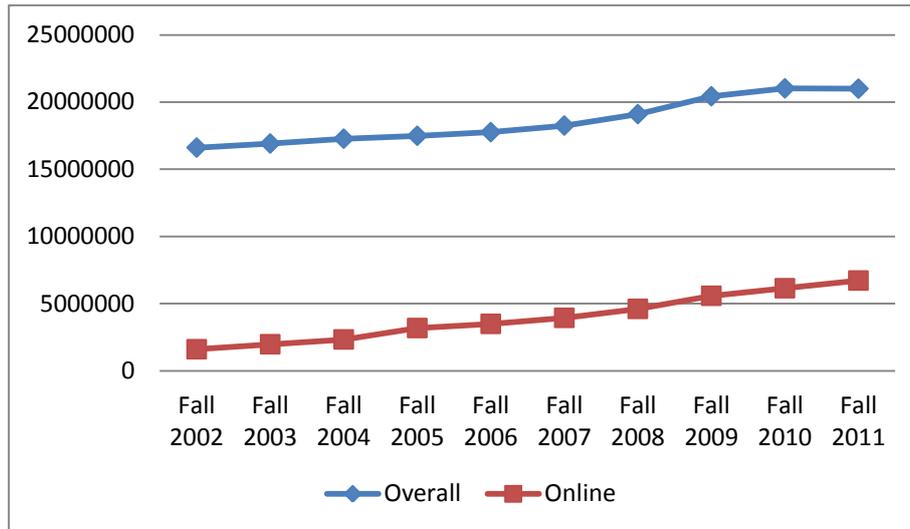


Chart 1: Instructions Fall 2002-2011, Changing course 2013, Sloan Consortium

Talking about the number of institutions, always referring to Sloan Consortium the number of U.S. universities in 2012 were about 4,527 institutions all over the country; instead, from personal research emerged that the number of universities in United Kingdom that provide this type of course are 103 on a total of 130 institution in all the nation.

The aim of university that adopts Distance Learning is to generate new revenue streams that traditional instruction is not able to reach, and this is not an irrelevant point. Fees and tuitions of Distance Learning depend from universities to universities, some of them, especially U.S. universities have taxation lower compare to the tradition one with the aim of reach a different target of students that cannot allow a traditional instruction, someone thinks the right tuition for Distance Learning have to be equal to the one for traditional learning, while others prefer to increase fees of Distance Learning in order to cover the related costs pushing on the convenience and comfort of studying at home.

Table 2: STATE OF THE ART

- Internet makes the competition among universities worldwide
- In order to succeed, a university has to be better, cheaper and different compare to others
- the number of students increase every year and the number of universities who provide this way of learning increase as well
- Student's tuitions depends from universities to universities and can be both higher, lower of equal to the traditional one

1.1.3.1 State of the Art: UK & Netherland survey

The analysis of the state of the art can be discovering not only through the literature research but also through a direct investigation.

Starting from the knowledge of the state of the art and through interviews done with METID staff, it has been develop a 26 questions' survey (appendix 7.1). It was decided to compose it on two main parts:

1. General information about the institution
2. Student learning information and performances

It was done an activity of research in the different institutional web sites in order to discover if universities make online courses and the e-mail contacts of the responsible. It has been decided to choose United Kingdom and Netherland institutions because the online culture in this countries is more developed compare with Italian's one and they started to adopt Distance Learning since long time ago. In UK there is the biggest European online university, *The Open University* in London, which provides only this distance learning since 1971.

Not all universities that participate to the survey answer to all questions. Some data are classified like unknown when university doesn't give a response.

There are no limits of instruction for this methodology of learning, wide ranges of subject are taught: engineering, medicine, pharmacy, literature, art, law, education, architecture, computing, forestry, management and policy. The idea of these universities

is to expand the number of subject offered with Distance Learning in the following years.

What is interesting to know are the reasons that move universities to introduce a Distance Learning course in the institution education program: all universities answered that the main reason is to reach a different target of students: that portion of students that a traditional education is not able to get to. *University of Stirling* underlines that it decides to introduce it in order to offer flexible learning to postgraduate students that have an employment and cannot attend campus for teaching; instead, *Bedfordshire* is more focalized to international students because it thinks that Distance Learning can offer a widen education opportunities especially for students that are out of the Kingdom.

The Distance Learning initiative was developed at the behest of professors and lecturer staff.

For some universities, like *Delft University of Technology (TU Delft)*, *Stirling* and *University of Dundee*, it was a common decision between professors and top level management. In general is possible to say that it's a decision that came from the university itself and not from requirements of third parties like students or external companies.

Very important in this type of learning offer is the communication, the most common marketing actions to raise awareness is, of course internet, websites and emails (100% - 88%) very important are also Open days (50%), conferences, posters, students recommendations and word of mouth. *University of Bedfordshire* and *University of Portsmouth* have also local representatives or agents to increase the knowledge among high school students about this opportunity.

About the IT platform it's possible to say that the large majority of universities surveyed utilized an owned platform, *Queen's University of Belfast*, *Dundee* and *TU Delft* utilize a third parties solution.

Going in the deep about courses, the most common learning typology is hybrid. This means that 8 Distance Learning of 10 provide online lessons but sometimes are needed moments for live interaction like laboratories. Courses, usually, include midterm exams,

projects and laboratories. They are evaluated within country assessment and standard UK process of coursework.

The lessons in *Bedfordshire*, *Stirling* and *Portsmouth University* are taped during live class; *TU Delft* and *Dundee* prefer taped professor separately and then synchronize the voice with lecture's slides. It's possible to find a combination of both solution in order to save time and cost for a single university. Of course, the developing phase requires a lot of effort and time of professors and technical staff. On average, in order to complete an online course, are needed from 50 to 100 hours; for this reason, usually, the teaching materials is renewing every 2 years.

The final exams are taken for the 43% only in class, instead for the 57% are taken both online and in class. There are different way to guarantee that students don't cheat during online exams, for examples all submissions done to *Bangor University* are subjected to plagiarism detection software, *Kaplan Open learning* relies to Turnitin a leader company in plagiarism prevention. Another solution is utilized British Council tools to oversee examination.

University	DL course creation	Initiators	Why did you decide to introduce it?	Subject taught	Marketing Actions	Exams	How do you tape the lessons?	IT platform
Stirling	2011	Lecturer staff - not professor level	---	Health research	Web-sites, conferences, posters, student recommendation	---	Lectures are bespoken podcasts or are recording in the live online classroom	---
---	over the last 10 years	Professors	To reach an higher number of students, To reach a different target of students, To increase the portfolio of courses provided	Engineering, Medicine, Physics, Nursing, Pharmacy	Web-sites, Open days, E-mails, Visits to other countries	Both online and in class. Use British Council to oversee exams	Combination of options	Owned
Bedfordshire	---	Top level management	To reach a different target of students, To widen educational opportunities for international students	Engineering, Architecture, Art, Literature	Web-sites, Open days, E-mails, Local representatives	Both online and in class	The professors taped during the live class	---
Bangor	2001	Professors	To reach a different target of students	Forestry	Web-sites, E-mails	Both online and in class. Plagiarism detection software	Only some lectures are recorded, there is no reluctance and in some teaching slides to have the lectures recorded.	Owned
Queen's	1999	Professors	To reach an higher number of students, To reach a different target of students	Pharmacy	E-mails	Both online and in class	Combination of options	Owned platform
Dundee	1980	Professors, Top level management	To reach a different target of students	Nursery, Medicine, Law, Literature, Education, Management & Policy	Web-sites, E-mails, Word of Mouth	In class	The professor is taped separately and its voice is synchronized with the lectures slides	Owned platform
Portsmouth	1999	Professors	To reach a different target of students, To increase the portfolio of courses provided	Engineering, computing	Web-sites, Open days, E-mails, agents	In class	The professor is taped separately and its voice is synchronized with the lectures slides	Owned
Northumbria	mid-late 90s	---	---	Engineering, Art, Law, Literature, Business, Computing, Humanities, Information Management	Web-sites, Open days, E-mails	Both online and in class. Turnitin.	Varies Depending on course	---
---	2003	Top level management	To reach an higher number of students, To reach a different target of students	Engineering, Medicine, Architecture, Law, Literature, Business	Web-sites, E-mails	In class	The professor is taped separately and its voice is synchronized with the lectures slides	Owned

1) *Pure online vs. hybrid*: the difference between these two methods is the presence

or the absence of any form of face to face interaction added to the online development of the course. An example could be related to the way in which exams are performed;

2) *self paced system vs. defined schedule for all students*: this is more related to the learning phase, and the freedom of the students to define what, when and how to study without the presence of defined schedule imposed by professor;

- 3) *social gaming/peer-group approach vs. individual learners*: if there is the possibility to learn, not only with individual study but also through the development of team work;
- 4) *machine-guided vs. investments of time and effort from instructors to engage online with student*. It's possible to say that, in general, the full implementation of a purely machine guided Distance Learning is quite rare.

Anyway the program is structured, in order to be developed, it is important to create or outsource an Ad Hoc platform that allows students and professors to access to the material of each specific subject.

Once that student login on the platform he access to a specific room, with all the subjects followed and an agenda that remembers him the daily lessons and the activities. The lessons are performed through materials provided in advance by professor. They are usually videotaped lessons in which professor speaks and his voice is synchronized with lecture's slides. There is also the opportunity to videotaped a live lecture and propose it also online. All the material is available in different formats: for iPod/iPad, mp3, megavideo, mobile devices. Students can download materials and view them offline when they want, for example, on the train while they are going to work.

Another way of deliver lesson is through a virtual classroom. The virtual classroom is a live session with professor and online students. The lecturer has at his disposal a virtual blackboard, can share files and documents or utilizes slides. This occasion can be used for explain theory or make a practical lesson. Some professors like to use this tool in order to communicate with students and answer to questions and doubts. All virtual classrooms are recorded and remain available for students for the whole semester.

The last tool that an online student can find on the platform is the forum. The forum is not only the place in which students can share their doubts each other waiting for the answer of a classmate or professor but it is also the place in which is possible to share personal thoughts and news with the rest of the class. The forum gives the possibility to create and establish relationship among these distance classmates.

Under the technical point of view, for the characteristics of the program is important that university guarantees the access to the web site 24/7, to satisfy the need of all students. In order to manage and assure this, there is a double server that is useful in case of current break off or to sustain the peak in specific days or times.

The final point concerns the exams. Also for evaluation each universities, faculties and professors is free to organize it. There are two main options. Some universities prefer to do it live, with a face to face interaction and so professors can control that students don't cheat, others prefer to do also exam online and outsource the surveillance to external companies like British Concilium. Make or not mid-terms, orals and others tests are at the discretion of the single professor that decides also if do them online or live.

All marks achieved by a Distance Learning courses have the same legal value of traditional one, and in the degree could not appear details about the delivery method (depending by institutions).

Table 4: HOW DISTANCE LEARNING PLATFORM IS COMPOSED

- calendar and agenda
- videotaped lessons
- material available in different format that allow the learning also offline
- virtual classroom- live lesson
- forum
- technical/support services
- access 24/7

1.1.6 PRO & CONS

It's possible to identify several benefits of Distance Learning from what it's been exposed until this moment, the ability to reach a different target of students, the possibility, sometimes, to be cheaper compare to the traditional instruction and the flexibility in terms of time and space. For Horgan (1998), one of the pro identifiable by universities approaching Distance Learning is the feeling to be able to control their costs, improve quality of instruction, focus on customer needs and respond to the competitive pressures. Basom and Sherritt (1994) questioning themselves about the major problems facing by American higher

education and through a survey they understand that the big issue is “meeting increased demands at a time of decreased resources, increasing or maintaining access, using technology more efficiently, and sharing resources across state line so that colleges won’t have to be all things to all people”. The answer to all these problems is Distance Learning that without a physical constraint is able to admit a higher number of students per course. This has of course a financial advantage because the class size increases while the overhead costs remain the same. To give students the possibilities to learn and follow lesson without limit of time and thanks to new technologies is able to access to information, data and material under a broader amount of resources that go beyond the simple pen and paper.

Another point that can be seen like a pro of Distance Learning Distance Learning for universities as a whole is that the earnings coming from it can be utilized to maintain physical structure and others functionalities or budgetary shortfalls that traditional instruction is not able to cover.

Paul LeBlanc (2012) sums up the advantages for students taking an online course into a Four C classification.

- Convenience (can you provide it in a way that fits my busy life?); thanks to internet they haven’t time and space constraints and they can follow lecture in the comfort of their home.
- Completion (how quickly can I get my degree?); the possibility to accept prior learning credits or to transfer credits can help students to be able to complete his learning journey earlier and give relevance also to what he already learn.
- Cost (how affordable is the degree I seek?); like already said, some universities gave the possibilities to access to these courses with a cheaper fee.
- Credential (is it a degree or credential that will help me improve my life?); some adult learners enroll simply for the passion to deeper their instruction in a specific sector; others seek a credential in order to get a better job.

Despite all the benefits that a university can earn thanks to the adoption of a Distance Learning education system there are some problems that need to be resolved.

The first issue is that preparing a course online requires a much higher initial investment in term of time, faculty member and money. The process to videotape and synchronize voice and materials is long; require a lot of effort by professors and IT staff that have to work on it. If from one side Distance Learning doesn't require any physical structure it need servers and quickly maintenance service added to the administrative apparatus necessary also for traditional. It's very difficult for institution define costs of Distance Learning, not the one related to the initial investment, but all costs, hidden included, that university have to face year after year. To this problem it's been dedicated a specific chapter later.

Another Con is related to the quality of instruction. Much of quality depends on the attitude of the administration and the instructor. Often there is the believe that technology itself will improve the quality of the class but this is not true. It's the way in which the course is designed and delivered. Some professors don't have the right knowledge to deal with it, so became fundamental a training phase (other investment in cost and time). Others are used to a close face to face relationship with students, can be very difficult to approach this learning procedure, they can be reluctant and the quality of the teaching can be low. So, if the administration and instructors are lacking in try commitment, it's bound to have a negative influence on the entire Distance Learning experience.

The quality of instruction can be related also to students' performances that can be considered lower than face to face learners. The comparison between traditional and Distance Learning students will be explain in following chapter.

Table 5: PRO & CONS OF DISTANCE LEARNING	
PRO -Reach a different target of students - Focused on students' needs - Flexible in time and space - The possibility to admit an infinite number of students gives the possibility to increase revenues	CONS - Higher initial investment (money and time) - The quality of the instruction is could be or perceive lower than traditional instruction - The absence of a face-to-face relationship it's seen like a shortage

1.2 A NEW TREND: MOOCs

1.2.1 HISTORY: PRECURSOR

MOOCs precursors arose more than a decade ago. The main characteristics are the open access; indeed they targeted learners beyond the registered student bodies. The tuition costs are low-cost, not totally free and the layout is designed explicitly to open new revenue stream for universities.

NYU created a for-profit distance learning company called *NYUonline*, targeted businesses as clients. It has been spent 25m \$ in 3 years and then was cancelled. The potential causes can be the poor market research on what companies wanted for their employees that causes a lack in the satisfaction of their needs, another causes can be the trouble running like a business while being run by a university bureaucracy and the increasing difficulties in securing venture capital because of the recession and ensure high quality communication between the sales and the production teams. Another example of MOOCs' precursor came from the *University of Maryland University College* (UMUOnline) that in 2000 creates the *Fathom*, a high-profile and for-profit e-learning portal with Columbia, Chicago, Michigan, LSE, Cambridge University press, the American film institute, other partners like NY public library, British library and many museums in London. Columbia invested 18m\$ initially and then other \$7-10m. It attracted 65,000 students to 2,000 online courses in 3 years and then failed. Potential causes can be the inadequate level of revenues, the increasing diversity created by the offering provision across a huge range of subjects from a diverse group of partners, providing both credit and non-credit professional and general interest courses, and tried to sell them to everyone from alumni to the retired and the tensions between Columbia and Fathom. Looking in Europe, in 2000 was created the *UK's e-university (UKeU)*, financed with £35m of public money, its aim was to recruit thousands of students worldwide to take UK degrees, failed because in the first year attracted only 900 students against a target of 5,600. In 2006, *Yale*, *Oxford* and *Stanford University* set up *AllLearn*, the closest to MOOCs with a non-for-profit theory but failed because they think that the online's time had to come.

1.2.2 HISTORY: THE BIRTH OF THE MOOCs

The term MOOC was coined in 2008 during a course called: “Connectivism and
Connective Knowledge”. Offered by Downes and Siemens to some 25 tuition-paying students, in extended
education an *University of Manitoba*, along with over 2,300 who signed up for online
class free of charge. All course content was available through RSS feeds and learners could participate with
their choice of tools: Threaded discussions in Moodle, blog posts, second life and
synchronous online meetings. The most significant phase started in 2011 when, during the fall semester, *Stanford
University* launched three computer science courses each of which had an enrollment of
about 100,000 students. After *Stanford*, in December 2011, also MIT announced its interest in MOOCs.

Table 6: MOOCs HISTORY YEAR BY YEAR

2008: *The term MOOC was created*

Fall semester, 2011: *Stanford University with collaboration of two professors (Andrew Ng and Daphne Koller) launched 3 Computer Science courses*

December 2011: *MITx launch*

January 2012: *Sebastian Thurn left Stanford to launch Udacity*

February 2012: *MITx opens for enrollment for its first class: "6.002x: Circuits and Electronics"*

April 2012: *Andrew Ng and Daphne Koller launched Coursera*

May 2012: *MIT and Harvard launched EdX*

June 2012: *Udacity starts its partnership with Pearson, which will offer onsite testing for its classes;*
Google offers a MOOC on "power searching"

July 2012: *12 more Universities join Coursera (University of Pennsylvania, Princeton, University of Michigan and Stanford are in Georgia Tech, Duke University, University of Washington, Caltech, Rice University, University of Edinburgh, University of Toronto, EPFL-Lausanne, Johns Hopkins University, UCSF, University of Illinois Urbana Champaign and University of Virginia)*

August 2012: *University of California, Berkeley joins the EdX*

September 2012: *Tyler Cowan and Alex Tabarrok (George Mason University professors) launch MRUniversity;*
17 more schools join Coursera (Berklee College of Music, Brown University, Columbia University, Emory University, Hebrew University of Jerusalem, Honk Kong University of Science and Technology, Mount Sinai School of Medicine, Ohio State University, University of British Columbia, University of California at Irvine, University of Florida, University of London, University of Maryland, University of Melbourne, University of Pittsburg, Vanderbilt University and Wesleyan University)

October 2012: *The University of Texas system joins edX;*
Coursera strikes a deal with Antioch University in order to offers courses for credits

November 2012: *American Council on Education initiated a credit-equivalency of several Coursera courses;*
different Massachusetts community college starts a partnership with

edX

December 2012: *Wellesley and Georgetown join edX;*

Coursera announces Coursera Career Services to match employers and students;

12 British Universities (Cardiff University, King's College, University of London, Lancaster University, The Open University, University of Birmingham, University of Bristol, University of East Anglia, University of Exeter, University of Leeds, University of Southampton, University of St. Andrews, University of Warwick) join forces to create FutureLearn LTD

1.2.3 MOOCs DEFINITION

MOOCs stand for Massive Open Online Courses. These kinds of courses are offered by important and famous professors and, because of this, they usually belong to the STEM area (Science, Technology, Engineering and Math).

The MOOCs' courses are based on a set of materials suitably created by the professor and integrated with some activities that must be developed into some weeks. (Michael Gaebel, 2013). There are no formal entry requirements because students can enroll even without prior formal education, but some courses require specific prerequisites. There are not participation limits (up to 50,000 students per course) for this reason is called MASSIVE and it's really encouraged the peer-to-peer learning.

The bad aspect is that a university in order to provide these courses has to sustain high costs, especially related to the production phase and production team. As Michael Gabel suggests in his article (2013) we can use different business strategies to gain money. For example the university can issue a certificate or a badge for which the students have to pay, or can be furnished an extra-service like the secure assessments that allows the students, for a minimum fee, to have their examinations invigilated and for having human tutoring (as opposed to automated) or assignment marking. Also from the point of view of the companies the university can gain allowing the access to student performance records to the companies that have already paid a quota. Another way can be to create relationships with third parties selling the MOOC platform to enterprises to use in their own training course or to other high education institution enabling them to lower costs or to make their study programs more attractive, or to have sponsors. For

those universities that want to follow the logic for which education is free for students arise a new way to collect fees from those companies using the MOOCs for staff development.

Given that the courses are free, another disadvantage is awarding credits that could have a negative impact on enrolment in regular courses, and would also require more staff resources and extensive structures for testing and validation.

1.2.4 MOOCs TYPOLOGIES

Siemens, Hill, Downes and Daniel distinguish 2 different models of MOOCs (Audrey Watters, 2012):

- cMOOCs: stand in the tradition of Connectives' philosophy and refer to the work of Ivan Illich which proposed, in 1970, to establish 'learning webs' by using new technology, which emphasizes creation, creativity, autonomy and social networking learning and focus on knowledge creation and generation or generative knowledge. The cMOOCs rely to a tool like Downes' gRSShopper which is a personal web environment that combines resources aggregation, a personal data space and a personal publishing. It allows to organize your online content any way you want to, to import content (your own or others) from remote sites, to remix and repurpose it and to distribute it as RSS, web pages, JSON data or RSS feeds. The users are assumed to be outside the system for the most part.
- xMOOCs: are a "peer grading technology" where students are trained to grade each other work according to the professor's specifications. An xMOOC is a "calibration peer-review" (a bit of peer review and a bit crowd sourcing), but the peer assessment doesn't work out so well: students are not prepared to give feedbacks each other, there are language barriers, there is no opportunity to give feedback on the feedback and the anonymity of this process caused a lack of responsibility. xMOOCs are emphasized a more traditional learning approach through video presentation and short quizzes and testing and focus on knowledge duplication or declarative knowledge in which the knowledge is the center and the learners are replications of it.

Table 7: MOOCs TYPOLOGIES	
cMOOCs - Generative knowledge - Personalization of the contents - Students are outside the system - Learners contribute in the knowledge creation	xMOOCs - Declarative knowledge - Duplication of the contents - Students as a part of the system - Learners are replicators of knowledge

1.2.5 MOOCs STUDENTS

Student's motivation to sign up for a MOOC can be very different. A survey made by Steve Kolwisch in June 2012 carried out among the participants of a Coursera course called 'machine learning' revealed that half of them were working professionals, many of them enrolled elsewhere in education, other smaller groups that could be identified were school pupils and the unemployed. Close to 40% of participants signed up because they were curious about the topic, another 30% wanted to sharpen their skills and only 18% were aiming at a better job.

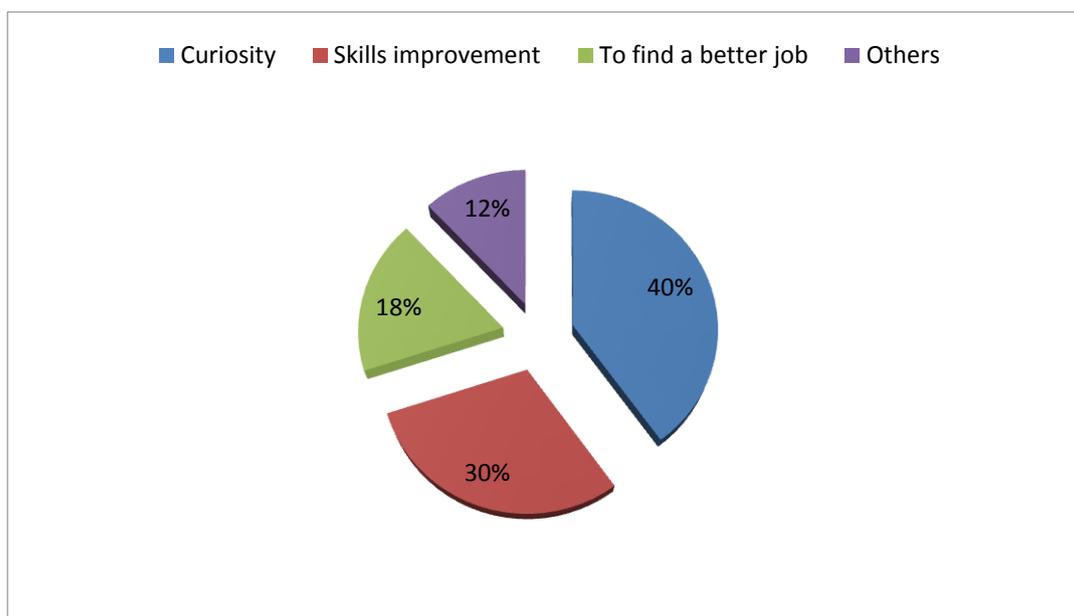


Chart 2: motivation of MOOCs' students

The study of 'Inside higher Ed' about Andrew Ng's Stanford Machinery Learning class MOOCs conducted by Audrey Watters (2012):

- 14,045 students
- Half were professionals who currently held jobs in the tech industry
- 41% working in the software industry
- 9% working in no-software areas of the computing and information technology industries.
- 20% were graduated students
- 11,6% were under-graduated
- 3,5% unemployed
- 2,5% employed in no-tech industries
- 1% enrolled in a K-12 school

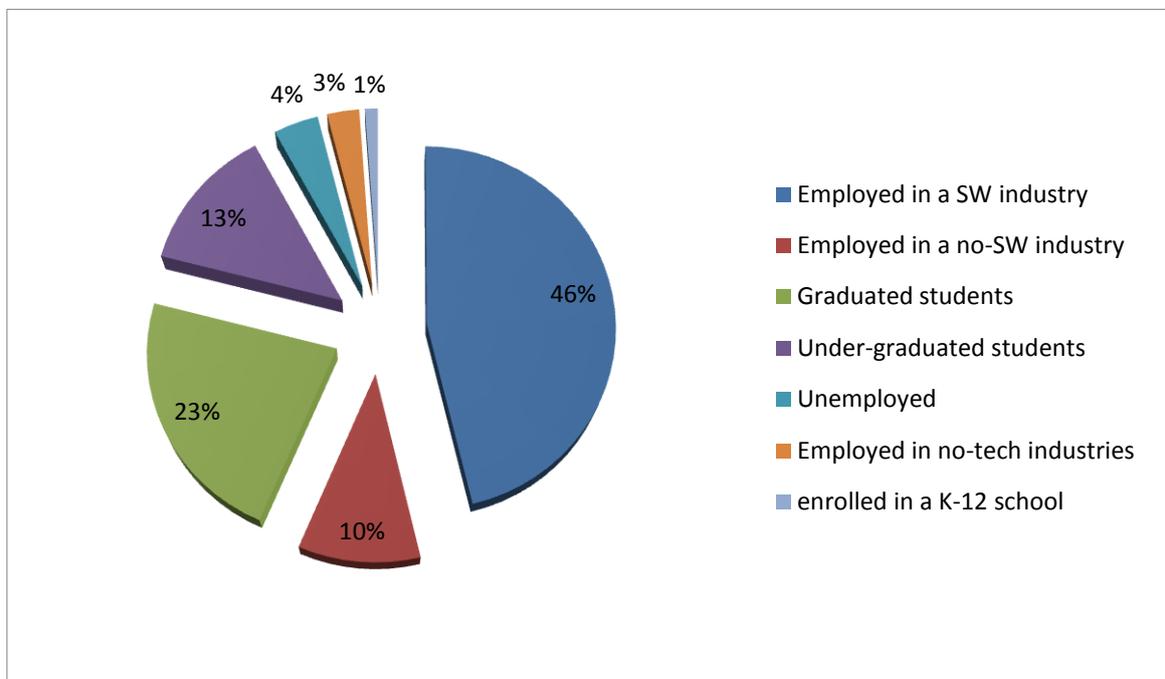


Chart 3: composition of MOOCs' students

In general from these researches emerge that 74% of the students reside outside the US.

Kris Olds in 2012 raises three issues related to geography and access: the first is related to the digital gap between the developed and developing world, then the issue of relevance and applicability of knowledge in other parts of the world and the last one is the fact that MOOCs have not been considered as a means of addressing problems in a particular region or city. A big issue with this innovation is the dropout rate. Dropout rates for MOOCs are very

high, but must be taken into consideration that due to the high number of students enrolled even if only 10% of the participants achieve the goals this would still outnumber the regular students who graduated over a decade ago from the same course.

From an interview with Rosanna Tamburri, in November 2012, it emerges that Of 104,000 students who enrolled in 2011 online machine-learning class, 46,000 submit at least one assignment, 20,000 completed a substantial portion of the course and 13,000 or 12,5% passed. This can be explained by the fact that courses are free of charge, do not award credits (course providers have made clear from the beginning that they would not award credit for MOOCs, but specific certificates of attendance and completion) and many learners seem to sign up out of curiosity. There are already indications that some providers are assessing different options, for example *Anitoch University* announced that it would award credits for students that attend its own MOOCs, for which it will charge tuition fees, even if lower than the one for its traditional courses, the *UDACITY Platform* started to offer, through partnership with electronic testing company Pearson VUE, final examinations which would be recognized by employers and *San Jose State University* announced a pilot project with *Udacity* to award credits for MOOC courses for a substantially lower fee than usual.

1.2.6 PLATFORMS AND DEFINITION

MOOCs are quite diverse: the institution concludes a contract with the company (eg *Coursera*). It launches an open call among its faculty members and invites applications. A limited number of them is selected. Then the course is produced in collaboration with a Coursera professional team. Could also be a consortium of universities that set up a company to serve their specific purpose (*edX*) or companies have not contractual relationship with a university, but with individual scholars (or other experts) to provide course content (eg *Udacity*).

1.2.6.1 Who provide the MOOCs?

In MOOCs the responsible of courses' quality and content are the individual academics and/or universities, the company, instead, is in charge of production and technical facilitation.

Some companies and consortia that are active are:

Coursera: started in 2012 by Daphne Koller and Andrew Ng (Stanford). It was developed with \$16m in venture capital and \$6m in cash and equity investment from university partners. The first 4 universities were Stanford, Princeton, Michigan and the University of Pennsylvania. It taken off quickly: it offers courses (119 and counting) from a consortium of 33 universities (US and 8 between Europe and Canada), courses includes a wide range of subjects. By mid-august 2012 they have over than 1million registrations (more than 1\3 in US and the next higher numbers originated in Brazil, India, China, Canada, UK, Russia and Germany). The final evaluation is made up by: multiple choice quizzes, written test and final exam; every evaluation is done “by students for students”, in a group of 4-5 person everyone is responsible for the work of the others; at the end of the course the certificates are at the discretion of participating universities. Coursera is for-profit, its courses are provided for free but they still need revenues, one solution is to charge a modest fee for the completion certificates, another is to charge a licensing fee to participating institutions or to sell CVs o access to student database for potential. After the Log-in it is possible to choose different areas containing: notices, fundamental for the organization and to not forget deadlines; materials that are uploaded in audio-video format or used to register the progress of the student; forum includes hundreds of discussion and is managed by the users and evaluation materials.

The screenshot shows the Coursera interface for the course "Generating the Wealth of Nations" by Jeff Borland, University of Melbourne. The course is described as a survey of economic development over the last 300 years, with a workload of 6-8 hours per week. It started on April 29th, 2013, and is 10 weeks long. The page features a "Sign Up" button, an "Add to Watchlist" button, and social media sharing options for 94 tweets, 39 shares, and 476 likes. The instructor's profile, Jeff Borland from the University of Melbourne, is also displayed.

Figure 1: Coursera homepage, 2013

edX: is a consortium platform launched in May 2012, MIT and Harvard each put \$30m in seed funding. Currently it offers HarvardX, MITx and BerkeleyX classes. Harvard and MIT announced that they are principally interested in taking additional universities into the ‘University X consortium’ but strictly based on quality standards. Is a not-for-profit initiative overseen by an organization governed by the universities themselves, is smaller than Coursera and includes 120 universities worldwide that exploit the platform. MITx offered its first course in spring 2012 in circuits and electronics. Collect around 155,000 students from 160 countries with range age of 14 to 74. For this course 23,000 tried the first problem set, 9,000 passed the first midterm and 7,157 passed the course. The majority of the MITx traffic comes from US, india and UK. Completion certificates will be free at first, though a fee of about \$100 (lower for developing countries) is to be introduced at some point. Also EdX, like Coursera, offer employers services for job recruitment. The advantage of this platform is the world-class brands already involved (but someone see it as an extension of MIT OWC). Students receive feedback on assignments and interact with peers in a curated forum. Access to academic staff means full labor costs, the issue will be the

quality and the quantity of such access. is a not-for-profit venture established and governed by Harvard and MIT.

Udemy: is a portal that facilitates online courses, mainly in the area of entrepreneurship, IT, software use, design, arts and sports. It invites learners to develop personal and professional skills in a cost-efficient, flexible and more interesting way than the traditional study courses. Allows everybody to offer a MOOC and announced that its courses are offered by the 'world's top experts, including New York Times best-selling authors, CEOs, celebrities and Ivy league professors'. Is financed by Insight Venture Partners, Lightbank, MHS Capital and 500 Startups (they previously foresaw the internet giants like youtube, LinkedIn, Twitter, Groupon...)

Udacity: is a for-profit start-up founded and run by Sebastian Thrun. , it wants to offer high education at a lower price to more people. The first course has 100,000 students and 10% of them completed it. Currently it offers 13 courses in different subjects (computer science, math..) students are 1/3 from US, 1/3 from Brasil, Canada and 8 countries in Europe and East Asia. It has much more possibilities to innovate, for example to post the students CVs and to charge a fee for the companies instead for students. This is important for the 'student debt problem' (students and families are willing to pay increasing amounts for a college degree; instead online education takes advantage of some economies of scale). The certificate of the participation can be downloaded for free but right now they are developing a tied-up with Pearson for final exams, with a \$80 fee students have the option of using Pearson Vue's 4500 testing centres worldwide for additional, supervised final exams. Its success is being wagered on the reputations of individual rather than institutional brands, and on supply of entrepreneurial and unshy academics who wish to increase their exposure.

Futurelearn: was established in late 2012, as the first 'nationally' defined initiative, and the first one launched outside of North America. It will bring together a range of free, open, online courses from leading UK universities, in

the same place and under the same brand. Oxford, Cambridge, University College London and Imperial College London are not among the initial partners.

Table 8: COURSES COMPARISON			
	<i>COURSERA</i>	<i>EDX</i>	<i>UDACITY</i>
<i>For-profit?</i>	Yes	No	Yes
<i>Partners to date</i>	19 HE institutions, including 5 outside US	Harvard, MIT, UC Berkeley	Pearson Education for exams
<i>Number of students</i>	1,100,000+	155,000+(MITx only)	739,000
<i>Number of countries</i>	Almost all	160	Almost all
<i>Origin of students</i>	39%US, then Brasil,India,China,Canada, UK,Russia,Germany	Us, India, UK, Spain, Pakistan, Canada, Brasil, Greece	1\3 US, 1\3 from Brazil, Canada, Europe, East Asia
<i>Fees</i>	None yet	\$100 for completion certificate after autumn 2012 cohort	\$80 for Pearson Test (optional)
<i>Funding</i>	\$16m venture capital, \$6m from partners	\$30m each from MIT and Harvard, \$1m from Gates Foundation, more from private partners	Charles River ventures, Sebastian Thurn (amount unknown)
<i>Credit toward degree</i>	No	No (certificate of mastery)	No (certificate)
<i>Subjects</i>	Multidisciplinary, including medicine, arts and humanities	Artificial intelligence, computer science, chemistry, electronics	Maths, statistics, computer science, sciences

1.2.7 FUTURE DEVELOPMENT

1.2.7.1 A real innovation?

Critics remark that MOOCs as such are not really revolutionary in that all their elements already existed before hand. Even the combination of top research universities providing online courses to a large number of students is not new. The recent success of this approach can be linked to the fact that they are offered by rather prominent and exclusive universities. MOOCs are rather traditional in their pedagogical and didactic approach, and often also of low quality. There is a focus on knowledge reproduction rather than knowledge creation, and that (besides videos, quizzes and tests) the main approach is traditional lectures. The disruptive innovations of MOOCs are shifting costs from students to institutions, from students to future employers, matching students to jobs via a database or individually, and combining these with supervised, in-person exams at locations around the world.

The modus operandi of traditional HE sector is taking a lot of money from a controlled number of students; with MOOCs it is charging hundreds of thousands of students a minimum fee. This is the explanation of their success only in US but not elsewhere, it has been pointed out that one driver for MOOCs is to cut costs, is well know that in US higher education is the most costly of the world. If the certificates or qualifications are to convey external value, this poses at least some limits to the scalability of MOOCs.

1.2.7.2 Why to invest?

Opportunities

Universities consider MOOCs for various reasons: lowering the cost of education, using existing resources more efficiently, for example by supplementing traditional classroom education with MOOCs, offering traditional students more flexible learning opportunities or reaching out new learner groups, thus for enhancing visibility and for self promotion.

It has been pointed out that (Michael Gaebel,2013) one driver for MOOCs is to cut costs, this new approach could save money both for institutions (regarding campus facilities and also teaching staff) and students

- Global growth of the universities' influence and prestige: general promotion of the universities' image abroad and specific sustain to the international branch campuses (very important in the strategy of the universities in the last 10 years).
- Increase in the importance of the single professor thanks to his communication skills.
- Students perceive to be more close to the foreign universities and they are more motivated to start an experience abroad.
- Creation of new business models: thank to the huge number of students per each course it is possible to have an important payback on the initial investment
- Universities can use the web to transfer the knowledge to the students and then exploit the classes' capabilities for tests, discussions with the professor and enforcement activities.
- Increase the possibility of partnerships between big and local universities in order to manage the additional activities for which is mandatory the presence (exams, tests...)

Threats

- If the certificates or qualifications are to convey external value, this poses at least some limits to the scalability of MOOCs.
- MOOCs influence and future development can lead to two different scenarios: in the first one (The observatory on borderless higher education, 2012) MOOCs have to be threatening by elite institutions with global brands; they will always have a market for people willing to pay for the elite model of education. They have to face also the competition of IBC (international branch campuses) because both are internationalization strategy options. Universities can choose one of these or both or using for example MOOCs as a recruitment pool for their branch campuses. In the second one, sustained by Clayton Christensen,

“wholesale bankruptcies” over the next decade among standard universities. This second thesis is also supported by the founder of UdaCity Sebastian Thrun who predicts (Sebastian Thrun, 2012) those in 50 years there will be only ten universities left in the world.

- The language diversity is an important issue. So far, MOOCs have been delivered in English and this has not been an issue of major debate and has not raised doubt about the effectiveness of global knowledge dissemination. The use of languages other than English might well depend also on the purpose and the target group of MOOCs.

Table 9: PROBLEMS & SOLUTION OF MOOCs	
<i>PROBLEMS</i>	<i>POSSIBLE SOLUTIONS</i>
Insecurities about learning	Possible development of personal paths
Lack of feedbacks and contact with teachers	<ul style="list-style-type: none"> - Use of technology such as emails, phone-calls... - Prompt feedbacks
Lack of support and services	<ul style="list-style-type: none"> - Use of technology such as emails, phone-calls... - Focus on the assistance of the user (24h/day...)
Sense of isolation and alienation	<ul style="list-style-type: none"> - develop personal involvement between student and university - Use of tutors - Use of social networks like Skype or Facebook between students
Lack of training	<ul style="list-style-type: none"> - Had hoc study materials

1.3 QUALITY AND PERFORMANCES OF ONLINE COURSES: AN OPEN ISSUE

1.3.1 STUDENTS' POINT OF VIEW

More so than traditional students, distance learners are more likely to have insecurities about learning (Knapper C., 1988). These insecurities are founded in personal and school related issues such as financial costs of study, disruption of family life, perceived

irrelevance of their studies and lack of support from employers. These pressures often result in higher dropout rates than among traditional students (Sweet, 1986).

These insecurities are emphasized by the fact that there is not daily or weekly face to face contact with teachers, students may have trouble in self-evaluation and may perceived lack of feedback or contact with them. Keegan (1986) believes that the separation of student and teacher imposed by distance removes a vital "link" of communication between these two parties. He, then, hypothesized that students who did not receive adequate reintegration measures such as electronic or telephone communication, would be less likely to experience complete academic and social integration into institutional life. Consequently, such students would be more likely to drop out (Sheets M., 1992).

These barriers can be mitigated through technological methods such as e-mail; it is important that the student receive prompt feedback in any institutional setting, particularly in distance learning where the learner is impaired by the lack of casual contact with the teacher and other students. This is especially important for those students who live outside metropolitan areas. They may not have access to reliable telecommunications, computers, and postal mail. The frustrations resulting from problems with communication between student and academic institution are factors of which distance education planners should be well aware. (Jill M. Galusha, 1997, Barriers to learning in distance education. *Interpersonal Computing and Technology: an electronic journal for the 21st century*).

Also the lack of support and services, such as providing tutors, academic planners and schedulers, and technical assistance can contribute to students' sense of isolation and feelings of alienation. Students of all kinds want to be part of a larger school community, for many traditional students, this is an important part of their social lives. The "distance" aspect of distance learning takes away much of the social interactions that would be present in traditional learning environments.

This problem must be mitigated by institutions providing a sense of personal involvement between the student and the institution. One way to help solve this problem is through the use of tutors that communicate with students either electronically or by

phone. Geographical isolation has been identified as one of the major problems for distance students (Meacham and Evans, 1989). Distance students suffer from the disadvantage of being unable to interact with other students and are often denied the perception that they belong to a scholarly community. This may lead to feelings of inadequacy and insecurity, and a lack of confidence in their own abilities (Wood H., 1996).

Also the design of study materials for distance students must be designed 'ad hoc' in order to take into account the significant proportion of students who enroll with little or no experience of distance study. These students are at risk of dropping out unless they develop study survival skills as rapidly as possible indeed many adult students have a lack of training and, because of this; they are not well versed in the uses of technology such as computers and the Internet. Using electronic medium in distance learning can inadvertently exclude students who lack computer or writing skills

1.3.2 PROFESSORS' POINT OF VIEW

More than any other participant, faculty roles must change the most in administering distance learning programs. This can be difficult adjustment for some teachers, indeed, preparing a course online requires a much higher initial investment of time by a faculty member to teach the same course in a traditional format, and moreover they must change teaching styles to that of a mentor, tutor, and facilitator. The big dare is to meet the needs of distance students without face-to-face contact, this may be challenging for teachers who are used to teaching with 18 to 22-year-olds. Despite this big issues nearly 50% of the instructors indicate they would participate in a distance education course again but reporting that the quality of the distance education course, when compared to a traditional course, was lower. Also the examination method is different since cheating remains a problem, in order to verify that person at the key board is the actual student registered from an online course, the exams can be done in presence at campus or using video.

The motivation of the collaboration of, on average, only an half of the entire faculty can be that Professors fear that online instruction will be the cause of the cutting in the university's staff: if one professor can serve thousands of students there will obviously

be fewer professors and fewer departments and faculties. Schools must not underestimate this resistance and should be very aware of the possibility of overburdening faculty and staff.

1.3.4 UNIVERSITIES' POINT OF VIEW

One of the most important aspects for universities is their perceived value; everything depends on their reputation from their fee to the future that they can guarantee for their students. The face-to-face teaching is the most visible sign of this value for money and, because of this, faculty's fear that online instruction will be used to diminishing faculty's rank. Reputation is also built up thanks to teachers' name and courses' particularity, accordingly to this, except for some faculty hired specifically to teach online, most faculty expressed little interest in teaching online courses that are developed by third parties, while they are willing to borrow from others and to share content of their own creation,

They don't wish to teach something that is pre-packaged and in which they have little to say. This preference for "ownership" of content is weaker in community colleges but still prevalent and contributes in making faculties reluctant to teach courses that they don't own.

Another important difficulty is the guarantee of technological support to students: financing new technology, telecommunications, hardware issues, course production and technology, and Internet problems can be very hard. This problem can be easily mitigated thanks to the availability of funds. Taking into account when technology is used, the costs increase substantially for both the student and the institution. Because must be considered not only the initial costs but also the continuing costs of installing, maintaining, using, and upgrading technology to support distance services.

1.3.5 WHAT AN INSTITUTION HAS TO DO IN ORDER TO CREATE A SUCCESSFUL DISTANCE LEARNING PROGRAM

In the following list are included what an institution has to look for in order to create a successful DL course. These areas include how they plan to use technology,

centralization of their information technology IT support, instructional technology support for faculty and students, and buy-in from faculty, administrators, and potential students (Morgan, 2000).

Using technology as a strategic asset: universities don't have to purchase technology to possess the latest and greatest tool, this is not sufficient for a quality DL program. The investment in the technology necessary for the courses must be accompanied by proper education of who designs and who teaches the courses. At this point is very important the opinion of the students who will be taking the course because it must to be possible for them to reach the technology and the skills needed to take the advantages of a technological course. University has to invest in technical training programs and encouraging online students to participate in the improvement of the DL program.

Centralization of IT support: about this point there are different points of view. Morgan brings back to the *Marshall University* experience. In this case the centralization of IT, it's the best solution that increase benefit and gives the opportunity thanks to a single system, to offer and support to online courses. A single system helps students and faculty work with multiple courses without learning multiple systems, reducing costs and time for planning, training and implementation.

Instructional technology support: this area is specialized in offer that kind of support that the standardized help desk cannot offer. Its task is to assist faculty in determining which opportunities exist in finding and implementing technology to fit course content. This area support instructors in determining the technologies that best suits for their content based on affordability, scalability, availability and supportability.

Faculty and online courses: sometimes faculty are against Distance Learning because they don't have the proper knowledge about what Distance Learning is. There is the fear that administration believes that the courses can be handled by adjuncts or that these courses are inferior compare to traditional ones. The quality of the program depends on the quality of the instructors and the culture of the institution that can influence the teaching methods.

Administration and online courses: as pointed out in the previous point, the two main errors that administration can make are: introduce Distance Learning with the purpose

to gain students in a simply way and think that technology will create cheaper courses. Cheaper costs may arise in courses that have material learned by drill and practice but Turoff (1997) shows that it will not happen for courses that rely heavily on problem solving and critical thinking. Improve cost-effectiveness of education is not the same of reducing costs.

Many administrators have stayed from online courses because they fear the huge investment that is necessary to get online. Provide a DL course will not decrease costs immediately. Costs may decrease at some point in the future, but never at the outset.

Students and online courses: also student's opinion is important and depends on the quality and on the delivery o the course. To be successful, the infrastructure has to be in place to make the learning journey the easiest possible for students to continue their education. There are some problems, concerning this type of instruction, that have a direct impact on students' satisfaction. For example they don't receive an immediate feedback from professors or that in some universities the examination is done through live session. In this way the convenience of an online course is set aside.

Table 10: A SUCCESSFUL DISTANCE LEARNING PROGRAM

- technology has to be considered like a strategic asset that have to help professor to increase the quality of his lesson
- the centralization of IT support can help to reduce the overall costs
- fight against the resistances of faculties against online learning
- follow the program in all its stages and don't think that technology can do everything by itself
- considering students' opinions and feedbacks important for the improvement of the learning system

1.3.6 COMPARISON OF PERFORMANCES IN DISTANCE LEARNING AND TRADITIONAL

Assessing student performance is a problem area in distance learning. It is a commonly held belief that distance students perform more poorly in assessment than do internal students because of the additional pressures and burdens of distance study (Jill M. Galusha, ,1997, Barriers to learning in distance education. Interpersonal Computing and Technology: an electronic journal for the 21st century)
Many research studies have shown that cognitive factors such as learning, performance

and achievement in distance education classes are comparable to those observed in traditional classes (Carr,2000: Russell 1999; Schoech 2000; Sonner, 1999; Spooner, Jordan, Algozzine& Spooner, 1999), however, perceptions and satisfaction levels of instructors and students of distance education have not shown the same consistency (Bower,2001; Hara&Kling, 1999; Sticks&Freddolino, 1998).

Students in the web based course consistently scored an average of five percentage points higher on the final exam than did those in the lecture course, but they consistently reported less satisfaction than the students in the lecture course (Julio C. Riviera& Margaret L. Rice)

1.3.6.1 Students performance & satisfaction

Performance and students' satisfaction are fundamental for the continued success of the online course in the future and for the value added to the university.

Piccoli, Ahman and Ives in 2001 find out different factors that can potentially affect e-learning outcomes and Perceived student satisfaction.

These factors are human and design factors, human factors are concerned with students and instructors, while design factors characterize such variables as technology, learner control, course content and interaction.

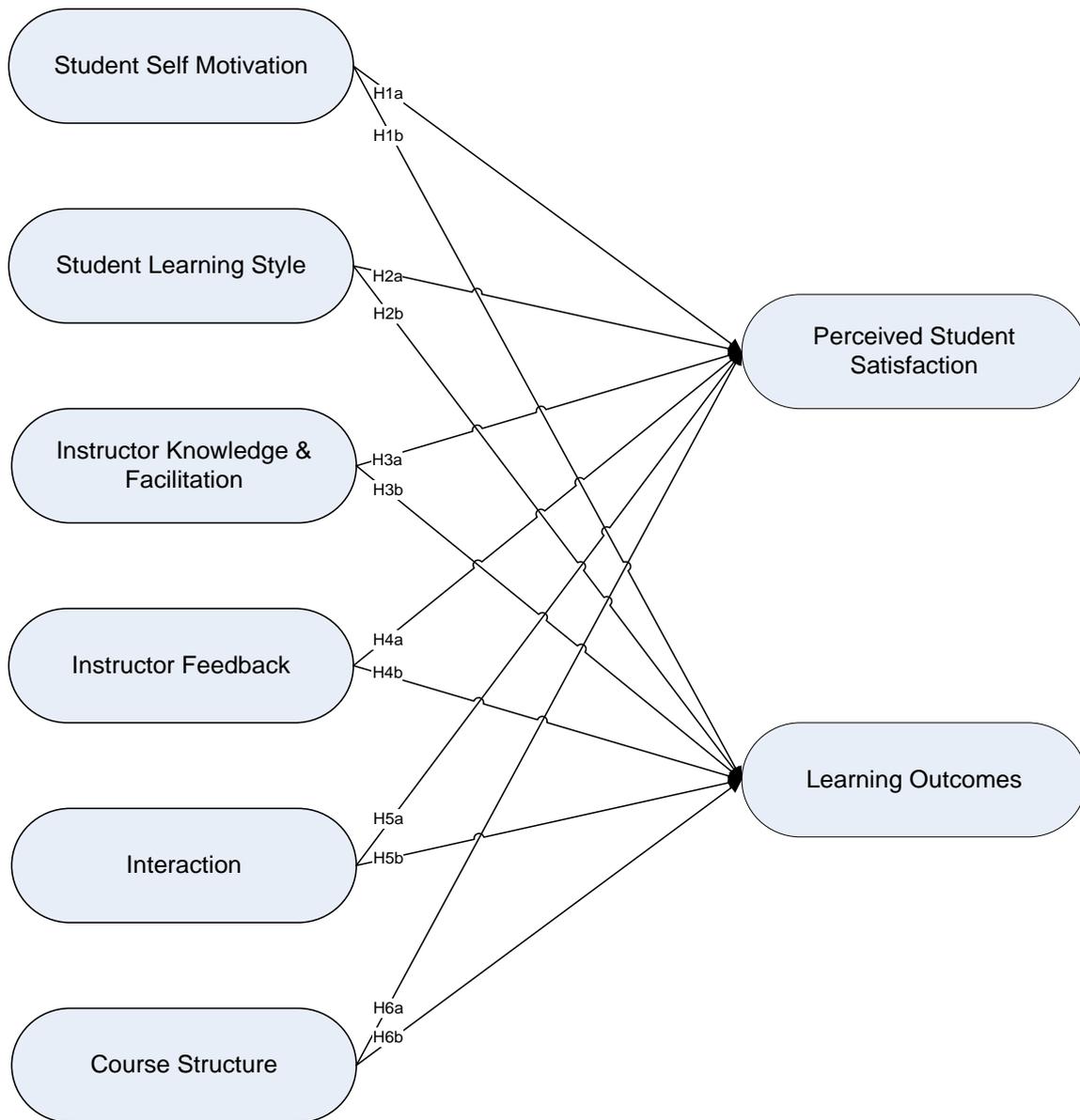


Figure 2: Research Model..”The determinants of Students’ perceived learning outcomes and Satisfaction in university Online education: An empirical Investigation”, Sean B. Eom and H. Joseph Wen, Decision Sciences Journal Of Innovative Education, July 2006

Student self-motivation: Web-based e-learning systems placed more responsibilities on learners than traditional face-to-face learning systems. A different learning strategy, self-regulated learning, is necessary for e-learning systems to be effective. Self-regulated learning requires changing roles of students from passive learners to active learners.

Learners must self-manage the learning process. The core of self-regulated learning is self-motivation. Self-motivation is defined as the self-generated energy that gives behavior direction toward a particular goal.

The strength of the learner's self-motivation is influenced by self-regulatory attributes and self-regulatory processes. The self-regulatory attributes are the learner's personal learning characteristics including self-efficacy, which is situation-specific self-confidence in one's abilities. The self-regulatory processes refer to the learner's personal learning processes such as attributions, goals and monitoring. Attributions are views in regard to the causes of an outcome.

One of the stark contrasts between successful students is their apparent ability to motivate themselves, even when they do not have the burning desire to complete a certain task, students with strong motivation will be more successful and tend to learn the most in web-based courses than those with less motivation. A lack of motivation is also linked to high dropout rates.

For these reasons they hypothesized:

- H1a: students with a higher level of motivation will experience a higher level of user satisfaction

- H1b: students with a higher level of motivation in online courses will report higher levels of agreement that the learning outcomes equal or better than in face-to-face courses.

Students' learning styles: Learning is a complex process of acquiring knowledge or skills involving: physiological dimension, so biological characteristics\senses; the affective dimension: personality characteristics such as attention, emotion, motivation and curiosity; the cognitive dimension that is the information processing style such as logical analysis or gut feelings; and the psychological dimension with psychological\individual differences.

The basic premise of learning style research is that different students learn differently and students experience higher level of satisfaction and learning outcomes when there is a fit between learners' learning style and a teaching style.

This study uses the physiological dimension of the study of learning styles; a popular typology for the physiological dimension of learning styles is VARK: visual learners like to be provided demonstrations and can learn through description: they remember faces but often forget names; aural learners learn by listening: they like to be provided with aural instruction and they enjoy aural discussion and dialogues and prefer to work out problems by talking; read\write learners are note takers: they do best by taking notes during a lecture or reading difficult material; kinesthetic learners learn best by doing: their preference is for hands-on experiences.

They assume that online learning systems may include less sound or oral components than traditional face-to-face course delivery systems and those online learning systems have more proportion of read\write assignment components, students with visual learning styles and read\write learning styles may do better in online courses.

The two main hypotheses are:

- H2a: students with visual and read\write learning styles will experience a higher level of user satisfaction;
- H2b: students with visual and read\write learning styles will report higher levels of agreement that the learning outcomes of online courses are equal to or better than in face-to-face courses.

Instructor knowledge and facilitation: Learning models:

- Objectivist model: the goal is transfer of knowledge from instructor to students. It is the primary method of traditional face-to-face classes. Distance learning can easily break a major assumption of objectivism that the instructor houses all necessary knowledge. For this reason we have the other models.
- Constructivism model: assumes that individuals learn better when they control the pace of learning, therefore the instructor supports learner-centered active learning.
- Collaboratist model: students' involvement is critical to learning, the basic premise is that students learn through shared understanding of a group of learners, therefore instruction becomes a discussion leader. Distance learning facilities promote collaborative learning across distances with facilities enabling students to communicate with each other.

- Socio culturism model: necessitates empowering students' freedom and responsibilities because learning is individualistic.

E-learning environments demand a transition of the roles of students and the instructor.

The instructor's role is to become a facilitator who stimulates guides and challenges his\her students via empowering students' freedom and responsibility, rather than a lecturer who focuses on the delivery of instruction.

H3a: a higher level of instructor knowledge and facilitation will lead to a higher level of user satisfaction

H3b: a higher level of instructor knowledge and facilitation will lead to higher levels of student agreement that the learning outcomes of online courses are equal to or better than the face-to-face courses.

Instructor feedback: Instructor feedback to the learner is defined as information a learner received about his\her learning process and achievement outcomes and It is one of the most powerful component in the learning process. It intends to improve student performance via informing students how well they are doing and via directing students' learning effort.

Instructor feedback in the web-based system includes: a cognitive feedback about examination\assignment with his\her answer marked wrong; diagnostic feedback, examination\assignment with instructor comments about why the answers are correct or incorrect; and prescriptive feedback with instructor feedback suggesting how the correct response can be constructed.

Instructor feedback to students can improve learner effective responses, increase cognitive skills and knowledge and activate met cognition (awareness and control of cognition through planning, monitoring and regulating cognitive activities, when it is activated, students may become self regulated learners.

They can set specific learning outcomes and monitoring the effectiveness of their learning methods or strategies.

H4a: a high level of instructor feedback will lead to a high level of user satisfaction

H4b: a higher level of instructor feedback will lead to higher levels of student agreement that the learning outcomes of online courses are equal to or better than face-to-face course.

Interaction: This research adopts Moore's communication framework which classified engagement in learning through the interaction between participants and learning materials, between participants and tutor/experts and interaction among participants.

These three forms of interaction in online courses are recognized as important and critical constructs determining the performance web-based course quality.

Previous research studies suggested that an interactive teaching style and high levels of learner-to-instructor interaction are strongly associated with high levels of user satisfaction and learning outcomes.

Student perceptions of interaction with their peers to be related to four components: actual interactions in the courses; the percentage of the course grade that was based on discussion; required participation in discussions and average length of discussion responses

The main hypothesis is:
H5a: a high level of perceived interaction between the instructor and students and between students and students will lead to a high level of user satisfaction

A higher level of perceived interaction between the instructor and students and between students and students will lead to higher levels of student agreement that the learning outcomes of online courses are equal to or better than in face-to-face courses.

Course structure

Expresses the rigidity or flexibility of the program's educational objectives, teaching strategies, evaluation methods and describes the extent to which an education program can accommodate or be responsive to each learner's individual needs.

It is composed by two elements: the Course objectives/expectation, to be specified in the course syllabus including what topical areas are to be learned, required workload in competing assignments, expected class participation in the form of online conferencing

systems, group project assignments and so on and the course infrastructure concerned with the overall usability of the course web site and organization of the course material into logical and understandable components.

We theorize that course structure will be strongly correlated to user satisfaction and perceived learning outcomes, especially when course materials is organized into logical and understandable components and that the clear communication of course objectives and procedure will lead to the high levels of student satisfaction and perceived learning outcomes.

The main hypotheses are:

H6a: a good course structure will lead to a high level of user satisfaction

H6b: a good course structure will lead to higher levels of student agreement that the learning outcomes of online courses are equal to or better than in face-to-face courses.

After different studies and tests, made with surveys, the results are:

- Learning styles and instructor feedback hypothesis were supported.
- No support for a positive relationship between interaction and perceived learning outcomes was found. One possible explanation is that the study did not account for the quality or purpose of the interactions. Although a student's perception of interaction with instructor and other students is important in his\her level of satisfaction with the overall online learning experience, when the purpose of online interaction is to create a sense of personalization and customizations of learning and help students overcome feelings of remoteness, it may have little effect on perceived learning outcomes. Furthermore, a well-designed online course delivery system is likely to reduce the need of interactions between instructors and students.
- Statistically insignificant relationship between online course structure and perceived learning outcomes. One possible explanation for this is that, for students who visited the class web site on a regular basis, what matters to their learning is not so much the usability of the course site as a measure of the quality of engagement in other learning activities. For instance, meaningful feedback that occurs among students or from a teacher may have a greater

impact on perceived learning outcomes. As long as students received meaningful feedback about the course contents, an inadequate web content design becomes less critical.

- No significant relationships were found between students' self-motivation and perceived learning. There is no explanation for this result.

1.4 AN UNDERESTIMATED TOPIC: ASSESSING THE COSTS OF ONLINE COURSES

Several institutions consider Distance Learning like a source of revenues. What is important to consider is that when an entity produces a product or provides a service there are not only revenues to but also costs and what is more important: the reduction of them.

If this assumption is obvious in a productive and lucrative environment, few institutions not only don't see Distance Learning a way to reduce costs, but also don't consider all the costs that they incur when they provide this service.

Before going in the deep on the relationship between it and Distance Learning is better to understand what cost is in general.

“Cost is the monetary measure of the resources sacrificed or forgone to achieve a specific objective such as acquire a good or service”.

The term “cost” alone is not sufficient. Usually it is accompanied by an adjective.

The general categorization of cost is:

- Fixed costs that are the unchanging ones: items of cost that, in total, don't vary with the volume;
- Semi variable costs: that are fixed within a relevant range, but an increase in expenditure is triggered when activity levels pass a threshold;
- Variable costs: are items of cost that vary, in total, directly and proportionately with volume

Rumble (1997) makes a first conventional categorization considering capital costs and revenue costs. With capital costs, he includes buildings, equipment and furniture, which

are annualized over their expected life. Generally these costs have been regarded as non-recurrent costs through the short life of some capital items; instead revenue costs are normally categorized as staffing costs (including on-costs) and non-staffing costs (covering revenue expenditures on premises, stocks, supplies, consumable and expenses). Some revenue expenditure on the development of course materials behaves very much like capital expenditure, incurred when the course is designed but expected to retain some value over the expected life of the course.

Brian Morgan (2000) from *Marshall University* sustains that the educational technology equipment and support costs are often under budgeted because their importance is not understood or because such costs conflict with other priorities. He defines the following costs categories: capital and recurrent costs, production and delivery costs, and fixed and variable costs.

- Capital costs: infrastructure, equipment, materials necessary for the offering of courses
Recurrent costs: occur on an ongoing basis (IT support);
- Production costs: incurred during the development of the courses
Delivery costs: associated with teaching a course;
- Fixed costs: not change as the number of students
Variable costs: change with the number of students.

He also sustains that technology based education it's possible to underline that fixed costs are high, but variable costs are lower than traditional costs.

Through cost analysis it's possible to find out how much something actual cost, set a budget, determine a price and compare the costs of different options.

Judith V. Boettcher, in her paper: "*How Much Does It Cost to Develop a Distance Learning Course? It All Depends...*" recommend a good strategy for budgeting DL activities. She suggests building three different budgets for the initial design and development program; the second budget for the marketing and delivery activities and the last one for the ongoing maintenance of the program. The *Open University* defines a model to overlap the difficulty to manage with the creation of this phase budgeting. The model assigns to faculty experts the responsibility

for preparing the course content and packaging: this is the design and development phase. Then when a student applies for a course, all the learning material is sent out to him. The student then completes the course experience interacting with a tutor specializes in the delivery of the course. While the course is being delivered by a tutor, the faculty expert is often working on a new course or on maintaining another course.

1.4.1 COSTS AND DISTANCE LEARNING

The Distance Learning course, like every other activity, requires the consumption of several resources and so several costs.

The Commonwealth of Learning in its Start-up guide to distance education practice and delivery, underlines the important of the cost accounting in Distance Learning in particular, an accouter has to identify and monitoring: the activities and resources used and relative costs.

For them there are 3 main activities:

- Creation, acquisition, production and delivery of learning materials
- Provide administrative and pedagogical student support services
- Provide institutional management to support the above.

Which are the main resources used in order to provide a Distance Learning system? The most important one is human resources. It's been included not only professors and tutors but also technical support staff and administration. There are buildings and infrastructure, they can be property of the university or can be rented; utilities, repairs and maintenance occur in both case. Equipment and furniture like staplers and whole punches but also servers and lubricants for machinery. Each of these resources corresponds to a cost.

The institutional costs of a fully developed e-education systems would include: developing e-materials; teaching (and assessing) students online; accessing the web site; administering students online; providing the infrastructure and support within which e-education can operate

Of course there are some start-up costs (investment in technology, instructional design, web design and training) but they will decrease over time due to experience and economies of scale. Several institutions do not do a serious cost accounting neither for traditional and online so these assumptions remain speculative. They don't think that the cost structure might look on a long-term basis with the reduction of full time instructors and investment in plant and equipment.

To provide a comprehensive approach to the costs of networked learning we need an analysis that looked at the costs of a system:

1. By expenditure category: using the traditional distinction between HR or staff costs, premises and accommodation costs, equipment and furniture costs and the costs of stocks, supplies, consumables and expenses)
2. By contributor (the institution's own budget, partner institutions' inputs, direct government inputs, aid agency inputs...)
3. Distinguishing between capital and revenue costs, with the former, including the investment in course materials, annualized over their expected life
4. Where this seems sensible to the analyst, using an appropriate systems framework for the analysis of costs.

Rumble (2001) divides costs of Distance Learning in three main sub areas. The first is cost of developing online learning materials: includes the preparation of text, audio, video, computer-based tutoring, intelligent tutoring, exploratory learning, simulations. A high percentage of this cost is labor cost. Researches show that it takes more academic time to develop media that will occupy a student for one hour, than it takes to develop a one hour live lecture. The second is cost of e-delivery: includes professors and tutors cost, cost for students to acquire the needed equipment. This last one is not generally taken into account, but from student's point of view, these costs can have a major impact on affordability and hence on access. The last one is cost of e-administration or support cost: this is the area in which is possible save the most sharing resources with traditional instruction or with other

universities. It's considered website supporting online administration, servers, annualization of equipment and upgrades, higher level management costs.

Sometimes the cost accounting makes by university is not accurate because there is the risk that some cost typologies are forgotten. It's important to consider all type of cost sustained by the institution and for each type of resources and activities utilized in Distance Learning process it's possible to make specifications.

One of the huge investments that an institution has to sustain is technology infrastructure.

A university has to invest into an information technology infrastructure to support online courses and bandwidth charges. This second one usually is ignored but Inglis (1999) shows that if an institution tries to require students to bear communication and computing costs as a way of reducing costs, this only shifts costs and does not reflect a savings. The delivery of audio and video requires more bandwidth than simple text or most graphics, which relates to higher costs. Another investment is the one related to the acquisition of one or more servers and also the purchase of packaged software to serve online courses. Depending on the strategy of the institution and on its orientation these investments can differ in quantity and each one can decide if produce them internally (especially software) or if buy them.

The second main categorization of cost is related to the support personnel. Depending always to the objectives, an institution can hire a specific manager that has to manage the administrative side (assist students and faculty in getting started with Distance Learning), conduct evaluation about technology, distribute student materials, generate administrative reports and coordinate the relationship among different faculties working with online courses and support personnel. In addition to this manager, it's important to consider the technology support individuals, these skilled people are the key for the success of an online course. They have to support professors in the production of learning material and teach them how work on the platform. The second task of IT staff is to carry calls from students, for example related to malfunctioning of the web site.

The third cost is brought on by the faculty development. Turoff (1997) believes that is wise to select faculty who are thought to be able to adapt to the use of the underlying technology and the facilitation, guidance, and leadership of online courses. He sustain that when a course fails, it's often because either an instructor was forced into teaching the course and was not able to adapt to the role, or that proper development was not provided. Some universities, like the Southern Nevada, pay faculty a fixed rate per hour for attending training during the summer.

Many institutions neglect to consider those costs that are deemed hidden costs. Why this? Because they are difficult to estimate, not all hidden costs are tangible costs, for example, one of these costs, for John Morrison, is related to the increase in network traffic because of online course material. In this area of costs has to be considered office space, provision for computer system, telephone services, heating and lighting, central finance office, president office, human resources and so on. One of the most difficult things to do is the allocation of them. Bates (2000) says that there are three possible way:

- not to charge users
- to average overhead costs out over each operational functions using the service
- spread the costs over all operational units whether they use the service or not.

Other hidden costs are the ones related to the construction and maintenance of the website because they can be considered internal departmental costs and believed to be negligible.

Even through the costs seem to be lofty in the beginning; in the long term costs are likely to be lower than other types of DL.

The fifth type of cost is related to the developing of online courses. The development of a course cannot happen overnight and there are no assurances about how long it will be. For Shank and Mc Vay, the advance of a course depends on: resources available to the developer, technical abilities, pedagogical knowledge, availability of content, form of content (electronic or not), availability of developers and faculty, complexity of course, objectives and desired outcomes of course, type of instructional strategies necessary,

programming needed.

Sometimes happen that the budgeted number or hours for the developing are not follow so it's better to not consider this type of cost in time because there are too many unknown variables.

The best methods for compensation in this case are: flat stipend for development or contractual development.

The last typology is related to teaching in Distance Learning.

Many instructors fear that once a Distance Learning is developed, because of the investment in technology, they will not need to be kept around to teach the course. Of course this is a wrong idea. Like it was already said, technology cannot be enough to provide a course of quality and also machine cannot substitute professors, especially in the interaction with the students.

Table 11:MAIN COSTS FOR DISTANCE LEARNING PROGRAM DEVELOPMENT

- investment in technology infrastructure and bandwidth charges
- support personnel cost (technical and administrative)
- faculty development/training cost
- hidden costs (office space, provision for computer system, heating and lighting,...)
- developing of online courses and needed material cost
- teaching cost

1.4.2 COST EFFICIENCY- COST EFFECTIVENESS

Cost-efficiency and cost-effectiveness are two similar terms related to financial performance but they differ in meaning: efficiency is the ratio of output to input focuses on the quantity: "how much output it's possible to obtain from the input" and effectiveness is concerned with only output focuses on the quality: "how relevant the output is".

Rumble (1997) sustains that a learning method is relatively cost-efficient in the case that its outputs cost less per unit of input (how expensive is Distance Learning in comparison to other forms of instruction?) and it is cost effective if its outputs not only spend less cost than others but also are relevant to learner's needs (are the educational outcomes resulting from Distance Learning worth the costs?).

A Distance Learning program is often considered cost efficient because of its potential to benefit from economies of scale. Because Distance Learning course enrollments are not restricted by classroom size, per student costs decrease as enrollment increases reaching this potential is based on reputation, quality and costs. For Parsons (1995), there are three benefits of the analysis of cost efficiency:

1. to help the trainers look at the program through the customer's perspective
2. to provide a guide to discuss the program with major stakeholders of them
3. to be helpful to make decision related to the program

A study conducted by Phelps et al. (1991) shows that "the potential cost-effectiveness of using online technologies in distance education is still uncertain". Atkinson (1983) has discovered that "it is possible for a program to be efficient but not cost effective if the outputs which are actually produced do not contribute to the program objectives: that is it may be efficient at doing the wrong things". It's common that costs like human capital and conversion costs are underestimated; the way in which a Distance Learning course is implemented affect the cost. If it is implemented as a primary teaching medium, it is more expensive. Caffarella et al. (1992) found in a study at the *University of Northern Colorado* that "when electronic distance delivery costs were compared with those of instructor travel directly to the site, the least costly alternative was the live instruction with the instructor traveling to the remote site compressing the class into fewer weeks. This alternative was one-third the cost of any other alternative".

1.4.3 REVENUE- BREAK EVEN STUDENT

The easier part of cost-accounting is determining the revenue coming from Distance Learning. It is generated from student tuition and technology fee which some institutions apply to online courses. If student tuitions are higher or the price doesn't justify the service, students can enroll to another course provided by another university; if the cost is too low, there is a loss of money of the university. There are different methods to measure and analyze cost-efficiency, the most common are to evaluate the Cost-to-Benefit Ratio (CBR), the Return-On-Investment (ROI) and the breakeven point analysis (Morgan 2001).

The Cost to Benefit Ratio is an indicator that attempts to summarize the overall value for money of a project or proposal. It takes into account the amount of money realized by performing a project versus the amount of money necessary to execute it.

CBR = Program benefits/program costs if the higher than 1 the value is good.

The Return On Investment is a performance measure utilized to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. In DL, ROI utilizes the percentage of the net program benefits over program costs:

$$ROI (\%) = (Gain\ from\ Program - Program\ Costs) / Program\ Costs \times 100$$

It's important to consider in program benefits also what does not have a monetary value converting them, in this way it's possible to get accurate and credible results. Some methods suggested by Phillips (1997) to convert in monetary value are: output data is converted to profit contribution or cost savings; cost of quality is calculated; wages and benefits are used for the value for time; historical costs; internal and external experts; external database; participants estimates; senior management provides estimates; and HRD staff estimates.

The third method is to estimate the Breakeven Point or in the DL case, the Breakeven Student. The BEP is the point of balance in which gains equal losses; the BES is the number of students that offset the fixed cost of the DL program.

There is no formula for determining the optimum number of students. Bishop (2000) tried to determine this number based on cost analysis. According to the result, a group of 25 students appeared both fiscally viable and pedagogically sound, even though the result showed a small profit with a 20 student group. In the case of courseware, Cates (1998) shows that in the multimedia learning system developed by Academic System Corporation, in order to increase the students' success rate, the sufficient level of annual enrollment were 1.000 students per year. The study on a Distance Learning program, conducted by Whalen and Wright (1999), shows that the breakeven number of students is 112 and the Return On Investment is 228% through 3283%.

Even if the Breakeven Student results are different from program to program, faculty to faculty, the fact is that Distance Learning is more expensive than traditional learning. The decision of the how many students enroll is very important both for educational and economical reason. The online class size has to be balanced between quality and budget.

Table 12: MAIN COSTS FOR DISTANCE LEARNING PROGRAM DEVELOPMENT

- Cost efficiency: how expensive is DL in comparison to other forms of instruction?
- Cost effectiveness: are the educational outcomes resulting from DL worth the costs?

Table 13: METHODS TO ANALYZE COST EFFICIENCY

- $CBR = \text{Program benefits} / \text{program costs}$
- $ROI(\%) = (\text{Gain from Program} - \text{Program Costs}) / \text{Program Costs} \times 100$
- Breakeven student

1.4.4 COSTS' COMPARISON

The most common comparison is between Distance Learning system and traditional system of instruction. The evaluation is done considering the cost-efficiency of systems, institutions or technologies. A system is more cost-efficient than another if the unit cost of its output is lower than the unit cost of the system with which it is being compared.

Being that there are differences in output quality, it's important to measure also effectiveness and relate this to cost.

The cost efficiency of two or more educational systems is usually measured by comparing:

- *Average cost per student*, by dividing the total annual cost of the institution by the number of registered students in that year.
- *Average cost per graduate*, considering the variances in the cost of different subjects that can affect the costs per graduate and the length (in years) may vary depending on the course.
- *Cost per Student Learning Hour (SLH)*, because calculate the previous is not enough. Not all students graduate. The SLH measure is not related to the costs

of materials developed to support the course but it analyses the development/production, delivery/reception and costs of courses by media. The total cost for each media is then divided by the number of SLHs that the media gives rise to.

A study conducted some years ago, at the *University of Illinois* has found that unit costs came down on all nine courses in which Distance Learning were substituted for face-to-face instruction. A standard web-based course, with a mix of pre-prepared web materials, online discussion forums and print in the form of required text, is increasingly more cost-effective than face-to-face teaching as numbers per class increase beyond 40 per year over a four-year period. Under 20 students it is not economically worth doing. Between 20 and 40 students per year per course, any cost differences are likely to be less significant than differences in benefits.

Online training courses are less expensive than face-to-face ones provided the development costs are spread across sufficient numbers of students (possibly over several years) and provided that one takes into account both saving on travel and accommodation costs and the fact that less of an employee's productive time is lost.

The cost-effectiveness can be measured in five ways:

- 1) Measurement against a standard, the ration of the actual to the possible or ideal outcome;
- 2) Measurement of relative effectiveness, compares the effectiveness of Distance Learning against traditional education by comparing graduation rates within a period;
- 3) Measurement of learning gain looks at the improvement in students' performance over the period of their studies (e.g. Compare pre-test and final examination). This can be difficult when students enter with a variety of qualifications, or because of the diverse unit of measurement used;

- 4) Measuring overall effectiveness across a number of variables, e.g. measurement of student performance in four areas, applying weighting to each score to derive an overall score;
- 5) Attaching a cost to learning gain, the difference between an average entry test and an average exit score.

1.5 THE RESEARCH QUESTION OF THE THESIS

The purpose of this work is to investigate the Distance Learning world. Starting from the literature above reported, it's clear that the missing point of Distance Learning analysis are related to a concrete evaluation of costs needed to develop and deliver these courses and the analysis of the effectiveness of online learning linked with quality and student performances but also student engagement.

In order to fill these gaps, it's been proposed in the following chapter a dashboard of indicators that takes into account all the essential elements for a complete Distance Learning monitoring.

2 DASHBOARD OF INDICATORS: LITERATURE

2.1 ORIGINS

In order to measure performance three different classes of indicators can be used.

Financial Indicators

These are those indicators that can be built using the annual report of the organization; they can be divided into different categories:

Table 14: FINANCIAL INDICATORS		<i>Measurement principles</i>	
		Accrual Basis	Cash Basis
<i>Type of indicator</i>	Ratio	ROE, ROA, ROI, ROCE, RONA, ROIC	CFRoi, EM
	Absolute	RI, EVA	CashEVA, CVA

These indicators were introduced in order to solve two big problems that are present in the calculation of the traditional indicators (like ROA and ROE):

- The elimination of the misalignment between cash and accrual flows (RI, EVA, CashEVA);
- The elimination of the Denominator management (CFRoi, EM, EVA, CashEVA);

But they still have some limits, even if from one hand they give back results that are more complete than traditional ones, considering the influence of the cost of capital; more precise because they avoid the presence of denominator management; they are also able to show specific responsibilities at the top levels and are easy to be measured thank to the precise rules above each formula. From the other hand they allows really low short term orientation, because they are all based on past results, and timeliness.

This means that even if they can help in identifying problems can be too late for solving it.

They are very aligned with NPV but they have problems of TIME

Value Based Indicators

The aim of this typology of indicators is to create and monitor the company through the measuring of the value creation.

Total Business Return (TBR), Market Value Added (MVA) and the Total Shareholders Return (TSR) are included in this category.

The most important problem with these indicators is the timeliness (lower than any other typology) because in order to calculate some of these values some number must be translate in monetary terms and for other a forecast must be done. This necessity of forecasting has an impact also in the measurability of the indicators (is difficult to measure something that is only predicted). Value Based indicators has also some point of strength like the financial ones as, for example, the precision, completeness and an average specific responsibility (only at the level of Business Units) and they are better than the financial from the point of view of the long term orientation because they take into consideration both short and long term objectives.

Non-Financial Indicators

Their goal is to predict future cash flows moving on the timeline and anticipating problems.

Financial indicators are quantitative measures not expressed in monetary terms, traditionally they are used in operative management.

Taking into account that the value, in the organization, is created with the success in all the key processes; with the monitoring of non-financial indicators the organization can anticipate the value creation.

Non-financial indicators can be subdivided into two categories: one referred to the output and the processes used to deliver the output, and the other focused on the input.

Performance Indicators:

Table 15: NON FINANCIAL INDICATORS		
	<i>Revenues Driver</i>	<i>Costs Driver</i>
<i>Time</i>	-Time to market (time for developing new products) - Delivery Time (time for delivering catalogue products)	Throughput time (time for performing process)
<i>Quality</i>	-Claim number (conformance quality)	Spoilage percentage (Process quality)
<i>Productivity</i>	---	Labor productivity
<i>Flexibility</i>	---	Time of change
<i>Environmental compatibility</i>	-Emission level -Product compliance	Energy conservation

Table 16: RESOURCE INDICATORS			
	<i>Quality</i>	<i>Quantity</i>	<i>Accessibility</i>
<i>Technology</i>	% of revenues due to new products	# of patents	Not used manufacturing capacity
<i>Human Resource</i>	Turnover rate	# of employees	Education level of the area
<i>Image</i>	Company reputation	Marketing expenses	Surveys

The best characteristic of this type of indicators is the importance of TIME. Their long-term orientation and timeliness are very high and, because of it, they allow to have time to take decisions thank to the not immediate relation between the indicator and the NPV. From the other side if the decider chooses carefully the set of indicators he can obtain also a complete and easy to measure dashboard.

Table 17: COMPARISON OF THE DIFFERENT CATEGORIES OF INDICATORS			
	<i>Financial Indicators</i>	<i>Value Based Indicators</i>	<i>Non-financial Indicators</i>
<i>Completeness</i>	GOOD	HIGH	IT DEPENDS BY THE SINGLE INDICATOR
<i>Measurability</i>	GOOD	LOW	HIGH
<i>Long term orientation</i>	LOW	HIGH	MEDIUM
<i>Precision</i>	MEDIUM	HIGH	LOW
<i>Specific responsibility</i>	IT DEPENDS BY THE SINGLE INDICATOR	GOOD ONLY AT TOP LEVEL	GOOD AT THE OPERATIONAL LEVEL
<i>Timeliness</i>	LOW	VERY LOW	HIGH

The table clearly shows that none set is the best but each performance has at least one optimal class of indicators.

This consideration is the starting point of the continuous research of a dashboard of indicators which can contain all the typologies of indicators in order to be more suitable with the situation of the single organization.

2.2 THE BALANCED SCORECARD

2.2.1 HISTORY

The first balanced scorecard, created in 1992 by Kaplan and Norton, is composed by four different areas, or group of indicators, aggregated KPIs and a more comprehensive and synthetic view.

This first generation of balanced scorecard suggests to associate a set of indicators to each area, always considering as a base the strategy and the vision of the company.

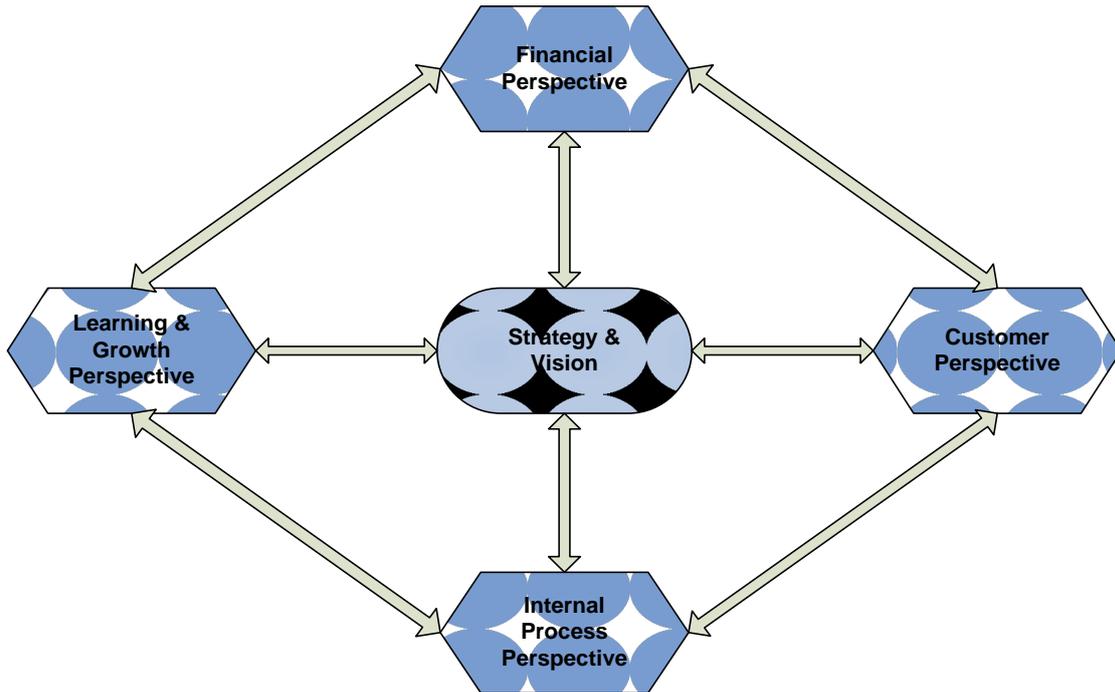


Figure 3: Balanced Scorecard

Financial Perspective: Analyses company's trends for shareholders with reference to size (market share, sales...), profitability (ROE, ROI, NOI...) and cash generation (cash flow).

Customer Perspective: Highlight performance linked to the relation between the organization and the market in terms of product range and frequency of new products introduction (measured in terms of revenues due to new products), delivery time, customer satisfaction surveys and existence of relations between the organization and the customer. In this area co-exist different type of indicators, both financial and non-financial.

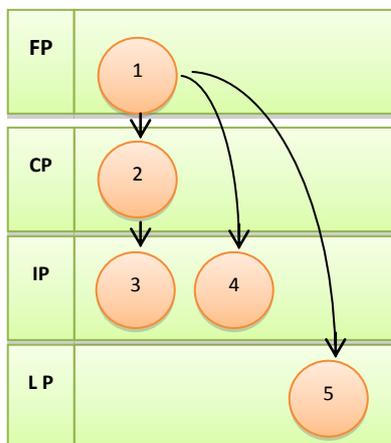
Internal Perspective: includes measures oriented to the control of internal efficiency, also in this case we have both financial and non-financial measures such as the average cost of production and the throughput time (used to measure the performances of the production) and the productivity or the frequency of introduction of new products (used to measure the efficiency in the design).

Learning and growth: highlights the innovative capability of the company with special emphasis on the product creation (with, for example, the time to market or the lead time between two different product creation) or on the innovation from an operative perspective (reducing in the construction time thanks to the increasing in the know-how).

It is important to highlight that the quality of the Balanced Scorecard depends from the choice of the single indicators, because of this Kaplan and Norton introduced what Lawrie, Cobbold and Marshall called, the second generation of Balanced Scorecard where they explained the process that has to be followed in order to have indicators that are:

- Linked by causal relations
- Updated to the objectives of the organization

Objectives



Indicators

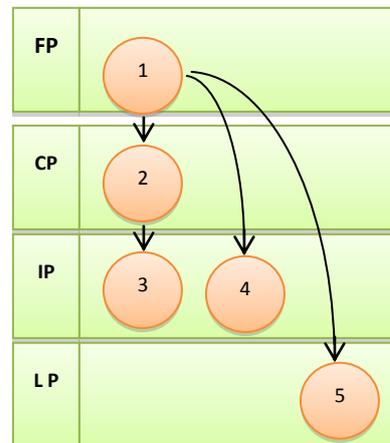


Figure 4: second generation of Balanced Scorecard

- 1) **Objectives mapping:** First of all the general objectives of the organization have to be highlighted, in general these objectives are financial and, because of this, are positioned in the financial perspective (1).

- 2) **Objectives allocation:** each general objective, in the financial area, is then subdivided in different sub-objectives each one located in its specific area of competence (2) (3) (4) (5).

Generally the relations are from the top to the bottom, or at least within the same level, and they can “jump” one or more areas (4) (5).

- 3) **Indicators association:** to each objective is associated one indicator, the set of indicators placed in the same level creates the correspondent Balance scorecard area.

This layout of the Balanced scorecard has two main problems: the first is the difficulty of defining a target for each indicators of the Balanced scorecard, indeed is not natural to set “a priori” the objectives only using theories and, only after it, calculate the real variation of the objective; the second is the difficulty of finding out the relation between the balance scorecard of the organization and the ones of its single business units. Some indicators are really difficult to be translated in operative terms.

In order to solve these problems the third generation of balance scorecard was built by Lawrie, Cobblod and Marshall.

This third balanced scorecard changed two main things:

- The process of definition of the indicators started from the definition of the destination statement in which the organization set directly the target value of its objectives. This, for Lawrie, Cobblod and Marshall (2004) is a good way to reach quickly the consensus.
- Also the strategic map was changed and subdivided in only two levels: the expected results (given by the Destination Statement) and the activities needed to obtain those results. Thanks to the fact that single activities are more linkable to single business units, this change solved the problem of finding relations between organization and single unit balanced scorecard.

2.1.2.2 Where is the innovation?

The balanced scorecard supplemented traditional financial measures with criteria that measured performances from three additional perspectives, in this way it enables companies to track financial results while simultaneously monitoring progress in

building the capabilities and acquiring the intangible assets they would need for future growth.

Balanced scorecard is the complement of the traditional methods and allows the company to link long-term strategy with its short-term actions.

The scorecard introduces four new processes that, separately and in combination, contribute to linking long-term strategic objectives and short-term actions. (“Using the balanced scorecard as a strategic Management system”, Robert S. Kaplan, David P. Norton”)

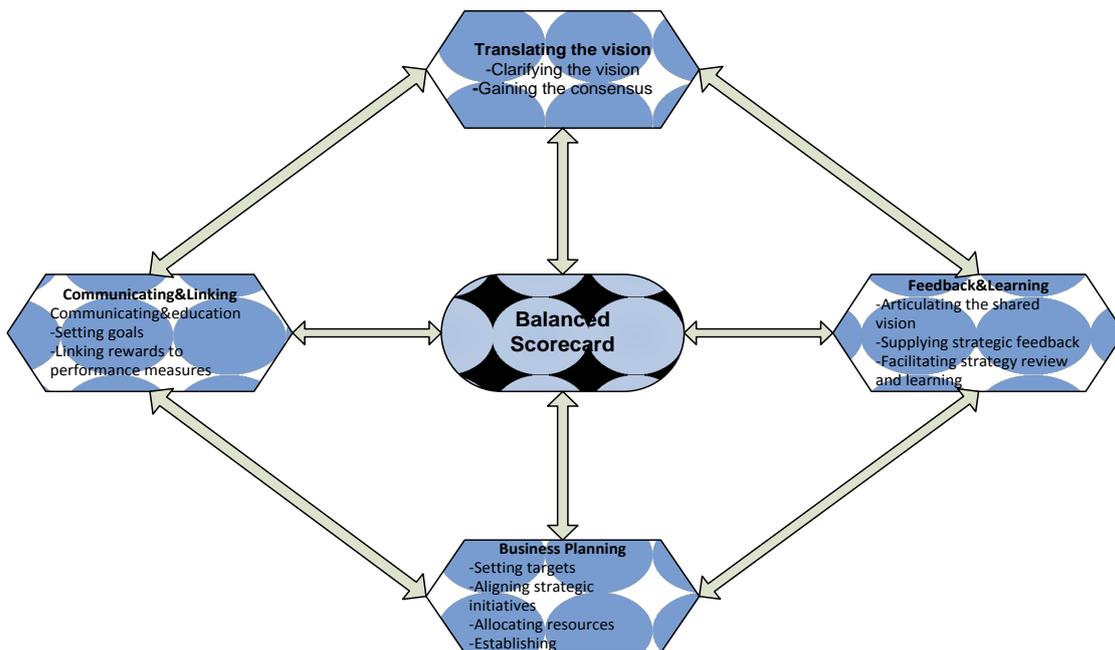


Figure 5: Balanced Scorecard as a strategic Management system

Translating the vision: helps managers build a consensus around the organizations’ vision and strategy. Despite the best intentions of those at the top, some lofty statements can’t be easily translated into operational terms that provide useful guides to action at the local level, because there is a large gap between the mission statement and employees knowledge of how their day-to-day actions could contribute to realizing the company vision.

Communicating and linking: lets managers communicate their strategy up and down the organization and link it to departmental and individual objectives. The

scorecard gives managers a way of ensuring that all levels of the organization understand the long-term strategy and those both departmental and individual objectives are aligned with it, in this way it signals to everyone what company is trying to achieve for shareholders and customers alike.

To align employees' individual performances scorecard users generally do:

- **Communicating and educating:** implementing a strategy begins with educating those who have to execute it. A broad-based communication program shares with all employees the strategy and the critical objectives they have to meet if the strategy is to succeed.
- **Setting goals:** the organization's high-level strategic objectives and measures must be translated into objectives and measures for operating units and individuals.
- **Linking reward to performance measures:** some companies believe that tying financial compensation to performance is a powerful lever. With the Balanced scorecard it is possible to establish minimum threshold levels for a critical subset of the strategic measures, individuals would earn no incentive compensation if performance in a given period fell short of any threshold, this requirement should motivate people to achieve a more balanced performance across short and long-term objectives.

Business planning: enables companies to integrate their business and financial plans. In this way balanced scorecard helps to ensure that companies' budgets support their strategies.

Once the strategy is defined and the drivers are identified managers have to concentrate on improving or reengineering those processes most critical to the organization's strategy in order to align action with strategy.

At the end of this phase is important to set targets and milestones for the measurement of the long-term objectives they would like to achieve in all the four areas.

Feedback and learning: gives companies the capacity for strategic learning. Traditionally feedback and review simply focus on whether the company (or its departments or its business units) met its budgeted financial goals. Instead the

scorecard enables companies to modify strategies to reflect real-time learning in all the four areas and not only in the financial one.

2.1.2.3 Pro&Cons

Advantages

- Completeness: thanks to the presence of four different perspectives, the balanced scorecard gives a more clear vision of both financial and non-financial measures.
- Focus on past and future performances
- Integration between short-term actions and long-term strategic objectives: helps in covering the gap between the development of the strategy and its implementation. In this way it is easier, for all the levels of the organization, to understand the vision and the mission of the company; and to apply it in their own processes of competence. Indeed meeting short-term financial targets should not constitute satisfactory performance when other measures indicate that long-term strategy is not being implemented well.
- Enables communication upstream and downstream: with balanced scorecard it is easier for the top-level to communicate the company's strategy and translate it into business units' objectives, as well, for the bottom-level it is easier to communicate operative results.
- Allows the use of DOUBLE-LOOP LEARNING: today's market is turbulent and implies complex strategies that, though valid when they were launched, may lose their validity as business conditions change, the double-loop learning is a kind of learning that produces a change in people's assumptions and theories about cause-and-effect relationships.
- The scorecard supplies the essential strategic feedback system: it should be able to test, validate and modify the hypothesis embedded in a business unit's strategy.

Disadvantages

- Tradeoff problem: the aim of Kaplan and Norton (1996) is to capture both past performance and expected future performance in a scorecard with multiple measures. Given a dozen or two dozen measures and no sense of the tradeoffs between them, the typical managers will be unable to behave purposefully, and the result will be confusion. Kaplan and Norton generally do not deal with the critical issue of HOW to weight the multiple dimensions represented by the two-dozen measures on their scorecard. The balanced scorecard is not really balance without tradeoff specifications.
- Absence of clear linkage between the performance measures and the corporate system of rewards and punishment: the balanced scorecard does not distinguish winners from losers, indeed if managers do not understand the tradeoff between multiple measures they cannot know whether they are becoming better off (except in those cases where all measures are increasing in some decisions)
- Conflicts between managers at headquarters: the uncertainty about how and what has the priority generates conflicts between managers who are likely to have different assessments of the tradeoffs.

2.1.3 THE BSC IN EDUCATION: THE BALRIDGE EDUCATION CRITERIA FOR PERFORMANCE EXCELLENCE

2.1.3.1 The Balridge National Quality Program

The Balridge National Quality Program is the vehicle of implementation of *The Malcolm Balridge National Quality Improvement Act of 1987-Public Law 100-107*:

“.. be leadership of the United States in product and process quality has been challenged strongly (and sometimes successfully) by foreign competition and our Nation’s productivity growth has improved less than our competitors’ over the last two decades” (Balridge National Quality Program, 2003)

The primary objective of the Balridge Program is to help American businesses improve their competitiveness by identifying role-model organizations, recognizing them and disseminating their best practices throughout the United States.

The centerpiece of the Balridge Program is the Criteria for Performance Excellence. These criteria define the state-of-art management model that integrates seven areas (leadership; strategic planning; customer and market focus; measurement, analysis and knowledge management; human resource focus; process management; and business results) into a comprehensive system.

The criteria place heavy emphasis on the development of a comprehensive measurement system that is aligned with the company’s strategic objectives, this measurement system yields results in different areas: (Balridge National Quality Program, 2003)

- Customer-focused results
- Product and service results
- Financial and market results
- Organization effectiveness results (including key internal operations performance measures
- Governance and social responsibility results

Clearly this set of results is consistent with the basic concept of the balanced scorecard:

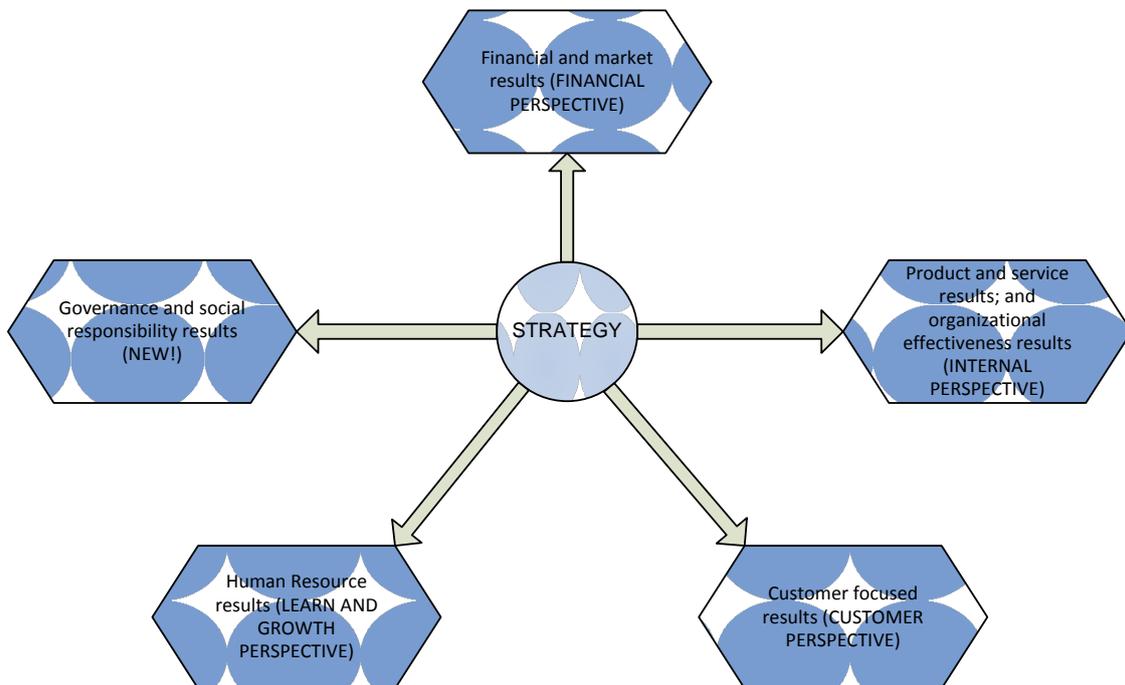


Figure 6: Balridge National Quality Program Map

2.1.3.2 The BSC in the Education Criteria for Performance Excellence

In 1995, the Balridge National Quality Program began the process of converting the business criteria for the use in the education sector, this process culminated in the development of the *Education Criteria for Performance Excellence and with Congressional approval of the Malcolm Balridge National Quality Award for Education* in 1999.

The importance of measurement permeates the Balridge Criteria for Performance Excellence to focus on measurement in the criteria first appears in the set of “Core Values and Concepts”.

These factors comprises the philosophical foundation of performance excellence and are: (Balridge National Quality Program, 2003)

- Visionary leadership
- Learning-centered education
- Organizational and personal learning
- Valuing faculty, staff and partners
- Agility
- Focus on the future: *“a major long-term investment associated with your organization’s improvement is the investment in creating and sustaining a mission-oriented assessment system focused on learning”* (Balridge National Quality Program,2003)
- Managing for innovation
- Management by fact: it means that the measures and indicators that the organization choose should best represent the factors that lead to improved student, operational and financial performance.
- Social responsibility
- Focus on results and creating value: the use of a balanced composite of leading and lagging performance measures offers an effective means to communicate short and longer term priorities and provide a clear basis for improving results.
- Systems perspective: alignment means using key linkages among requirements given in the Balridge Categories to ensure consistency of plans, processes, measures and actions.

These 11 core values and concepts are embodied in seven categories:

1. Leadership
2. Strategic planning
3. Student, stakeholder and market focus
4. Measurement, analysis and knowledge management
5. Faculty and staff focus
6. Process management
7. Organizational performance results

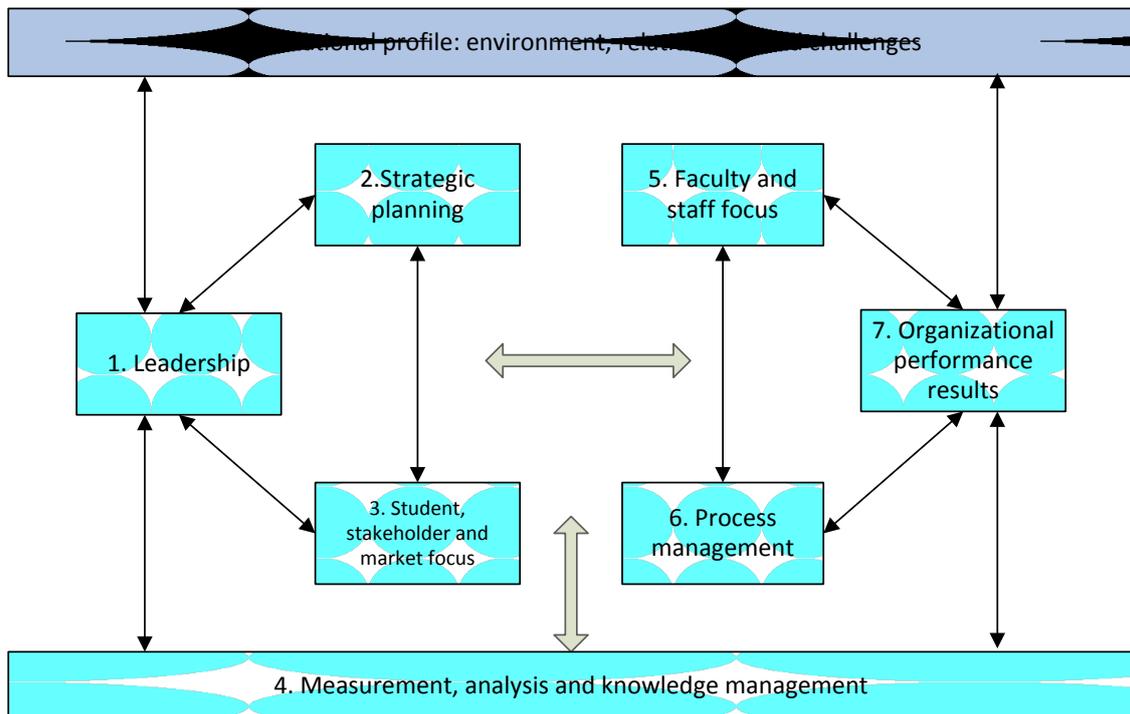


Figure 7: the seven categories of the BSC in the Education Criteria for Performance Excellence

These results clearly represent a balanced scorecard. However some of the perspectives in the education sectors are really different, obviously, from those in the business sector. Category 4 is considered critical to the effective management of the organization and to a fact-based system for improving performances; it serves as a foundation for the performance management system.

The “bottom line” or lagging indicators in the educational sector is the student learning results, all other results are considered to be leading indicators or drivers of student learning, instead for the business sector the bottom line is represented by financial and market results.

In education the expected measures are primarily internal efficiency measures (whereas in business they are the bottom line or lagging indicators).

Under the customer perspective, the student and stakeholder-focused results focus primarily on satisfaction with educational programs, instead for business sectors the results focus primarily on satisfaction with products and services.

From the learn and growth point of view, the human resource results in business and the faculty and staff results in education would include very similar measures.

Under the internal business perspective the organizational effectiveness results in business would use primarily internal efficiency measures, whereas in education the make use of measures of factors that affect students' performance and development.

The last perspective, the governance and social responsibility results, is new for both and it increases the importance of ethical practices after the recent ethics-related collapses of giant corporations and the continuing serious ethical violations (primarily in the athletics area) in educational institutions (Karathanos, 2005).

Table 18: BALRIDGE CRITERIA FOR EDUCATION		
	<i>Description</i>	<i>Examples of indicators</i>
<i>Student learning results</i>	Results should be based on a variety of assessment methods, should reflect the organization's overall mission and improvement objectives, and together should represent holistic appraisal of student learning	<ul style="list-style-type: none"> - Diploma rates - Final grade-point average - Student job placement - Salaries of graduates - Alumni development of active learning skills
<i>Student and stakeholder focused results</i>	Student and stakeholder satisfaction measurements about specific educational program and service features, delivery, interactions and transactions that bear upon student development and learning and the students' and stakeholders' future actions	<ul style="list-style-type: none"> - stakeholder satisfaction with: leadership, strategic planning, stakeholder focus, information, staff, processes, results - Satisfaction of graduates with: basic skills, individual needs, character development, transition skills, technology

		<ul style="list-style-type: none"> - average daily attendance - dropout rate
<i>Budgetary, financial and market results</i>	Instructional and general administration expenditures per student, tuition and fee levels, cost per academic credit, resources redirected to education from other areas, scholarship growth	<ul style="list-style-type: none"> - Revenues - Costs per student - Market share - State funds - Tuition comparisons
<i>Faculty and staff results</i>	Innovation and suggestion rates, courses or educational programs completed, learning, on-the-job performance improvements, crosstraining rates, collaboration and teamworking, employees well-being, satisfaction and dissatisfaction	<ul style="list-style-type: none"> - Staff evaluation - E-mail use - Faculty and staff satisfaction - Injury/accident rates - New employee orientation
<i>Organizational effectiveness results</i>	Capacity to improve student performance, student development, education climate, indicators of responsiveness to student or stakeholder needs, supplier and partner performance, key measures or indicators of accomplishment of organizational strategy and action plan	<ul style="list-style-type: none"> - Percentage of “classified” students - Support service effectiveness (current students and alumni) - Student satisfaction with guidance and counseling
<i>Governance and social responsibility</i>	Fiscal accountability, both internal and external; measures or indicators of ethical behavior and of stakeholder trust in the governance of the organization, regulatory and legal compliance, organizational citizenship	

2.1.3 THE SLOAN CONSORTIUM METHOD

2.1.3.1 History

Quality is a parameter that has to be define and measure but quality online education is still difficult to define (Meyer, 2002), doesn't exist an instrument that allow measuring quality programs and their improvement. What is important is that online education administrators cannot afford to not take the issue of quality seriously because students may go elsewhere in search of quality educational programs (Carnevale, 2006).

Dilbeck (2008) surveyed more than 200 community college administrators to determine the perception and the importance for them of quality indicators for online education programs. This study utilized the 24 quality indicators defined by the study conducted by the Institute for Higher Education Policy (IHEP) in its study (2000). These 24 indicators are a viable tool but they didn't attempt to create a measurement tool that could be used for quality improvement.

In 2010 Kaye Shelton, from *University of Nebraska* and Sloan Consortium, an organization dedicated to improving the quality of online education, carried out a research with the purpose of define if the IHEP quality indicators are still relevant today and if there are some new ones.

In 2012, Kaye Shelton and Janet Moore preside the conference "Using the Quality scorecard for the Administration of online programs". During this conference it was explain why and how to use a quality scorecard presenting the latest version of the one already redacted in 2010.

2.1.3.2 Quality in distance learning: definition and classification

The 24 quality indicators described by IHEP are considered foundational to quality Distance Learning, chosen to be absolutely essential by various respected online education leaders of higher education institutes. They are classified as follow:

- a) Institutional support;
- b) course development;
- c) teaching and learning;
- d) course structure;
- e) student support;
- f) faculty support;

g) Evaluation and assessment

2.1.3.3 Quality scorecard for the administration of online education programs

Methodology

The method adopted to select the indicators is the Delphi method. This technique is used to gain consensus among a panel of experts on the given research topic (Fischer, 1978). The methodology is a structured flow of information that through a series of systematic surveys and reciprocal feedback to survey participants after each round.

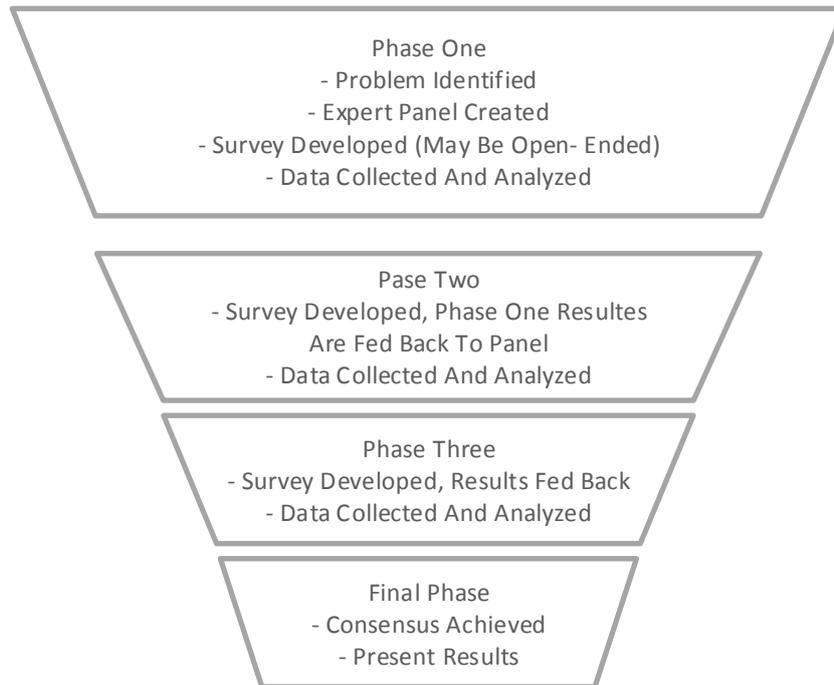


Figure 8: Typical steps for a generalized Delphi study

Result

The starting 24 quality indicators of IHEP were been modified into 25 and then, thanks to the collaboration of the experts the scorecard introduced 45 new parameters, adding 2 new categories:

- h) technology support
- i) student and social engagement.

Institution can give to each indicator a score from 0 to 3 points, where:

- 0- not observed;
- 1- insufficient;
- 2- moderate use;
- 3 meets criteria completely

The perfect score is 210 points. If a university scores 125 points or below, it is unacceptable, in other cases are needed little or significant improvements.

2.1.3.4 Pro & Cons

Table 19: PRO & CONS OF QUALITY SCORECARD	
<ul style="list-style-type: none">- Quality indicators fit better with DL because they are born for that.- The generation of these indicators came from the comparison among experts in this sector.- focused on input, on something that administrator can manage and influence- Measure and report on quality internally and externally- can be considered like an industry standard	<ul style="list-style-type: none">- It does not study in the deep costs and cost accounting of developing and delivery a DL course- not focused on output

The Sloan Consortium identified Five Pillars of Quality Online Education (Bourne & Moore, 2002).



Figure 9: Five Pillars of Quality Online Education

- 1) Learning Effectiveness evaluates the learning activities because, for Lorenzo and Moore (2002), the success of the student is related with his interactivity with the instructor and the ability to create a learning environment of inquiry.
- 2) Student Satisfaction focuses on the experience of the student by providing necessary support services like advising and counseling or opportunities for peer interaction. It evaluates the satisfaction of the students with what and how they learned in the class or program.
- 3) Faculty Satisfaction is higher when the institution support faculty members with technical infrastructure, training and ongoing technical and administrative assistance.
- 4) The Scale Pillar was called at the beginning Cost Effectiveness but Scale has a wider meaning. The focus is not only on cost effective programs but includes also costs monitoring to keep students and faculty and quality improvement.
- 5) Access Pillar assures that students have full access to the learning material and needed services.

2.1.3.5 Relationship between Sloan pillars and quality indicators

It's possible to make a comparison among quality principle, defined by the five pillars of Sloan Consortium, for Higher Education and for companies.

Table 20: SLOAN C PILLARS VS. QUALITY INDICATOS		
<i>Quality principles</i>	<i>For Higher Education</i>	<i>For Corporations</i>
<i>Learning effectiveness</i>	Learning effectiveness, new knowledge, applied theory, continuous feedback from stakeholders	Productivity, improved operations
<i>Cost effectiveness and Institutional commitment (Scale)</i>	Cost effectiveness, brand recognition, scalability, public service and influence, prestige, funding	Cost Savings, brand, market capture
<i>Access</i>	Wider access including international communities, greater research and development opportunities, faster response to new fields of study, capacity enrollment	Market Growth, distributed team work
<i>Faculty (employee) satisfaction</i>	New populations of students and colleagues, greater satisfaction with teaching and learning	Competition, competitive intelligence, understanding
<i>Student (customer) satisfaction</i>	Learner and teacher satisfaction and loyalty, career opportunities including OJT, internships, and mentorships	Recruitment and retention

Miller says: “in the business of education—‘to improve learning while achieving capacity enrollment’—continuous quality improvement (CQI) helps people to set goals, identify resources and strategies, and measure progress towards the institution’s ideal vision of its distinctive purpose.”(Moore, 2003)

The goal of each of the five pillars is presented in the CQI terms form measuring continuously improving learning, affordability, access and faculty and student satisfaction.

Table 21: FIVE PILLARS' GOALS, PROCESSES, METRICS & INDICES

<i>Goal</i>	<i>Process/Practice</i>	<i>Metric</i>	<i>Progress Indices</i>
LEARNING EFFECTIVENESS			
The quality of learning online is demonstrated to be at least as good as the institutional norm	Academic integrity and control reside with faculty in the same way as in traditional programs at the provider institution.	Faculty perception surveys or sampled interviews compare learning effectiveness in delivery modes Learner/graduate/employer focus groups or interviews measure learning gains	Faculty report online learning is equivalent or better Direct assessment of student learning is equivalent or better
COST EFFECTIVENESS AND INSTITUTIONAL COMMITMENT (SCALE)			
The institution continuously improves services while reducing costs	The institution demonstrates financial and technical commitment to its online programs Tuition rates provide a fair return to the institution and best value to learners Scalability	Institutional stakeholders show support for participation in online education Effective practices are identified and shared	The institution sustains the program, expands and scales upward as desired, strengthens and disseminates its mission and core values through online education
ACCESS			
All learners who wish to learn online can access learning in a wide array of programs and courses	Program entry and support processes inform learners of opportunities, and ensure that qualified, motivated learners have reliable	Administrative and technical infrastructure provides access to all prospective and enrolled learners Quality metrics for information dissemination; learning resources	Qualitative indicators show continuous improvement in growth and effectiveness rates

	access	delivery; tutoring services.	
FACULTY SATISFACTION			
Faculty are pleased with teaching online, citing appreciation and happiness	Processes ensure faculty participation and support in online education (e.g. governance, intellectual property, royalty sharing, training, preparation, rewards, incentives and so on)	Repeat teaching of online courses by individual faculty indicates approval Addition of new faculty shows growing endorsement	Data from post-course surveys show continuous improvement: At least 90% of faculty believe the overall online teaching/learning experience is positive Willingness/desire to teach additional courses in the program: 80% positive
STUDENT SATISFACTION			
Students are pleased with their experiences in learning online, including interaction with instructors and peers, learning outcomes that match expectations, services, and orientation	Faculty/learner interaction is timely and substantive Adequate and fair systems assess course learning objectives; results are used for improving learning	Metrics show growing satisfaction: Surveys (see above) and/or interviews; Alumni surveys, referrals, testimonials; Outcomes measures; Focus groups; Faculty/Mentor/Advisor perceptions;	Satisfaction measures show continuously increasing improvement Institutional surveys, interviews, or other metrics show satisfaction levels are at least equivalent to those of other delivery modes for the institution

2.1.4 COMPARISON AMONG THE 3 DIFFERENT METHODS

The three different methodologies are now analyzed for their conformity to different characteristics:

- **Alignment with the strategy:** The alignment is fundamental in order to have a Dashboard of indicators perfectly suited with the organization or in those cases where the subject of the analysis can't be related to other standardized situations. In this category both Balance Scorecard and Balridge method are really aligned with the strategy instead the SLOAN approach is the same for every case and so in NOT ALIGNED.
- **Target Definition:** As already said in previous paragraphs the definition of targets can present some problems indeed is difficult to set target of something that is unknown. BSC is the only one that try to solve this problem in its 3rd generation.
- **Personal Responsibility:** one of the basic scopes of a dashboard of indicators is to highlight problems, with the identification of the person, or the department, responsible is easier to investigate and find solutions. This is not only an indication of guilty, is also a way for identifying a deserving person or area and to give incentives.
- **Completeness:** When the dashboard is unique for the whole company it must cover all the core-areas of the organization in order to have a complete view of the situation. The SLOAN approach, within the three, is the less complete because it misses a very important area of analysis: the cost.
- **Future Oriented:** The dashboard is useful mainly at top-level, where the strategy and the long-term decisions are made. This is way this characteristic is so important. All the methods are future-oriented even if in different ways. The BSC creates a strict link between actions and long-term objectives of the company, and the Balridge method is totally mission-oriented.
- **Focus:** the focus of the dashboard can be on the whole company performance or on a specific characteristic.
- **Balance:** The presence of trade-off can be a big problem in a dashboard, different indicators which can't be implemented without the decreasing of other ones. In this case the only method that is able to avoid this problem is the SLOAN

- **Prioritize:** this characteristic is strictly linked with the previous one, the Balridge prioritizes its objectives in order to avoid trade-offs.
- **Qualitative/Quantitative results:** Different unit of measure can be used, the SLOAN uses qualitative measures (good, bad...) instead the BSC is the most complete and uses both.

Table 22: COMPARISON AMONG THE 3 METHODS			
	<i>BSC</i>	<i>BALRIDGE</i>	<i>SLOAN</i>
<i>Alignment with strategy</i>	HIGH	HIGH	LOW
<i>Target definition</i>	GOOD (for the 3rd gen.)	LOW (many performance are difficult to be set)	---
<i>Personal responsibility</i>	GOOD (for the 3rd gen.)	GOOD	GOOD
<i>Completeness</i>	HIGH (4 perspectives)	HIGH	MEDIUM (no cost perspective)
<i>Future oriented</i>	HIGH (strict link between actions and long-term objectives)	HIGH (mission-oriented)	HIGH
<i>Focus</i>	LOW (general scorecard of indicators)	MEDIUM (focused on education)	HIGH (defined from experts of distance learning)
<i>Balanced</i>	VERY LOW (big presence of trade off)	LOW (thanks to the prioritization)	GOOD
<i>Prioritize</i>	VERY LOW (uncertainty of what has the priority between the different objectives)	GOOD (measures used to communicate short and long term priorities)	LOW
<i>Qualitative /Quantitative results</i>	BOTH		QUALITATIVE

3. METHODOLOGY

In the previous two chapters a deep analysis of the literature was made.

The literature about MOOCs, distance learning programs and platforms highlight the most important characteristics of a “distant student” and in what he differs, from the traditional one, from the point of view of the motivation, the dropout rate and all the insecurities that the online student has to face with respect of the traditional one.

The review about the different methodology available today for assessing company performance results and costs, both for business and education sectors is based on three major models:

- Balanced Scorecard
- Sloan Consortium Approach
- Baldrige Education Criteria for Excellence

From the study of these models emerged that there is one big area that is considered very important for business companies and, nowadays, is totally absent in the existing educational methodologies: the financial perspective.

Another important aspect to take into consideration is the increasing importance of entities, as a whole, within the society. Recently this feature, called “sustainability”, starts attracting the attention of the business sector. Sustainability tries to balance influence of the company on economy, society and environment in order to have the highest impact on economic value, in the long-term, for the organization. Being a topic that is becoming more and more important, it could be interesting to analyzes the sustainability also in university’s world.

3.1 THE iPACE MODEL

The basic characteristics of the new model can be easy identified in the previous paragraph.

In order to include all of them the construction of the model has to start from the analysis of the strategy of the company, in our case the University, which allows the identification of 4 main areas that are explained more in detail in the following paragraphs:

- Student Satisfaction
- Internal Efficiency

- Financial Perspective
- Social and Students' engagement

3.1.1 STUDENT SATISFACTION

We choose the Student Satisfaction as one of the 4 perspectives for different reasons. First of all, during our literature review we have noticed that the typical “Distance Student” is a person with a job and/or a family and with multiple commitments. These characteristics influenced a lot the motivation of the student and its possible dropout. For this reason the University must be focused on distance student satisfaction more than with other students, because they are on their own, without the support and the encouragement of other students, professors or tutors and with more responsibility to manage than other traditional students can have.

A second reason is that in all the typology of dashboard of indicators the customer and its own point of view is always considered, in an education perspective the customer can be the student.

Inside the student satisfaction area there are three different sub-areas called:

- Flexibility: Flexibility in terms of liberty of choice, space and time from the student point of view.
- Support: Support to students from both technical and learning sides.
- Brand: This category can be useful to identify how much is important the Brand and the iPace name for the satisfaction of students.

Going more in detail, in each sub-area can be identifying a set of indicators which can better explain all the aspect of the category.

Table 23: FLEXIBILITY	
<i>Indicator</i>	<i>Description</i>
<i>Credit Flexibility</i>	Does the student have the possibility of choosing the number of credits per academic year/semester that fit better with his own personal life?
<i>Course Flexibility</i>	Does the student have the possibility to choose the courses for which he has a specific interest inside a pool of courses?
<i>Document Access Flexibility</i>	Does the student have the possibility to download the materials and the lectures from differ support (ipad, iphone, IOS...) and to watch the lecture both online and offline?
<i>Personal Path</i>	This indicator aims at measuring the number of deadlines and the grade of liberty of the student in managing the assignments and the study materials along the semester.
<i>Exam Flexibility</i>	Does the student have the possibility of doing the exam from his home? Or he has to go to some authorized companies? Or he has to come to the university campus?

Table 24: SUPPORT	
<i>Indicator</i>	<i>Description</i>
<i>Student Training</i>	This indicator aims at measuring the number of hours of training that the student has to follow in order to be able to use the platform.
<i>Tutors</i>	This indicator aims at measuring the number of tutors that are available for students inside the course and for the overall program.
<i>Communication Channels</i>	This indicator aims at measuring the different ways that the student has to contact the professor after and during the lesson.
<i>Responsiveness</i>	This indicator aims at measuring the lead time between when the student sends a request and when he receives the answer from the professor.
<i>Tutor Availability</i>	This indicator aims at measuring the lead time between when the student sends a request and when he receives the answer from the tutor.
<i>Technology Support</i>	This indicator aims at measuring the lead time between when the student sends a request and when he receives the answer from the technical staff.

Table 25: BRAND	
<i>Indicator</i>	<i>Description</i>
<i>National Positioning</i>	This indicator aims at measuring the position of the university in the most famous ranking of the nation in order to understand its own position in the local market.
<i>International Positioning</i>	This indicator aims at measuring the position of the university in the most famous ranking of the world in order to understand its own position worldwide.
<i>N° of Patents, Researches and Publications</i>	Can the number of publications and patents be useful in increasing the popularity of the university name in the market?
<i>N° of accreditations earned</i>	Can the number of accreditation (both mandatory and not) be useful in increasing the popularity of the university name in the market?

3.1.2 INTERNAL EFFICIENCY

Another very common set of indicators is Internal Efficiency. Also for university, like for a company, is important to understand how much the processes are efficient. The basic question is: Is the University efficient in producing, developing and delivering the Distance Learning program?

Answering this question, analyzing this section, a good dashboard of indicators has to consider not only technology efficient but also how much staff, both faculty and technical, are proficient.

Inside the Internal Efficiency area there are four different sub-areas called:

- **Technology Support:** to analyze the support given by technology
- **Student Learning Results and Performance:** to calculate the influence that an online course can have on students' performances and results.
- **Faculty and Staff Support:** to analyze the level of assistance that faculty and technical staff give to students in order to increase the quality of the programs proposed
- **Course Structure:** going more in detail about the efficiency of the single courses

For each of these sub areas it's been identify a set of indicators which can better explain all the aspect of the category.

Table 26: TECHNOLOGY SUPPORT	
<i>Indicator</i>	<i>Description</i>
<i>Continuity</i>	To measure if it's important to guarantee the access to the platform 24/7
<i>Backup Frequency</i>	This indicator aims at measuring the adjust storage capacity of information based on students' requests (e.g. when the number of students increase)
<i>IT low frequency</i>	To measure the period of low frequency of the platform in order to plan maintenance activities of the web site
<i>Innovation Rate</i>	Considering technology like a strategic asset, can a systematic and monitored introduction of new hardware and/or software increase the quality of distance learning programs?
<i>Diffusion Rate</i>	To create redundancy of resources in order to provide an high connection flexibility to the clients (e.g. who doesn't live in U.S)
<i>Security</i>	This indicator aims at measuring and controlling the diffusion of data and information

Table 27: STUDENT LEARNING RESULTS AND PERFORMANCE	
<i>Indicator</i>	<i>Description</i>
<i>Dropout Rate</i>	This indicator aims at measuring the number of students that abandon the course
<i>Learning Gain</i>	This indicator looks at the improvement in students' performance over the period of their studies in an online course
<i>Salaries of graduated</i>	This indicator calculates the increasing of student salaries after the graduation in an online program

Table 28: FACULTY & STAFF SUPPORT	
<i>Indicator</i>	<i>Description</i>
<i>Feedback on assignments</i>	Is it important to guarantee a quick feedback from faculty to students' assignments?
<i>Feedback on questions</i>	Is it important to guarantee a quick feedback from faculty to students' questions?
<i>Feedback on technical problems</i>	Is it important to guarantee a quick feedback from technical staff to students' technical problems?
<i>Faculty satisfaction</i>	In order ensure quality of a program; is it important to measure faculty satisfaction? (E.g. support in development and delivery phases, monetary incentives...)

Table 29: COURSE STRUCTURE	
<i>Indicator</i>	<i>Description</i>
<i>Frequency of renewing of materials</i>	Is necessary to measure, after a certain period of time, the renewing of teaching materials with new information?
<i>Tools utilized</i>	To define which tools are needed for a specific course that can increase learning and communication
<i>Disabled students support</i>	This indicator measures if through specific application the access to disabled students to online courses is guaranteed
<i>Learning objectives</i>	This indicator helps to clarify which are the standards and to know where the institutions want to go
<i>Completeness</i>	This indicator helps to identify and clarify to students which are all the basic information and the expectation about the course

3.1.3 FINANCIAL PERSPECTIVE

Even if for a company, this perspective, could be considered like the most important, during the literature analysis, this aspect, is not been explained in the right way. The existent evaluation methods focus more on quality, organizational aspects and students' satisfaction. A university, like each other organization, both profit and no-profit, cannot allow to leave this aspect not well analyzed.

A good financial management can have a good impact on all the others areas analyzed, can increase students satisfaction through an increasing of human or technical resources.

For the financial perspective, are been classified three sub areas:

- Personnel Costs: the analysis of the costs related to the different actors that are engaged in an online program
- Lifecycle Costs: the analysis of the costs generated in the different phases of the online program/course life
- Traditional Indicators: the analysis of financial perspective through the traditional financial indicators

Explaining these sub areas more in details:

Table 30: PERSONNEL COSTS	
<i>Indicator</i>	<i>Description</i>
<i>Technical Costs</i>	This indicator analyses the cost of technical staff
<i>Administration Costs</i>	This indicator analyses the cost of administrative staff
<i>Professors and Tutors Costs</i>	This indicator analyses the cost of faculty

Table 31: LIFECYCLE COSTS	
<i>Indicator</i>	<i>Description</i>
<i>Initial Investment</i>	After the feasibility study, is it important to measure the initial investment needed to start an online program/course?
<i>Development</i>	This indicator measures the cost of the activities required to develop the program (e.g. from paper to digital, web page and platform creation, videotaping of lectures,...)
<i>Delivery</i>	This indicator measures the costs of the activities required to deliver the course to students (e.g. teaching)
<i>After Delivery</i>	This indicator measure the cost of the activities required after the delivery phase (e.g. maintenance, student support and services,...)

Table 32: TRADITIONAL INDICATORS	
<i>Indicator</i>	<i>Description</i>
<i>ROI</i>	To evaluate the efficiency of an investment
<i>Equity Variation</i>	To measure the amount of additional equity that is being added to the equity provided by the stockholders
<i>ROS</i>	To evaluate the efficiency of the university, considering with Sales like Tuitions and Fees
<i>Asset Turnover</i>	To analyze the efficiency in using the assets
<i>Financial Independence Ratio</i>	To measure the independence of the University
<i>ROE</i>	To measure the interest of shareholders
<i>Reinvestments</i>	To evaluate the availability of operating cash flows for purchase assets for distance learning program

3.1.4 SOCIAL & STUDENT ENGAGEMENT

This fourth perspective can be considered the novelty of our research.

Nowadays the responsibility of the University to its students and the overall population is increasing.

The student is like a son and the university is the father that has to make it grow not only from a pure learning perspective but also as an individual that is part of the world and that has an active role in the society.

With the diffusion of internet also the responsibility to the entire world increase, information can be easy found, ethic and intellectual property are at risk, is responsibility of the university to protect the culture from its own students and also to protect students from the web world.

Also in this area we have identify three main sub-categories:

- **Social Responsibility:** This category aims at measuring the level of protection to avoid cheating.
- **Partnerships:** This category helps in monitoring the different organizations that have a particular interest in students and in their curricula.
- **Student Engagement:** this category aims at measuring the level of engagement effort of the university.

Going more in-deep with all these sub-categories we have identify the following indicators:

Table 33: SOCIAL RESPONSIBILITY	
<i>Indicator</i>	<i>Description</i>
<i>Protection of intellectual property</i>	Is the university able to avoid that its own students cheating during online exams?
<i>Protection of internal intellectual property</i>	This indicator aims at measuring the level of protection that the university reach in order to protect what its own students create during their permanence in the university itself.

Table 34: PARTNERSHIPS	
<i>Indicator</i>	<i>Description</i>
<i>N° of collaborations</i>	This indicator aims at measuring the number of companies that are collaborating with the university offering stages and jobs and which are interested in students' curricula.
<i>Average importance of the collaborating companies</i>	This indicator aims at measuring the importance of the collaborating companies both in terms of number of employees and of profit.

Table 35: STUDENT ENGAGEMENT	
<i>Indicator</i>	<i>Description</i>
<i>Seminars</i>	This indicator aims at measuring the number of lectures not strictly linked with the particular course that the student can follow in order to improve its own knowledge.
<i>Extra-courses sponsored</i>	This indicator aims at measuring the number of activities not strictly linked with the particular course that the student can follow in order to improve its own knowledge. (eg. Theatre, Language courses...)
<i>Course Design</i>	Is the university promoting a course design that is attractive for both students and faculties?
<i>Students Collaboration</i>	Is the university promoting the student-student collaboration with projects and group works?
<i>Engagement Effort</i>	Is the university able to increase students' participation during lectures and courses?

3.2 METHOD

A dashboard perfectly suited on iPace program characteristics must consider the point of view of ALL iPace shareholders from professors to students including also administration and technical staff.

To validate the model framework and collect opinions and suggestions of all the actors about what is important for them to measure a questionnaire was created (appendix 7.2). For each actor was scheduled, by phone or in person, an interview of one hour during which the shareholder has to answer to different questions and give a mark to all the area, sub-area and indicators in the checklist.

The decision to use a scale from 0 (not useful) to 3 (very important) arises to avoid the concentration of the responses in the middle, indeed in a scale from 1 to 5 the answer: "3" doesn't give any particular indication about the position of the subject against the question (more positive or more negative?).

In order to avoid predictable useless answers was asked to respond the questionnaire from their own perspective and using their knowledge and experience in the specific area.

To each interviewed was asked to:

1. Give a mark from 0 to 3 to each perspective: student satisfaction, internal efficiency, financial and social and student engagement. Where “0” means that is not important to measure this specific area and “3” means that is very important to measure it.
2. For each area rank from the most important to the less important the different sub-area (eg. Flexibility, support and brand for the student satisfaction.)
3. For each indicator give a mark from 0 to 3 and, where possible a comment.

3.3 DATA CHARACTERISTICS

During the two weeks spent in New York City 26 interviews were made. Some by phone other in person, very often single interviews but also 3 groups composed by two, three and four people.

These 26 people can be subdivided into 3 main categories:

- Administration: inside this category there is a clear distinction between **strategic administration**, which include people involved (at different level) in the overall process concerning iPace program; and **iPace function** which, instead, are more focused on specific aspect of the program (admissions, service coordination..).
- Faculty: because of the particular condition of iPace program, where many professors cover also administrative positions, also this category is subdivided in two sub groups: **professors** and **professors&administrations**.
- Students

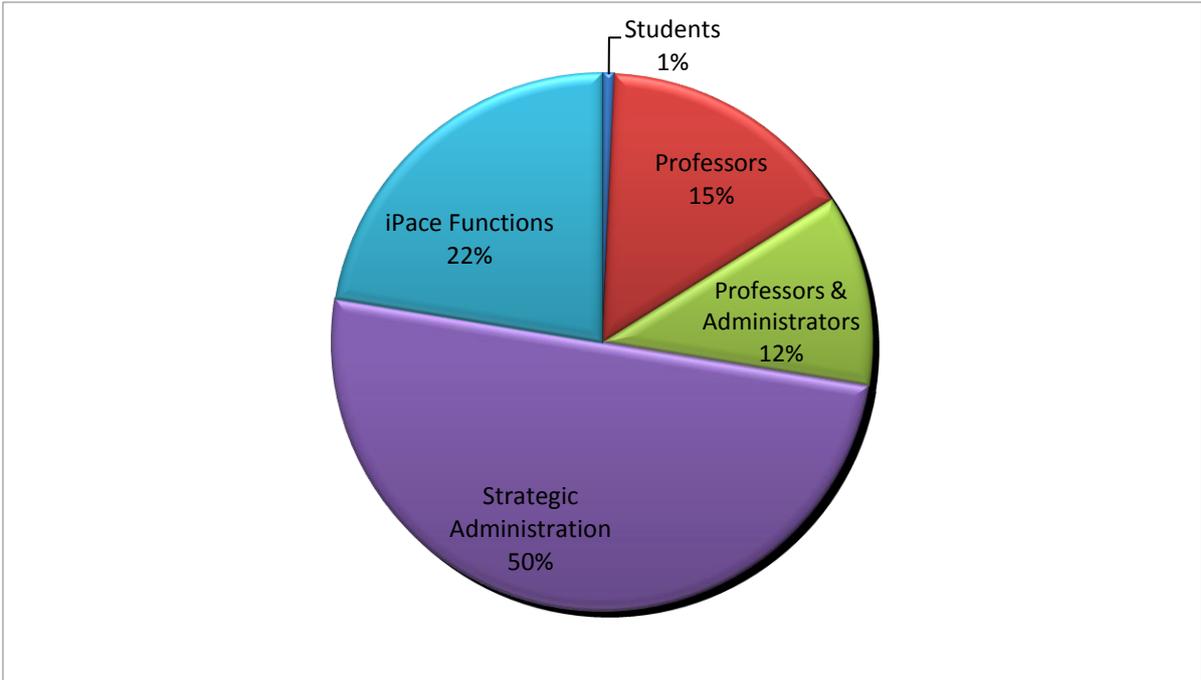


Chart 4: sample composition

It is clear from the graph that the group of people interviewed is pretty unbalanced, with an half coming from the strategic administration of Pace and iPace program. This sample composition can have a huge impact on questionnaire results and requires an analysis of the answers in order to identify if the replies are homogeneous or not, in this second case it would be appropriate to increase the number of people interviewed in some sub-group and, in this way, have a rebalanced situation.

Other possible risks, related to the choice of the sample and the data gathering method, must be taken into consideration in order to identify possible point of strength and weaknesses of the model.

The possibility that some stakeholders may have answer to the questionnaire without showing their own point of view at all, because of their sense of duty to the university, must be verify.

Also the hypothesis that some stakeholders answer to questions in which they are not so familiar must be considered, because in this way the data collected are more difficult to analyses since they are broad and various, and someone without a logical sense.

3.3.1 INTRODUCTION ABOUT PACE UNIVERSITY AND iPACE PROGRAM

Pace university is a private university in the New York metropolitan area with campuses in New York City and Westchester Country (New York).

In 2004-2005 Pace University started its online program called iPace that allows online students to receive the same Pace University degree as the traditional ones. The program is addressed to busy adults who are working full-time or have other obligations that do not enable them the time to be in the classroom during the week or during the working hours.

Online courses at Pace University run on a semester basis, as do most traditional classes. Each course, composed by 20 students as maximum, has a specific start and ending date and, very often, lasts about 15 weeks bringing new lectures and assignments. Depending on the single course assignments might include readings, quizzes, review of websites, participation in discussion boards, problems, projects, papers, midterms and final exams.

Enrolling in a iPace program allows to transfer college credits previously earned (no more than 15 years ago) with a grade of 2.0 or higher ,if they satisfy course work requirements for the major and degree at Pace, for a maximum of 68 credits from two-year institutions and 90 credits from four-year institutions.

Tuitions for iPace program are calculated on credit-basis and are different for each course; instead fees, without considering proctoring and the computer science, are the same for all the courses and include:

Fee	Description
50\$	Application fee
100\$	Tuition deposit
45\$	Technology fee (per semester)
25\$-50\$	ProctorU online test Proctoring fee
40\$	Technology course fee for school of Computer Science courses

At the moment iPace program includes four different bachelors taught by 6 full-time and 15 part-time instructional faculties:

- BBA in Business Studies
 - Business communication: enables students to develop and execute a fully integrated, strategic marketing plan that includes new and traditional media; to work in a global business environment and to effectively impact business communications and decision-making.
 - Accounting/Internal Auditing: prepares students to consult with companies to drive improvements in their operations and to investigate potential fraud within an organization and safeguard company assets.
- BS in Nursing: courses are taught by the same professors as for traditional ones, include evidence-based theory courses linked to clinical practice. The clinical practice experience is individualized to meet the essential of BSN education for professional nursing practice.
- BS in Professional communication studies: The program covers communications. Computing, digital media, writing and administration, it helps the student in succeeding in many cutting-edge professional environments
- BS in Professional technology studies: prepares for a job in law enforcement, a government agency or a private company with a strong knowledge in information technology, criminal justice system and cybercrime and an expertise in technical forensic computing investigations on PCs and mobile devices.

Table 36: iPACE PROGRAMS				
Bachelor	Course composition	Completion time	Accreditation	Tuitions
BBA in Business Studies	100% online	3 years	Offered by Pace's Lubin School of business which is accredited by AACSB international	535\$/credit
BS in nursing	Both online and in presence	15 month-2 years	---	680\$/credit
BS in Professional Communication Studies	100% online	3 years	Offered by Pace's Duson college of Arts&Science	535\$/credit
BS in Professional Technology Studies	100% online	Two and one-third years	Offered by Pace's Seidenberg School of Computer Science and Information Systems	535\$/credit

In 2013 the iPace program was ranking as “best online bachelor’s program” by USnews ranking.

The one-year retention rate continues to increase in the last four years starting from 78% in 2009 to the 83% of 2012.

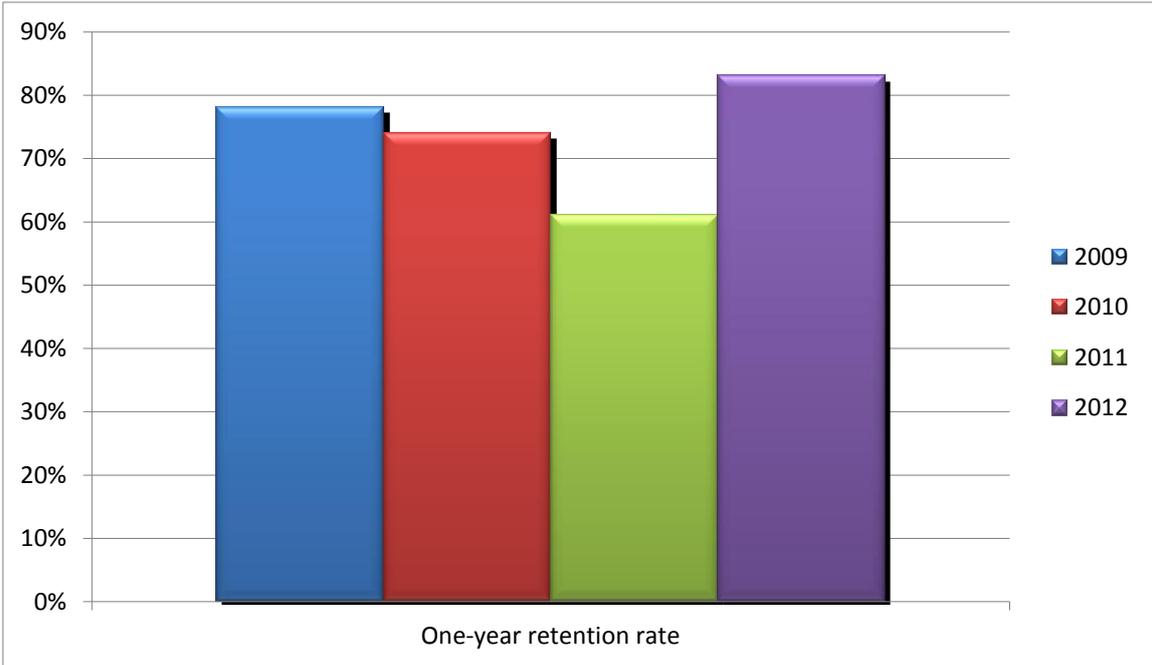


Chart 5: one year retention rate, usnews.com

With a target time to earn final 25% of credits of 3 years in last four academic years the graduation rate in 3 years from the enrollment increases, reaching during the last Academic Year 2011-2012 the 50% of the student population.

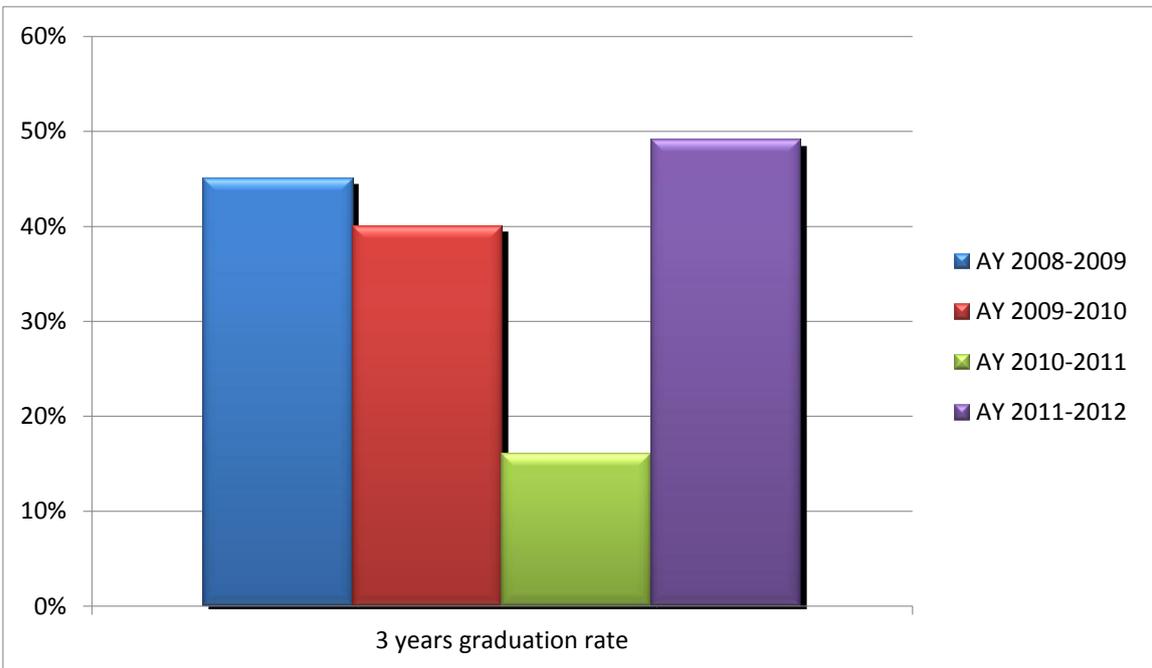


Chart 6: three years retention rate, usnews.com

The student body is composed by 212 students enrolled in which the 70, 3% are male and the remaining 29,7% are female. The average student's age is 38 years with:

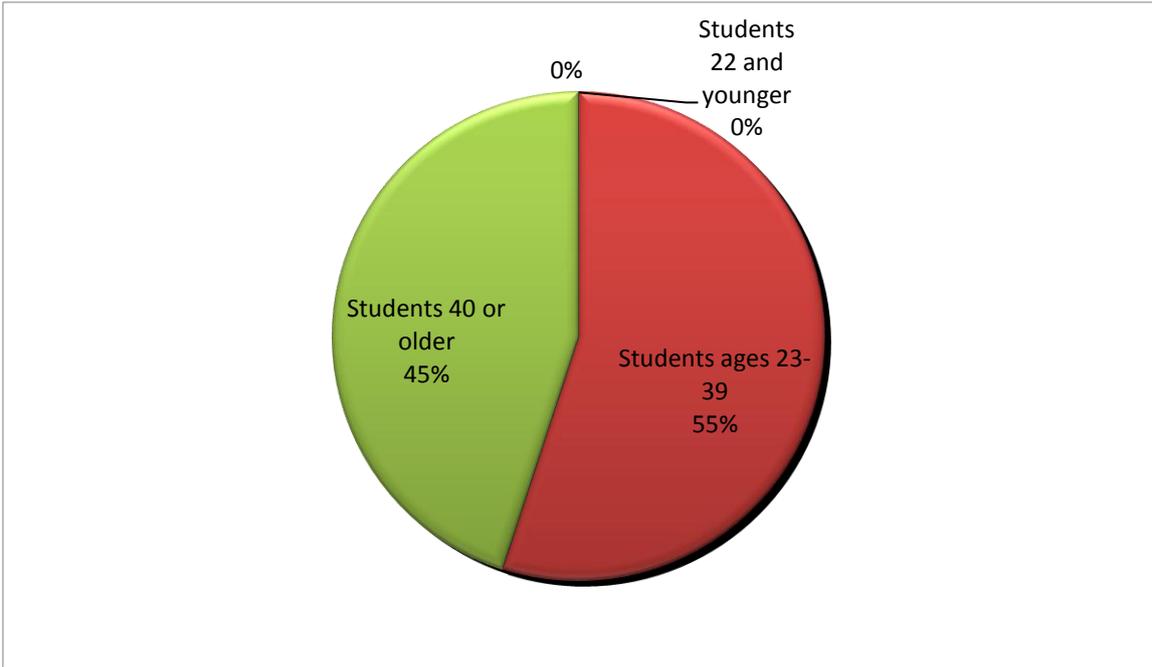


Chart 7: students' age

With a clear prevalence of students coming from the Middle Atlantic region of U.S. and a small representation of international students coming from United Kingdom and Somalia, the degree-seeking student diversity is pretty wide:

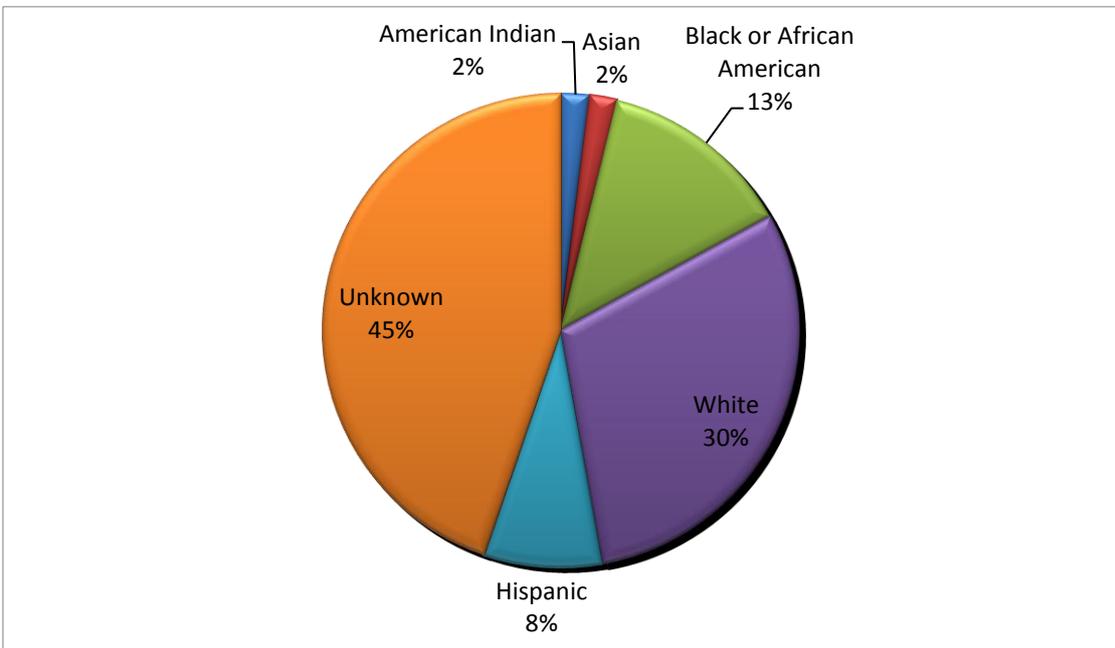


Chart 8: students' diversity

The 98% of this population is employed while taking the online program.

4 RESULTS

4.1 GENERAL RESULTS

What emerged, from all the interviews is that almost all indicators can be right but the framework must change including a new (sub-) area focused on faculty and on professors' needs and support. Moreover the importance of each answer must be weighted according to the importance and the competences of the single stakeholder, in order to avoid the problem explained in the previous chapter.

In order to understand better the overall situation and the point of view of the different groups of stakeholders, it was made an average of the general score about the four main areas.

Making a simple average of all the score given by all the stakeholders emerged that the student satisfaction is considered as the most important area with a grade of 2,95/3.

In the middle, with a minimum slack between one each other there are internal efficiency, with an average of 2,47/3, and the financial perspective with a result of 2,26.

As last one there is the Social and student engagement area with 2,14/3 points.

To identify the contribution of each group was made a simple average considering each group by itself.

Area	General Result	iPace function	Strategic	Professors	Professors & Administration	Students
Student Satisfaction	2,95	3	3	2,75	3	3
Internal Efficiency	2,47	2,75	2,55	2,13	2,5	2,5
Financial Perspective	2,26	2,5	2,4	1,75	2,17	2,5
Social & Student Engagement	2,19	1,75	2,1	2,5	2,17	2,5

What emerged from this table is:

- Each group considers the student satisfaction the most important area;
- The students' group is the one who care more about all the four areas, this can be a clear example of one of the potential problem about the specific knowledge of the interviewed previously discussed and arise questions like: what students know about the financial area of the university? We have to collect more opinion from students in order to have a bigger sample?
- Surprisingly, professors give an high score to social and student engagement area;
- As expected, administrative people consider the financial area as more important than professors do;
- Internal Efficiency seems to be the second most important area, why? Is it because it was not so clear what we mean with "internal efficiency"? Is it because includes indicators that concern all the groups?

In order to understand, graphically, which are the most important indicators; it has been made some histograms, in particular for each macro area:

- General histogram of the score of the sub- areas;
- Histogram of the score of the sub-areas for each group;
- Histogram of each indicator.

4.1.1 Student Satisfaction

Considering the average importance given by stakeholders to Student Satisfaction (2, 95/3), it is clear that this first result is pretty inconsistent, indeed none of the three sub-areas collect an evaluation as high as the general one.

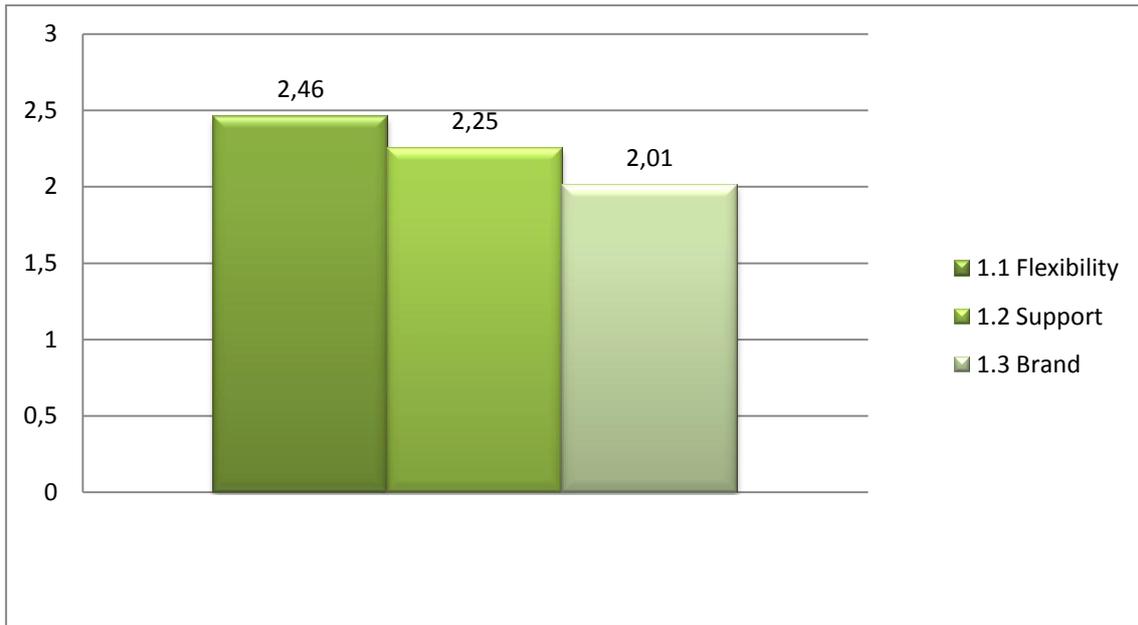


Chart 9: student satisfaction sub-area

To better understand the reason of this result and if this consideration can be done for all the groups or not, it's necessary to do a more detail analysis.

It's interesting to notice (Chart 13) that in general Support is considered for iPace staff, in particular professors and iPace function, the most important element to measure in order to identify student satisfaction. Looking at students' answers, instead, emerges that Support is considered important but not so much as Flexibility and Brand. This last sub-area that is perceived in different ways and it's important to focus on.

On one side there are staff, administrative and professors, that don't consider relevant this set of indicators in the analysis of satisfaction, but for students, the final clients to satisfy, it's totally different: the reason that they has chosen iPace is not only course flexibility but also the "name", the prestige of university, a recognized guarantee of high quality of courses and professors.

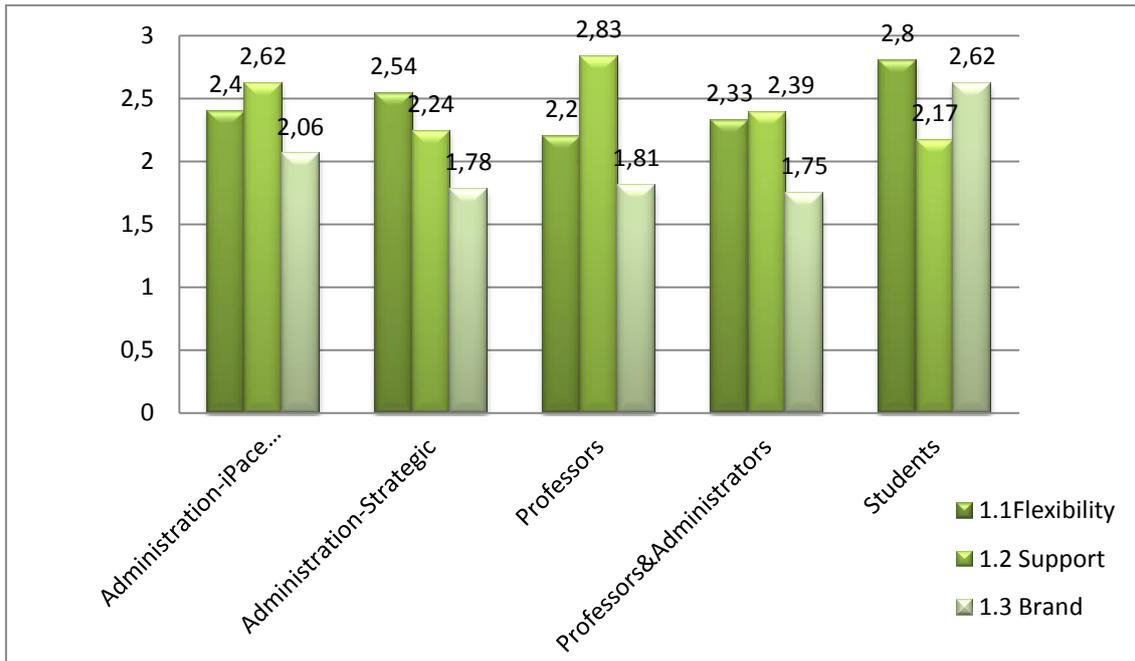


Chart 10: student satisfaction sub-area- group distribution

Going more in deep in the analysis of the single indicators, it emerges how some indicators are considered less useful than others like the one related to the presence of tutor and their availability.

The results of the last four indicators are coherent with the consideration above and they gain a low score.

Looking in general, except for some indicators considered very important by all the community (responsiveness, document access flexibility, technology support) the average score of most indicators in this area are very far from the 3/3 given to the macro area.

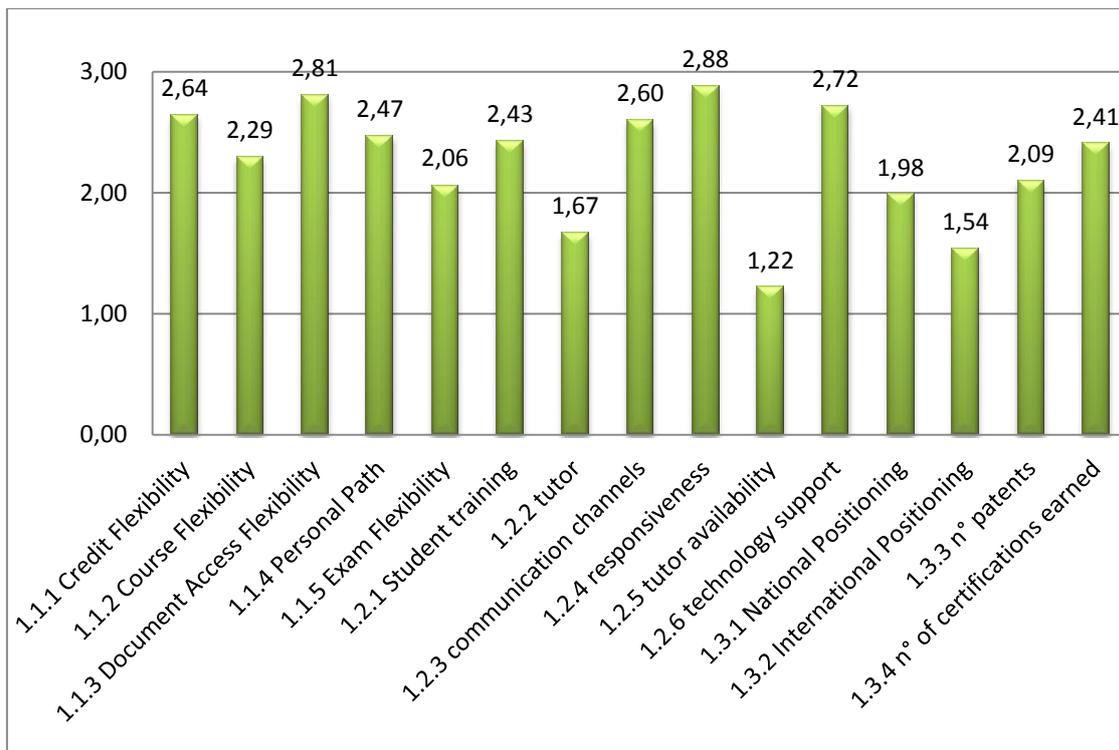


Chart 11: student satisfaction indicators

4.1.2 Internal Efficiency

Considering that the average value for internal efficiency is 2,47 it is clear that this area is relatively stable and in line with the general result.

For a complete analysis the point of view of the single groups and the score of the single indicators are explored.

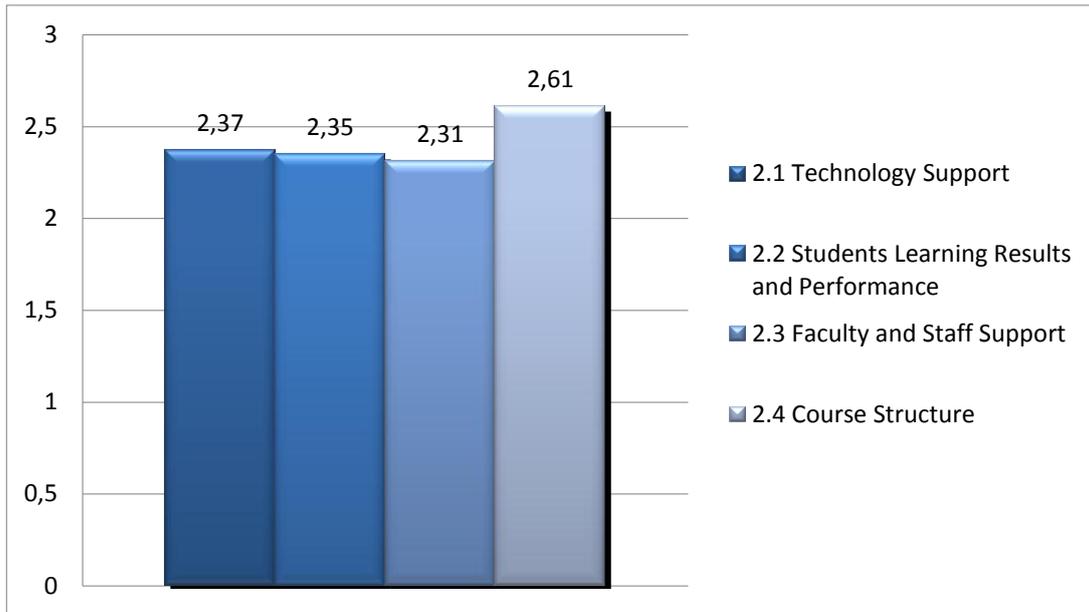


Chart 12: internal efficiency sub-area

For a complete analysis the point of view of the single groups and the score of the single indicators are explored.

Also in this case is possible to notice that the value are close to 2, 47/3.

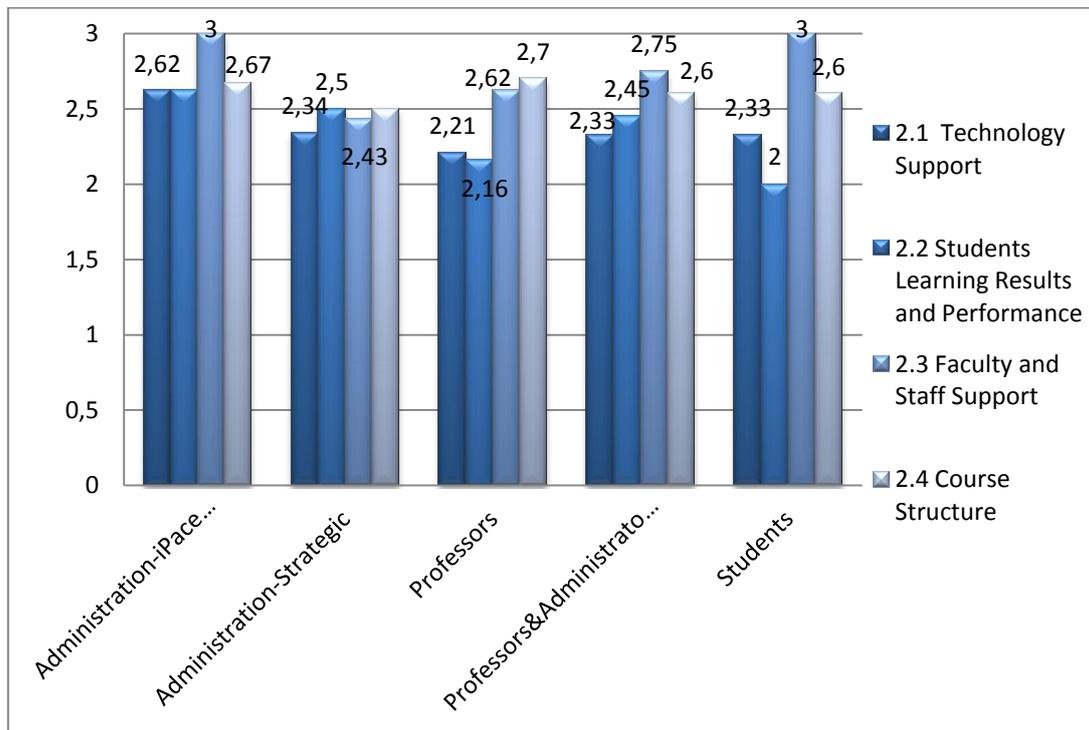


Chart 13: internal efficiency sub-area- group distribution

The following graph shows the coherence of the data, except for 2.1.2, Backup frequency, and 2.2.3, Salaries of graduated. From interviews emerged that the first one

is not considered important to be measure because the backup actions are done by third parties, instead the second one gain such a low score because, for stakeholders is impossible to collect the information.

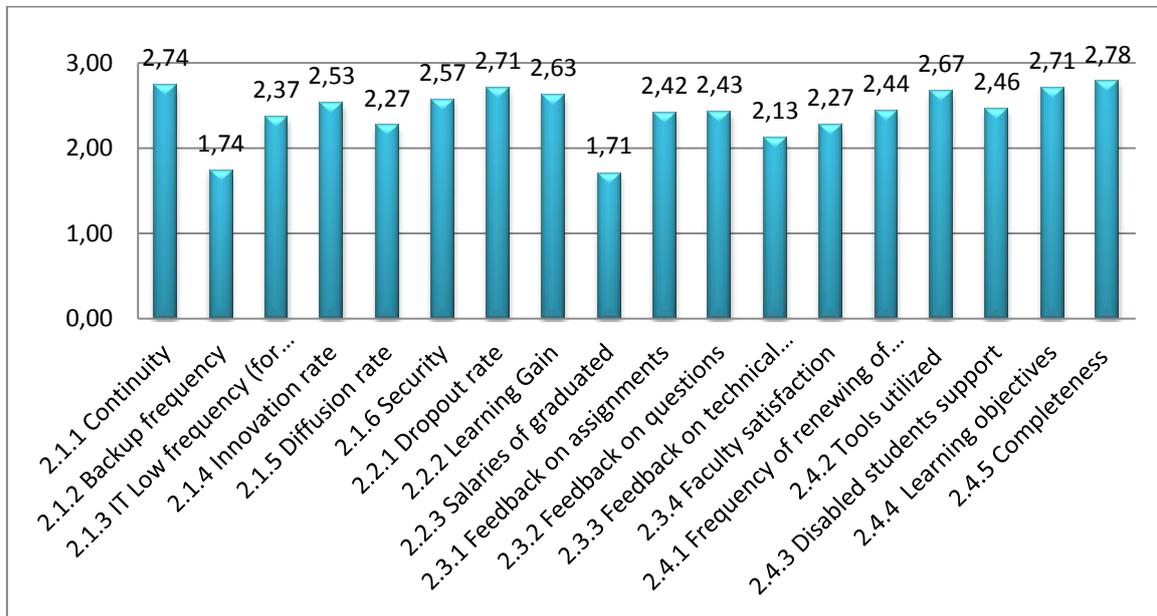


Chart 14: internal efficiency indicators

Concluding, also this last graph confirms the hypothesis of consistency for internal efficiency area.

4.1.3 Financial Perspective

With an average evaluation of 2, 26 also this area, as the previous one, seems to be coherent. To be sure about this consideration a more in-depth analysis is made.

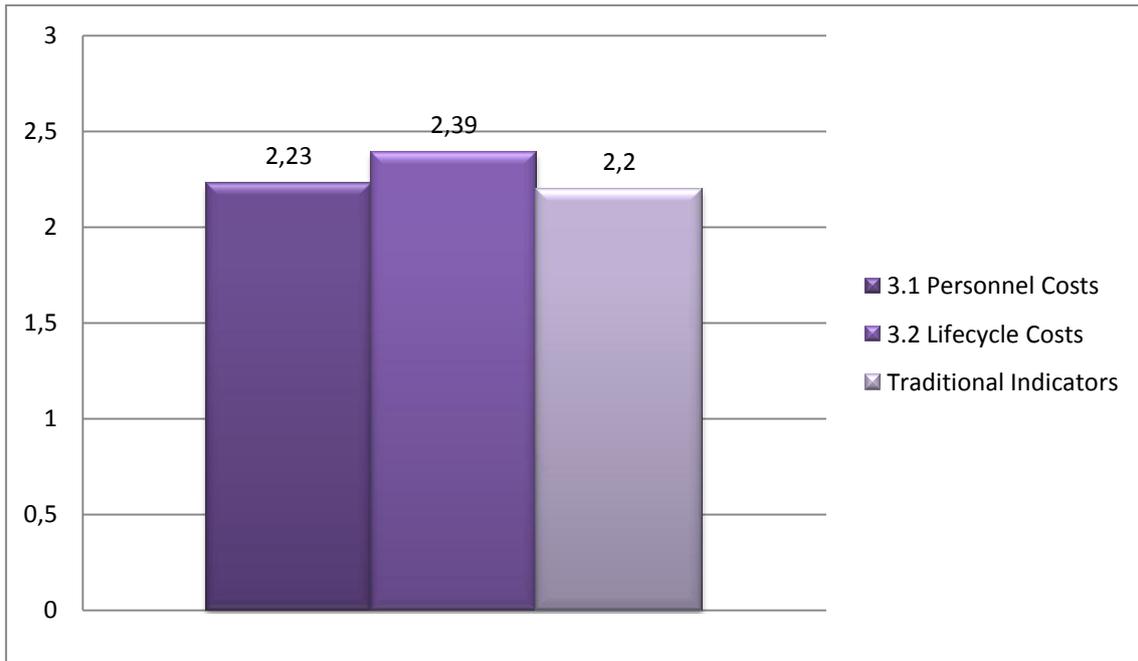


Chart 15: financial perspective sub-area

What emerged from this graph is that professors' group is the only one that gives scores deviated from the average. This result can be caused by the fact that some stakeholders tend to answer also to questions that are outside their area of competence.

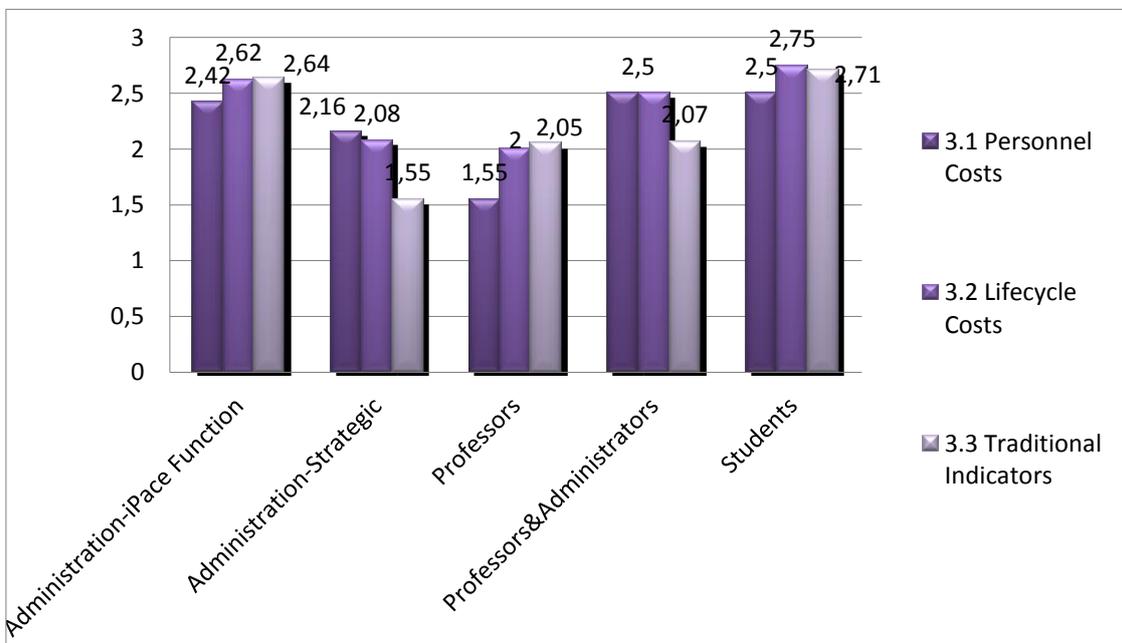


Chart 16: financial perspective sub-area- group distribution

Looking at the graph emerges that three main indicators received a low score: Equity Variation, Financial Independence Ratio and ROE.

This result was expected because of the nature of the university, indeed Pace being a private but no-profit University hasn't got shareholders and, consequently Equity.

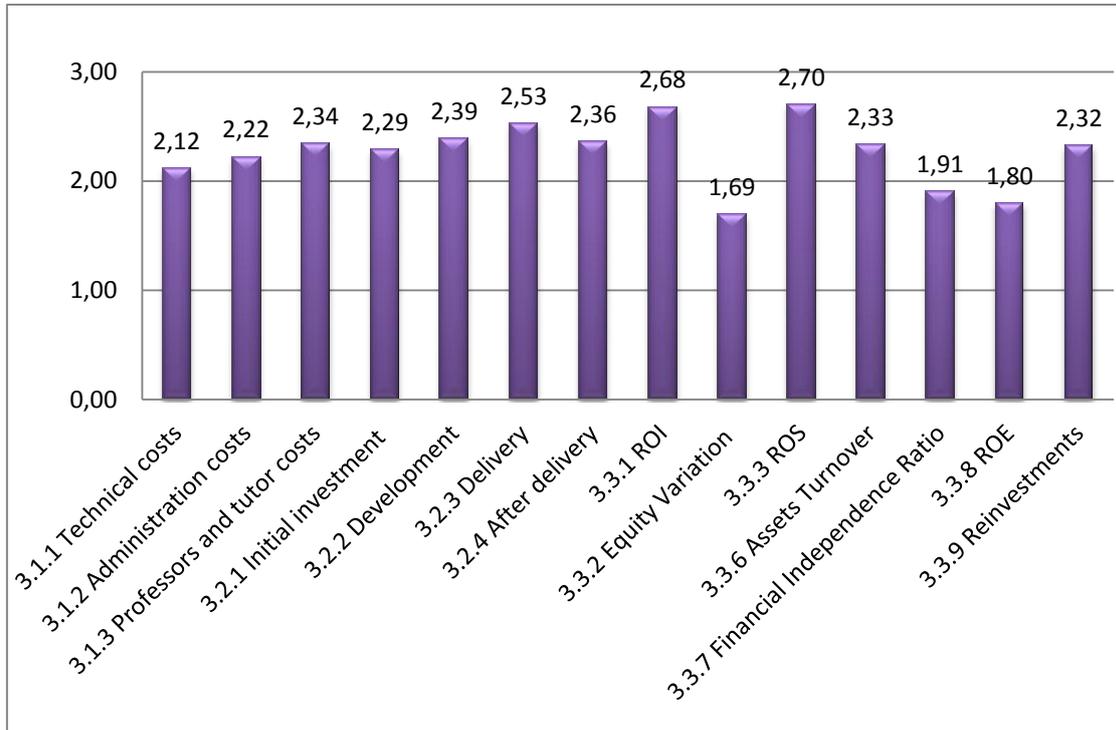


Chart 17: financial perspective indicators

4.1.4 Social and Student Engagement

Also in this case the inconsistency between the overall evaluation of the importance of the area and the score of the single sub-areas is evident. The average importance given to Social and Student engagement is 2, 19 points that is very far from the importance given to the single sub-area.

In order to consider all the point of view and all the indicators further analysis are needed.

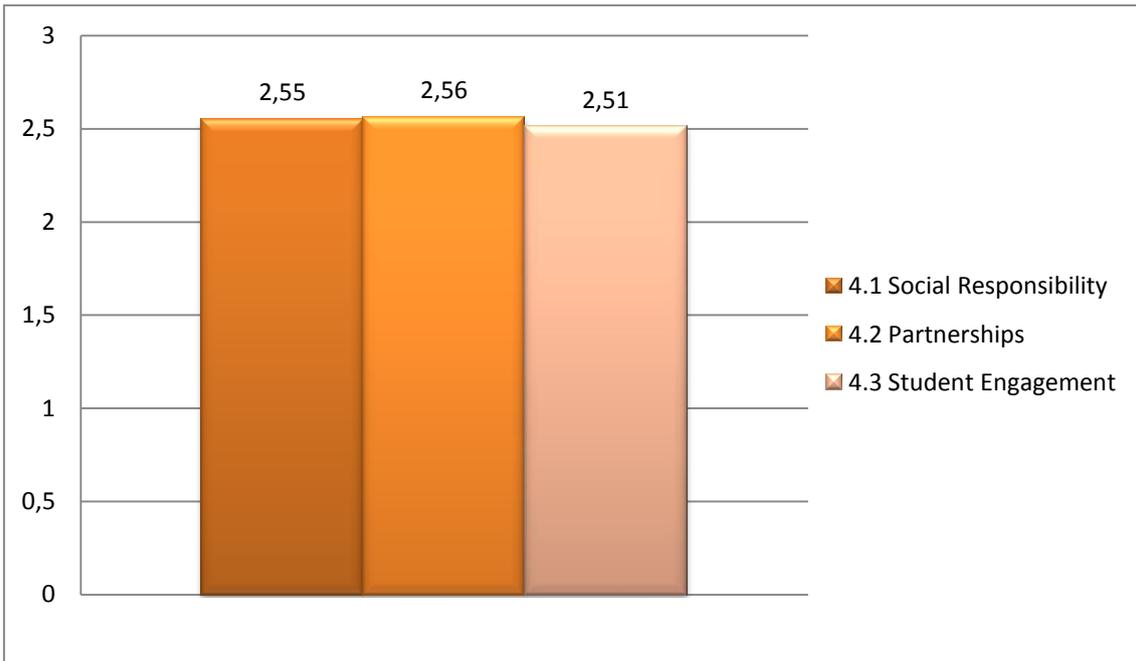


Chart 18: social & student engagement subarea

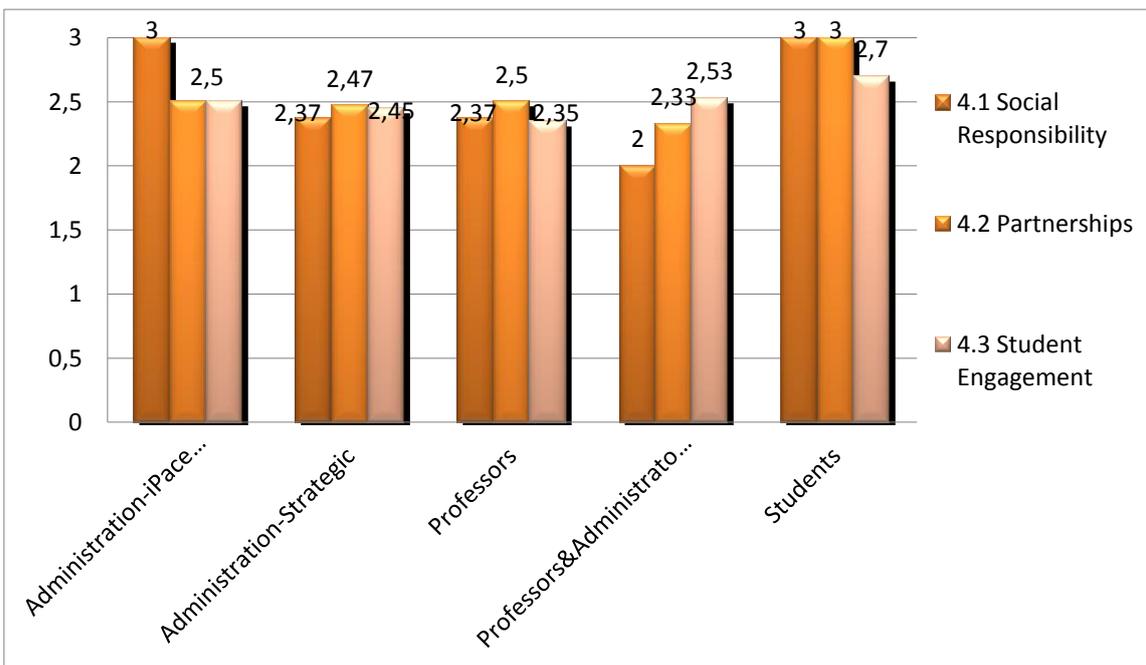


Chart 19: social & student engagement sub-area- group distribution

This graph divided by group of stakeholders confirms the inconsistency.

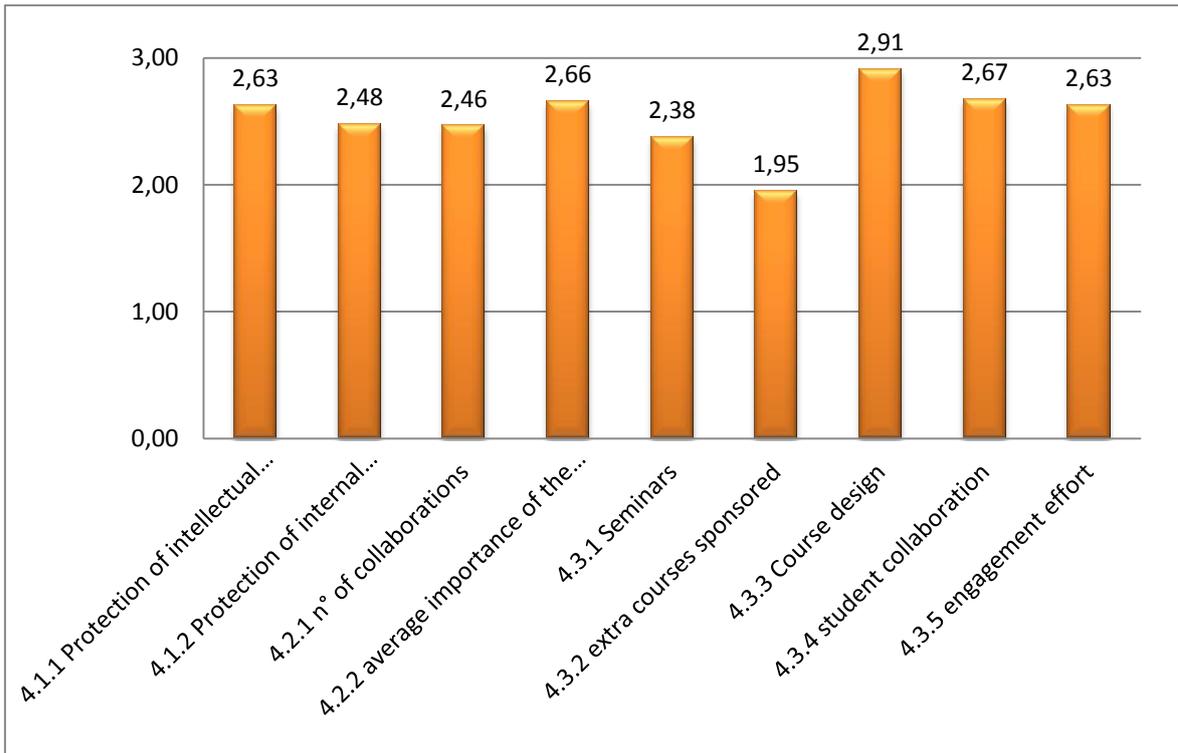


Chart 20: social & student engagement indicators

All the indicators, except Extra-Courses Sponsored, get a score higher than the average value of the area their belong.

4.2 ANALYSIS OF RESULTS

The inconsistency observed in two out of four areas doesn't allow considering the ranking of importance made by areas.

In order to know if student satisfaction is really the most important area, all of its indicators have to have higher score compared with others areas. In order to discover if this is a true assumption, it's been created a Top 10 list of indicators.

Table 38: FIRST 10 INDICATORS		
Indicator	Score	Area
4.3.3 Course Design	2,91	Social&Student Engagement
1.2.4 Responsiveness	2,88	Student Satisfaction
1.1.3 Document Access Flexibility	2,81	Student Satisfaction
2.4.5 Completeness	2,78	Internal Efficiency
2.1.1 Continuity	2,74	Internal Efficiency
1.2.6 Technology Support	2,72	Student Satisfaction
2.4.4 Learning Objectives	2,71	Internal Efficiency
2.2.1 Dropout rate	2,71	Internal Efficiency
3.3.3 ROS	2,7	Financial Perspective
3.3.1 ROI	2,68	Financial Perspective

The results that emerged from table 38 are very different from what it should be in theory:

- the first indicator is Course Structure within Social & Student Engagement;
- only three indicators out of ten are in student satisfaction area;
- the area with more indicators in the char is Internal Efficiency (4 indicators).

This outcome confirms the presence of inconsistency, but it's also a positive result, all areas have important indicators to monitor.

Table 39: LAST 10 INDICATORS		
Indicator	Score	Area
1.2.5 Tutor Availability	1,22	Student Satisfaction
1.3.2 International Positioning	1,54	Student Satisfaction
1.2.2 Tutor	1,67	Student Satisfaction
3.2.2 Equity Variation	1,69	Financial Perspective
2.2.3 Salaries of graduated	1,71	Internal Efficiency
2.1.2 Backup Frequency	1,74	Internal Efficiency
3.3.8 ROE	1,8	Financial Perspective
3.3.7 Financial Independence Ratio	1,91	Financial Perspective
4.3.2 Extra-courses Sponsored	1,95	Social&Student Engagement
1.3.1 National Positioning	1,98	Student Satisfaction

Also the list of the 10 less important indicators confirms the hypothesis of inconsistency. Indeed first of all the three less important indicators come from the Student Satisfaction area; secondly the less important area, Social and Student Engagement, has only one indicator in the last 10.

Because of these considerations, in order to start the implementation and the collection of data for the indicators calculation the suggestion is to look at the “top 10 list of the most important indicators” and not at the previous classification of the major areas.

It's possible to notice by the graphs below that Student Satisfaction is the only homogeneous macro area because the high majority of the values are aligned with the mean value.

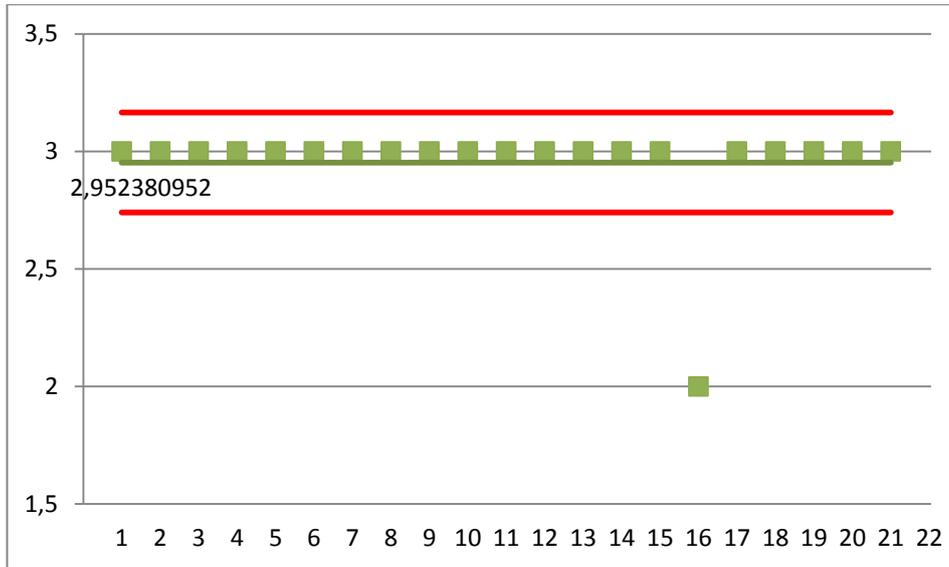


Chart 21: student satisfaction homogeneity

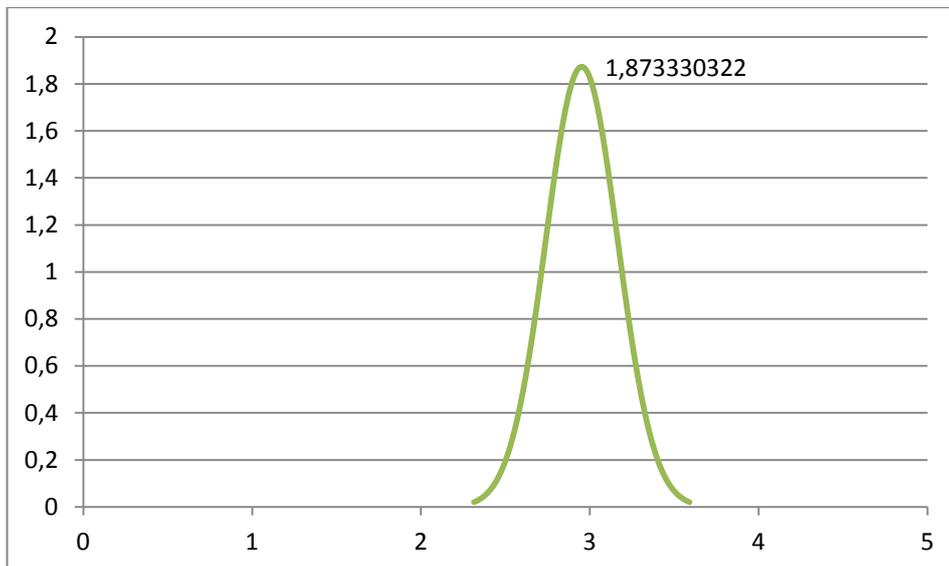


Chart 22: student satisfaction homogeneity

For the other three areas the heterogeneity is pretty clear. In order to eliminate this problem and to identify a trend in the answers the sample must be enlarged including a more diverse group of respondents.

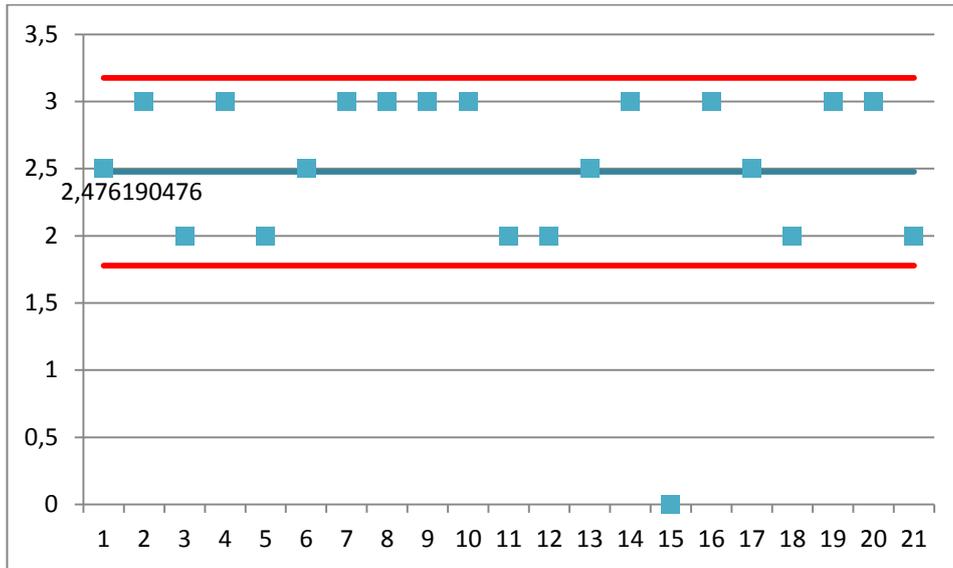


Chart 23: internal efficiency heterogeneity

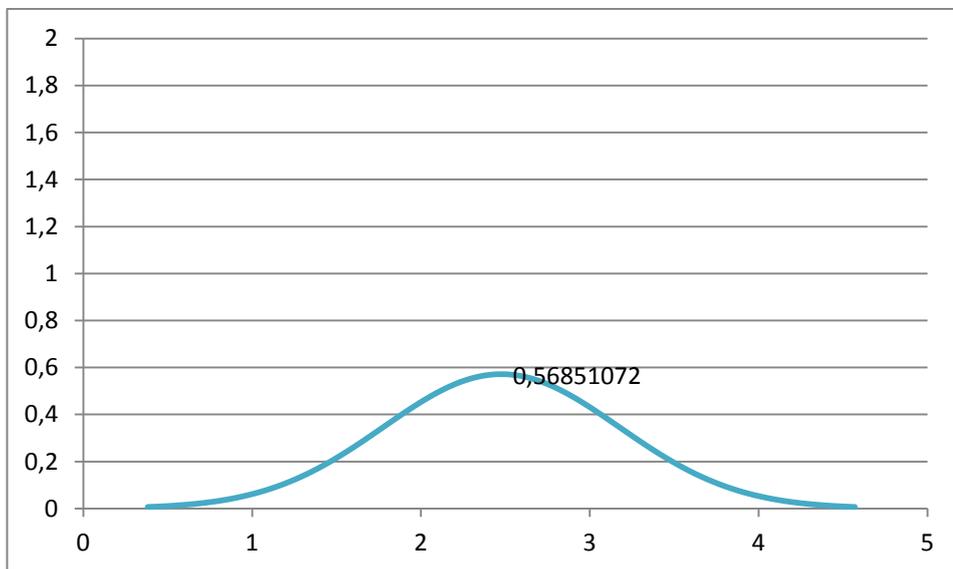


Chart 24: internal efficiency heterogeneity

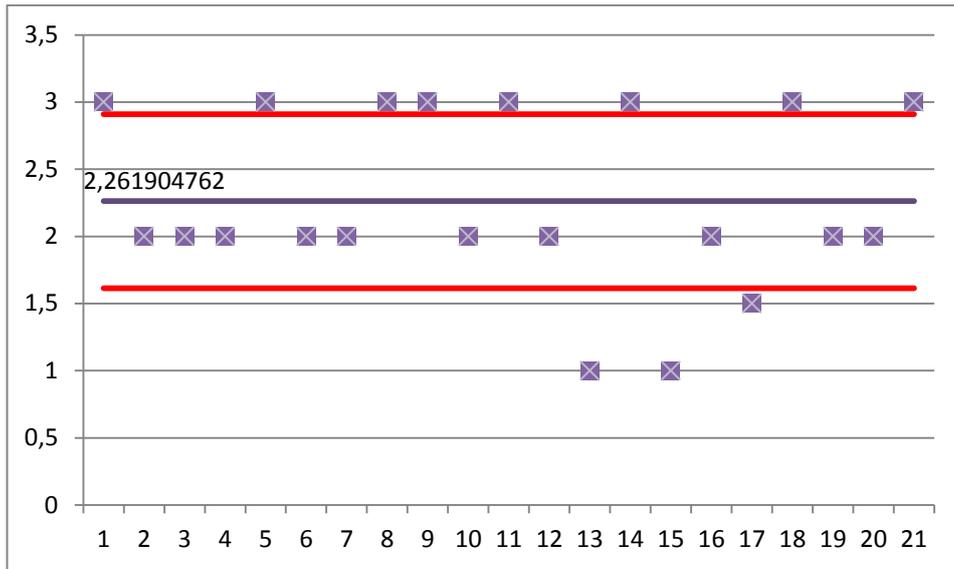


Chart 25: financial perspective heterogeneity

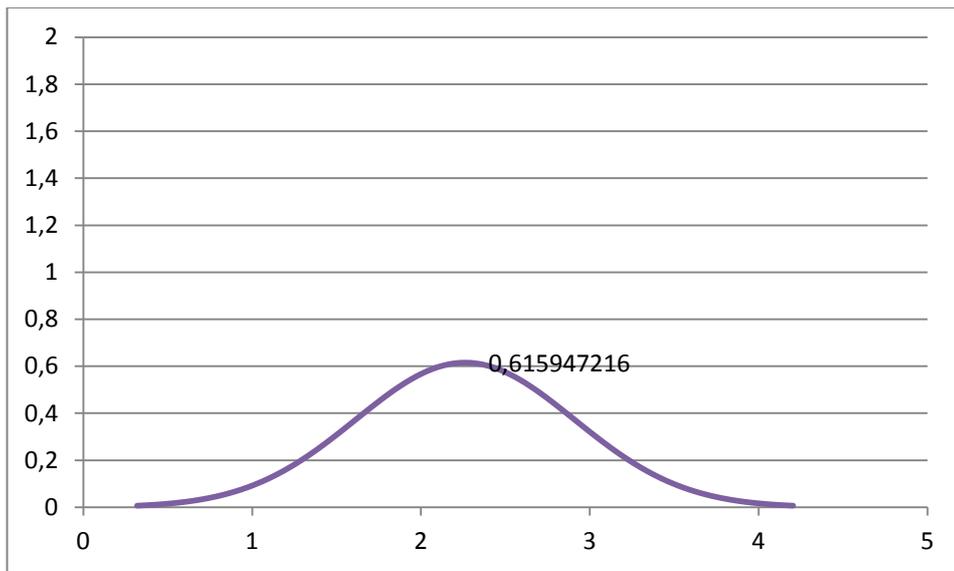


Chart 26: financial perspective heterogeneity

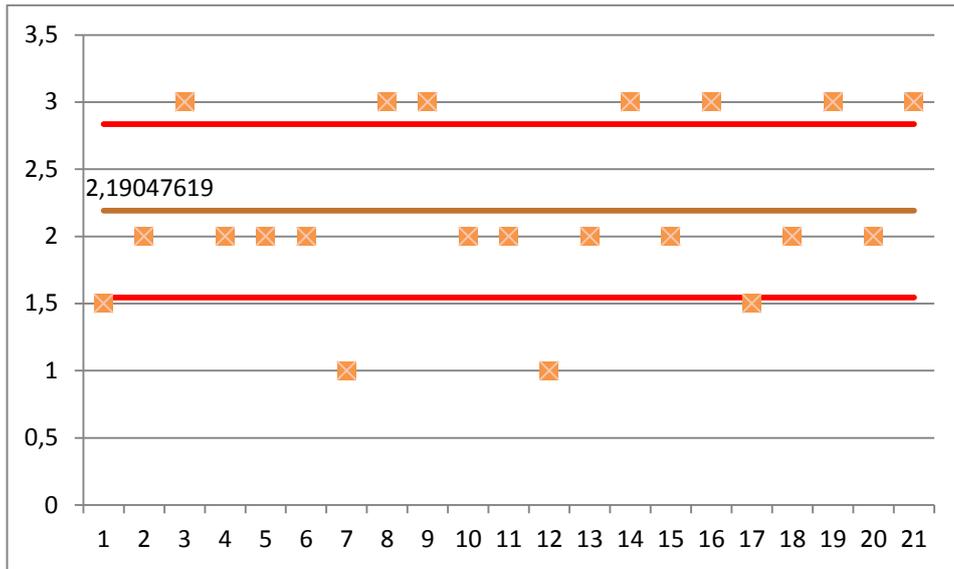


Chart 27: social & student engagement heterogeneity

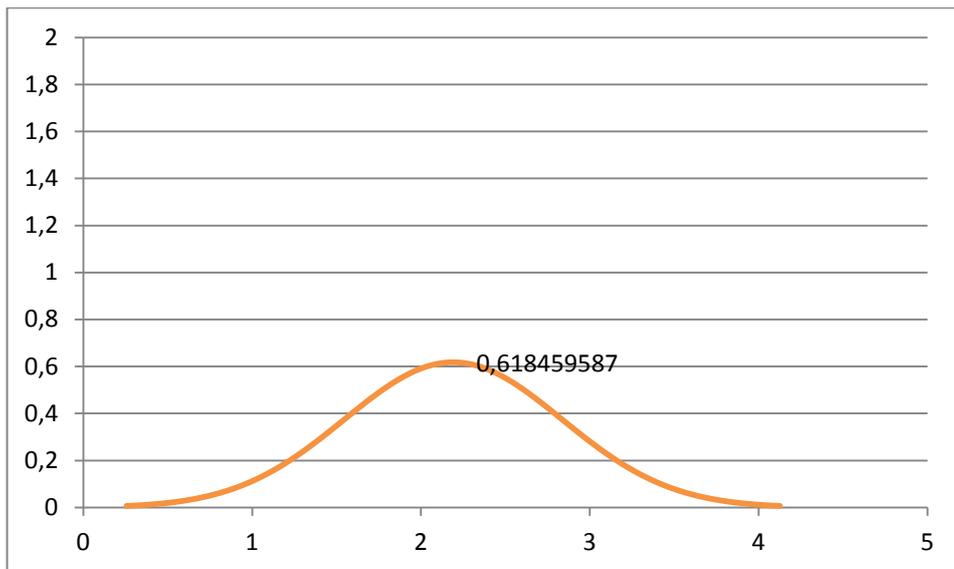


Chart 28: social & student engagement heterogeneity

5. CONCLUSIONS

5.1 SUMMARY OF THE RESULTS

During the period of permanence at Pace University, it has been done 24 interviews with members of iPace Program (four people), members of the administration (eleven people), professors (four people), professors which have also an administrative role (three people) and students (two of them). What emerged from these meetings is that Student Satisfaction area is considered as the most important to be measured by the 96% of interviewed with an overall score of 2,95 points out of 3, the Social and Student Engagement area instead is considered as the less important with only 2,14/3. The other two areas, Internal Efficiency and Financial Perspective are placed in the middle with an evaluation 2,47 and 2,26 respectively.

Going more in depth in the analysis, it's possible to identify a gap between the overall importance of the macro-area and the significance of the different sub-area, it happens for both the most and less important macro-area: Student Satisfaction, even if the overall evaluation is 2,95/3, the single sub-area gains only 2,46 for the Flexibility, 2,25 for the Support and 2,01 for the Brand. The opposite happens for Social and Student Engagement area where an overall result of 2,19 is exceeded in value by all the three sub-categories, in particular Social Responsibility has 2,55/3 , Partnership 2,56 and Student Engagement 2,51.

Because of this difference, it is clear that the first ranking doesn't reflect at all the behaviors of the stakeholders. The creation of the "Top Ten" and "Last Ten" lists of indicators identify what really is considered important for the interviewed without classifying the indicator inside a specific category of the model which can influence the response.

Another important problem of the analysis is the heterogeneity of the areas. Indeed only for the Student Satisfaction it's possible to identify an homogeneous trend in the answers. The others three areas are distributed without a particular concentration around a specific value so there is an high heterogeneity and variability in them.

5.2 NEXT STEP FOR iPACE PROGRAM

From the data analyzed is possible to do some considerations.

Taking into account all the previous analysis, it can be created a set of suggestions for future steps of iPace Program:

- Because of the inconsistency of the answers the first suggestion is to start collecting information and data for the “Top Ten” list of indicators, without taking into account the previous ranking divided by area. This choice is made considering realistically the quantity of data and the time needed to collect information in different format from different subjects, the “top ten” list would be, without doubt, the leaner and efficient way to obtain a first vision of the situation and of the most important performance results for the stakeholders.
- The second important point on which iPace Program has to work is the sample composition. As already shown more than the 50% of the interviews were done with people working in the strategic section of the program. About this point the suggestion is to rebalance the sample including more students (present and past one), professors and people coming from the iPace function. In this way all the categories can have the same importance in the average calculations and can give their own contribute.
- Another important advice tries to face the heterogeneity in the responses in Internal Efficiency, Financial and Social and Student Engagement area. This diversity in the answers must be analyzed more in detail collecting many information as possible in order to identify trends or links between the answer and the interviewed.
- In order to obtain more relevant answers, it could be important to weighted the different contributes of interviewed depending on their role within university. In this way each meeting can be more efficient because focused on the specific competences of the person.

5.3 GENERAL IMPLICATIONS

The study concerns a comprehensive analysis of the iPace program, touching the most important variables that influence the environment in which the university competes.

The framework proposed outlines a complete and well-defined structure of the elements that universities have to deal with when approaching their online programs.

However the qualitative nature of the work can be considered a starting point from which the specific university can develop more accurate and exhaustive analysis, collecting information and data, and starting the indicators' metric definition.

The heterogeneity of the answers can be considered another limitation for the generalization of the analysis but it does not diminish the contribution of this research in fact it can help the university in focusing on those areas that are considered critical from these point of view, without waste of resources and money.

This study can represent a thorough basis for future analysis for many reasons:

- The starting framework can be easily adapt to any kind of university thank to the fact that it is created using the strategy of the university as basis and the relevance of indicators is determinate by university's stakeholders.
- The framework is polymorphic and has a different roles in function of University and its needs.
- Can be applied to universities in different lifecycle phases from the very beginning, with the weighting of the four areas, to all the other possible steps with the identification of indicator's metrics, collection of data and so on.

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Interview with Politecnico di Milano - METID expert (2013)

7. Appendix

7.1 UK & Netherland questionnaire

7.1.1 Presentation Letter

Good Morning,

We are two students attending Master of Science in Management, Industrial and Economic Engineering at Politecnico di Milano.

We are at the end of our academic carrier and we are developing a thesis on the evaluation and analysis of performances of Online Learning. In particular we want to describe and classify the various approaches adopted by universities to develop their Online courses, carry out a detailed case study analysing the sustained costs used and then develop a system to measure the performances of the case analysed.

More in detail we want to map the different possibilities of online educations present in the education sector, on the basis of their peculiar characteristics (business model, number of users, type of relation with the university, financial aspect..) and create a model which can be used for future expansions and new generations on online courses.

We know that Your University is developing Online Education and we are interesting in it. We would like to know if it would be possible to carry out an analysis of those areas in Your Institution through a brief questionnaire made by some close and open questions.

Could it be possible, for you, answer to our survey?

<https://docs.google.com/forms/d/1zUo83zLISOKd7wyesnr-XrfoCAAIG6cmknHXJmMAIMA/viewform>

In attachment, the contact of our Professor Tommaso

Agasisti: tommaso.agasisti@polimi.it

Thanks in advance,

Regards

Elisa Cerri

Valentina Castelli

7.1.2 Survey

GENERAL INFORMATION ABOUT THE INSTITUTION

- 1) Name of the University
- 2) When Distance Learning was introduced?
- 3) Who was the initiator of this initiative?
 - Professors
 - Students
 - Top level management
 - others:.....
- 4) Why did you decide to introduce it?
 - to provide courses at lower cost
 - to reach an higher number of students
 - to reach a different target of students
 - to increase the portfolio of courses provided
 - others:
- 5) which are the subjects taught with DL?
 - Engineering
 - Nursery
 - Medicine
 - Architecture
 - Art
 - Law
 - Literature
 - Math
 - Physics
 - others:
- 6) Is Your university planning to expand the number of subjects offered with DL?
if yes, in which sector:
 - Engineering
 - Nursery
 - Medicine
 - Architecture

- Art
 - Law
 - Literature
 - Math
 - Physics
 - others:
- 7) How professors have welcomed this idea? (1-5)
- they were enthusiastic
 - they were reluctant at the beginning but then they changed their attitude (thanks to the incentives)
 - they were reluctant and they didn't participate
 - they proposed to introduce online courses for their subjects
- 8) Percentage of professors who have joined the DL
- 0-25%
 - 26-50%
 - 51-75%
 - 76-100%
- 9) How did you promote DL?
- web sites
 - open day
 - mail
 - others:.....
- 10) In which way are the courses organised?
- midterm exams
 - projects
 - laboratories
 -
- 11) you could define Your DL program as: (1-5)
- pure e-learning: the (only) interaction is Only through the web, exams included
 - pure e- learning: lessons are done online and exams are taken in live sessions
 - hybrid: lessons are online, but sometimes moments for live interaction (ex:

laboratory,..) are necessary
- more than one but mainly:

12) Usually, exams are taken:

- online
- in class
- both online and in class
- if online, What do you do to ensure that students don't cheat?

13) How do you tape the lessons?

- the professor is taped during the live class
- the professor is taped separately and its voice is synchronized with lecture's slides
- other

STUDENTS LEARNING INFORMATION AND PERFORMANCES

1) Is there In the degree certificate a clear indication about the methodology of the course (Distance Learning)?

- Yes

No, the degree certificate is the same of the traditional courses

2) Are There some special requirements before the application, EXCLUSIVELY for the DL?

- mark threshold from previous level of instruction

- language certification

- IT skills

- others:.....

3) how many students follow DL? Is The number increased in the last 5 years? In which percentage?

4) how many students there are in Your university as a whole?

5) Percentage of abandonment? In which year?

6) Average number of credits per traditional student?

7) Average number of credits per online student ?

- 8) Which are the supports for the online students?
- online lectures downloadable
 - virtual class with live sessions
 - forum
 - exchange program with other universities
 -
- 9) How is Your students population? (1-10)
- Old Adult and workers
 - Pensioners
 - Young from distance cities in UK
 - Young from others countries
 - Disabled
 -
- 10) Is Your university organizing online courses for pre-university students? (eg. Math course, science course,...)
- if yes, which is the percentage of students that apply for Your University?
- which is the percentage of students that apply for a DL program?
- 11) Are there some differences in the grading system between traditional and online courses ?
- 12) Which are the nationalities of your students?
- 13) have you done a survey for students? Can you send us a copy of the results of the last year?

7.2 iPace Survey

Student Satisfaction Indicators					
1.1 Flexibility	<i>Short Description</i>	<i>0</i> <i>(not important)</i>	<i>1</i>	<i>2</i>	<i>3</i> <i>(fundamental)</i>
1.1.1 Credit Flexibility	The student has the possibility to choose the number of credits per year which is suitable for its personal life				
1.1.2 Course Flexibility	The student has the possibility to choose the courses for which he has a special interest within a group				
1.1.3 Document Access Flexibility	The student has easy and suited access to the documents				
1.1.4 Personal Path	Some working students have time to study only during weekend or during the evening, after work, the lessons have some deadlines? With which frequency?				
1.1.5 Exam Flexibility	The student must go to the university personally to do the final exam or can go to some authorized companies?				
1.2 Support	<i>Short Description</i>	<i>0</i> <i>(not important)</i>	<i>1</i>	<i>2</i>	<i>3</i> <i>(fundamental)</i>
1.2.1 Student training	One of the most important aspect is to have the basic capabilities in order to be able to USE and NAVIGATE inside the course page				
1.2.2 tutor	Besides professors, many universities have tutors in order to be more reactive in front of students problems				
1.2.3 communication channels	One of the main obstacle in DL is the inability of asking question after lessons or breaks, so we need a communication channel really efficient to ensure fast				
1.2.4 responsiveness	All the available communication channels are nothing without a correct use.				
1.2.5 tutor availability	Sometimes happens that the students need help DURING the lecture (when there are real time lessons)				
1.2.5 technology support	During the course/program, students have access to appropriate technical assistance and support staff				
1.3 Brand	<i>Short Description</i>	<i>0</i> <i>(not important)</i>	<i>1</i>	<i>2</i>	<i>3</i> <i>(fundamental)</i>
1.3.1 National Positioning	In order to understand the local market (many universities made exams in presence so the biggest group of students are from the country of origin of the				
1.3.2 International Positioning	The international market must not be forget, if the university gives the possibility of doing exams with partners the number of students included in this				
1.3.3 n° patents	Prestige of an university is given, for the biggest part, by the success of its students				
1.3.4 n° of certifications earned	As for any other market, there are some certifications (mandatory or not) that the university may have and that are considered synonymous of quality and				

Internal indicators

2.1 Technology support	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
2.1.1 Continuity	It's important to guarantee access to data 24/7				
2.1.2 Backup frequency	Adjust storage capacity of information to students' requests				
2.1.3 IT Low frequency (for maintenance activities)	Understand the low frequency moment in order to plan maintenance activities				
2.1.4 Innovation rate	Technology likes strategic asset, innovation can increase the quality of DL programs				
2.1.5 Diffusion rate	Create redundancy of resources in order to provide an high connection flexibility to the clients.				
2.1.6 Security	Control the diffusion of data and information.				
2.2 Student learning results and performance	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
2.2.1 Dropout rate	Calculate the number of students that abandon the course				
2.2.2 Learning Gain	It looks at the improvement in students' performance over the period of their studies				
2.2.3 Salaries of graduated	Calculate student salaries pre and after the graduation				
2.3 Faculty and staff support	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
2.3.1 Feedback on assignments	It's important for the nature of the learning a quickly feedback from faculty to students				
2.3.2 Feedback on questions	It's important for the nature of the learning a quickly feedback from faculty to students				
2.3.3 Feedback on technical problems	It's important for the nature of the learning a quickly feedback to solve technical problems				
2.3.4 Faculty satisfaction	Satisfaction derived from: support in development and delivery phases, monetary incentives, ...				
2.4 Course structure	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
2.4.1 Frequency of renewing of materials	After a certain period of time could be good renewing the teaching materials with new information				
2.4.2 Tools utilized	Define which tools are needed for a specific course that can increase learning and communication				
2.4.3 Disabled students support	Guarantee through specific application the access to disabled students to DL courses				
2.4.4 Learning objectives	Learning objectives help the institution to know where it want to go.				
2.4.5 Completeness	Institution has to: explain clearly (on web site) all information needed by students, guarantee to them the access to all application				

Financial Indicators

3.1 Personnel costs	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
3.1.1 Technical costs	Analysis of costs for technical staff				
3.1.2 Administration costs	Analysis of costs for administrative staff				
3.1.3 Professors and tutor costs	Analysis of costs for faculty				
3.2 Lifecycle costs	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
3.2.1 Initial investment	After the feasibility study it's needed to consider the initial investment				
3.2.2 Development	Costs for activities : from paper to digital, web page and platform creation, videotaping				
3.2.3 Delivery	Costs for delivery of the course to students				
3.2.4 After delivery	Costs for maintenance, student support and services,...				
3.3 Traditional	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
3.3.1 ROI	Evaluate the efficiency of an investment				
3.3.2 Equity Variation	The amount of additional equity that is being added to the equity provided by the stockholders.				
3.3.3 ROS	Evaluate the efficiency of the university: with Sales we mean Tuitions & Fee				
3.3.4 Assets Turnover	Efficiency in using the assets				
3.3.5 Financial Independence Ratio	To measure the independence of institution				
3.3.6 ROE	To measure the interest of shareholders				
3.3.7 Reinvestments	To evaluate the availability of operating cash flows for purchase assets				

Social and Student Engagement Indicators

4.1 Social Responsibility	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
<i>4.1.1 Protection of intellectual property</i>	The DL works on the net and because of this is too easy to stole works and projects from others which have share them in the web				
<i>4.1.2 Protection of internal intellectual property</i>	Professors and students are a huge source of knowledge and the university must protect their work Professors and students are a huge source of				
4.2 Partnerships	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
<i>4.2.1 n° of collaborations</i>	It's important to know how many organization are interested in the students results for future jobs or stages				
<i>4.2.2 average importance of the collaborating companies</i>	In order to maintain a certain level the university must set collaboration with important and solid companies				
4.3 Student engagement	<i>Short description</i>	<i>0 (not important)</i>	<i>1</i>	<i>2</i>	<i>3 (fundamental)</i>
<i>4.3.1 Seminars</i>	The university may help the personal growth of students offering seminars taken by companies or professors in order to increase their own body of				
<i>4.3.2 extra courses sponsored</i>	The university may help the personal growth of students offering language course or not strictly scholastic activities (trip, music, theatre..)				
<i>4.3.3 Course design</i>	Promotes both faculty and student engagement				
<i>4.3.4 student collaboration</i>	Opportunities/tools are provided to encourage student-student collaboration (web conferencing, instant messaging..) if appropriate				
<i>4.3.5 engagement effort</i>	Efforts are made to engage students with the program and the institution (lesson's presence)				