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Planning and Strategic Management of Higher Education Considering the Vision of Latin America

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Abstract: Nowadays, many universities are employing metrics that are used by other countries as the focus moves towards academic management. A shared vision and collaboration is required to identify success cases. Leaders at senior and middle management need to be guided by a road map to get a clear vision, a list of different strategies and successful outcomes. Consequently, this article proposes an academic management strategy to guarantee student-centred education. This strategy has an emphasis on hierarchical process in layers, in order to optimise and achieve efficiency, reliability and resilience. In this paper, the "what", " how" and "where" are taken into account in order to respond to academic and administrative adjustments which are necessary to reduce the risk of investment in training and formation of human capital, which warns about the need to acquire knowledge, especially from countries with scientific expertise. It is also shown the indicators that motivate the effort based on the merit that human capital produces. A methodology of flipped learning or blended learning is applied to presume a human capital that is able to break down barriers, such as: English as a universal language. A bibliometric analysis has been based over 2000 scientific articles from the Web of Science and Scopus databases. So It was possible to identify countries, universities and researchers specifically for each area of knowledge based on the results of this analysis. Besides, university careers can even be validated according to the development and scientific interest that is presented by the bibliometric analysis, which could be compared with studies based on economics and wealth from sources such as Forbes.

Keywords: academic management; educational policy; knowledge society; professional development; strategic planning

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1. Introduction

Academic Management and Strategic Planning have acquired relevance in Higher Education in recent years, because of the imperative need to achieve quality, identity, sustainability and resilience within a competitive context in which both private and public universities have been operating. The rapid roll-out of short-term academic offerings by multinationals, such as Google, which will be supported by universities. it is a clear change that is taking place in higher education, not only because of the digital impact of the pandemic, it is also because of the real demand for careers with a prominent future exposed by organisations such as Forbes, and the Organisation for Economic Co-operation and Development (OECD).

The flexible curriculum, which is a restructuring in a macro context that considers the administrative area, the curricula, the teachers, the link with society, languages and research. Therefore, achieving a balance between the required theory and the increased practice is very important to develop the entrepreneurial spirit and the free exercise of the profession.

Consequently, this paper emphasises the necessity to achieve a balance in research, development, innovation, technology transfer and business. Therefore, it is necessary, that the top management of higher education institutions (HEIs) must understand that they have to work with statistics and the science performance. In addition, it is required to verify where the prestigious universities in developed countries are moving to and identify the relevant researchers in the field of the most important axes of sustainable development indicators, by contrast with the region's needs in education, health, agriculture, software development, science and technology. These pillars are fundamental to improve a country's economy by generating value-added services that are exportable.

Thus, they allow the inflow of new remittances in countries considered to be developing. Linking the academic management with transparency, academic stability, teacher training, management and administrative training into a dynamic and efficient environment, including optimisation of human and technological resources could be able to get a direct impact on the professional profiles, which universities have been offered with a trans disciplinary approach, where gaps can be found suddenly, as it happened in the pandemic. This issue had to be solved with an immediate solution to this lack of technological knowledge in which many university professors were involved because they were not prepared to apply blended learning or flipped learning; although, they had got the disciplinary and pedagogical knowledge, according to Al-Samarraie [1,2].

On the other hand, academic management implies the "how", "what", "with what" and "where", a higher education institution (HEI) could develop and be involved, and how it needs to integrate the pedagogical model with the organisational model, as stated by [3,4]. Furthermore, it needs to get a particular identity within a knowledge society, which may involve especially in the countries of the region; some pressures from the regulators of the education system, according to the specific indicators, which need to comply with resilience or self-adjustment depending on the policy when governments change. Besides, the surrounding university environment must be taken into account in order not to be against it, but it must also not be carried away by the current of competition; that means, each institution has to keep its identity, its mission and vision, from the point of view of [5,6].

However, a Latin American university that contributes to the community with social responsibility will be the one that projects itself into the future. it has to propose and presents degree profiles that contribute to achieve a change in the productive matrix of a developing country. Therefore, it will not depend exclusively on the export of raw materials such as oil, copper, bananas, flowers; but, on the contrary, A country should evaluate undergraduate and postgraduate projects that take on the challenge of being proactive in the fields of medicine-health, agriculture, wearable technology, education, food, software development, as considered by [7,8]. In this way, it generates value-added products, which may involve the evaluation of those undergraduate and postgraduate programs that have fulfilled their mission and should be taken out of the citizen context, affirms [9].

Developing countries have made an important effort in the training of human talent, but undoubtedly, it is those countries in the region that have assumed, responsibly and with vision, the acquisition of new knowledge through scholarships for doctoral studies, as pointed out by [10]. However, countries such as Brazil and Colombia have taken a route that has generated better results compared to other countries in the region. This is due to their strategic planning, mentions [11,12]. These countries have assumed with responsibility the deficiencies of the English as a universal language. Because it is necessary to acquire the knowledge of developed countries such as the United States, China, Germany, the

United Kingdom, Italy and Australia where solutions and beneficial products are proposed. Therefore, in this way this knowledge will be transmitted to the citizens of developing countries and a change will generate in the productive matrix; in addition, they are sponsors of international postgraduate programs for other countries in the region, warns [13,14].

Consequently, Latin American universities should not only propose innovative undergraduate or postgraduate programmes, they have to innovate their structure based on an hybrid system that preserves a traditional environment, but it also has to adapt to the future changes, because not all traditional is bad and not all future vision will generate adequate results, describe [15,16]. Consequently, a vision is needed to focus on where we are moving to, what we want to achieve and where we want to be. But the most important thing is that higher education must be inclusive, which implies attending to the society with the greatest needs, "the poorest", through different means, such as: scholarships for students with limited economic resources, technology transfer in vulnerable areas, training for the generation of enterprises in economically deficient contexts, or proposing solutions for students with disabilities, mention [17].

The aim of this research is to develop a management strategy for higher education, which is based on appropriate planning on the use of its resources and the effort of human capital. This could be achieved by incorporating innovative mechanisms in education, such as flipped learning, blended learning, which requires a forward-looking administration. Moreover, it must be able to look for options towards change, while maintaining what works in the traditional model.

Figure 1, shows the model that includes the scope of this work, which bases its objective on human talent. This work articulates three stages: (a) strategic planning in HEIs considering the future trends that it requires as a basis, (b) a clear governance scheme which can be replicated in the same country in several cities, and (c) a competency model that permits feedback of the knowledge acquired by the teaching staff in favour of the students. The methodology is based on case studies that are linked to the health and technology area. This process can be applied to other areas of knowledge where could be required as well. The bibliometric analysis information is compared with the future trends set out by Forbes and a scheme is proposed to validate the merit of teachers in order to motivate their professional growth within HEIs. To reduce the teacher training costs, a technical analysis is needed to identify the sensitive areas of the future before awarding a grant, either from the governmental institution or from a private HEI. In this way, the approach articulates three important aspects such as lifelong learning, merit-based growth, intellectual competencies which are transmitted in classroom environments, but it requires clear governance and prior technical analysis to identify the best institutions to achieve a fourth degree level or postdoctoral degree.

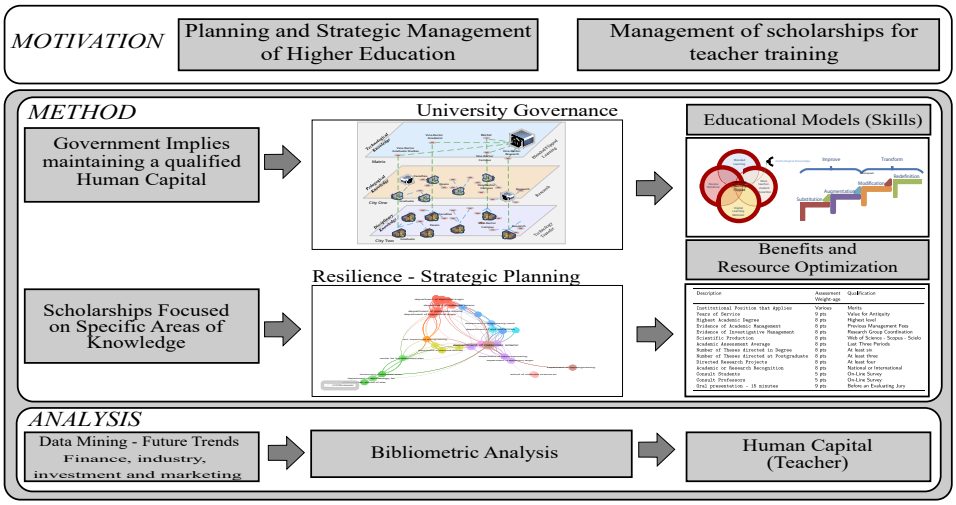


Figure 1. Model to Planning and Strategic Management HEI. Source: Authors.

This article is organised as follows. Related works with the research is described in Section 2. The problem formulation is presented in Section 3. The road map is provided in Section 4. Finally, some conclusions are giving in Section 5.

2. Related Works

The route followed across the best universities in the world gives us a great deal of experience, therefore, Latin American universities are enriched by looking at their experiences because it is not possible to discard and eliminate everything and start from nothing, considering only something new, as stated by [18]. In the case of Ecuador, universities have a limited articulation with private and public companies, due to the political structure that limits the field of action to generate self-sustainability in research projects, in terms of global and regional relevance, unless they come from competitive funds. Therefore, in Ecuador, networked research projects are encouraged between universities with similar needs, but not with universities that have an impact on society and which developing countries need to adhere in order to gain scientific experience and it can turn this back to their own country. However, the English language becomes a barrier in several cases in the region again. Figure 2 shows a summary based on the bloom taxonomy and the Open Systems Interconnection (OSI) model, which is articulated to academic management.

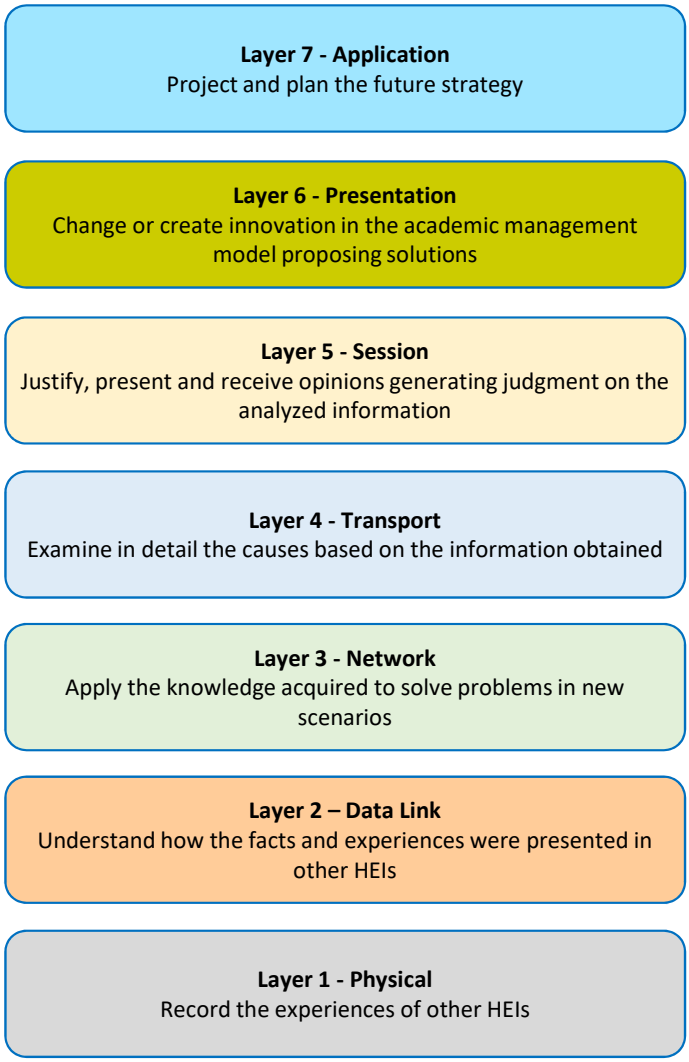


Figure 2. Model to governance HEI. Source: Authors.

University in Latin America needs academic leaders who encourage coordination and continuous collaboration, which must be based on a political and strategic vision that cannot be improvised, they must be planned, in accordance with [19]. Higher education institutions must not only adjust to the laws and regulations generated by the regulatory authorities of each country, because this could lead to the bankruptcy of an HEI, for this reason, the role of academic executives must be decisive; they must also get the political will to generate changes, recommend [20,21].

Today, if we are talking about student-centred learning, and teachers who must learn to use technology to teach and encourage student learning, the current academic offer and curricular content must be evaluated. However, how to do it without breaking the law imposed by regulators, this is the most important part that academic leaders need to have an initiative and inventiveness in order to achieve the university's goals, proposes [22].

Thus, an academic development plan (ADP) has been generated, which involves academic policies, laws, statutes, regulations and a new organisational chart on the university structure with delimitation of functions and regulations, from the point of view of [23,24]. This has to be done in terms of recognising managers' mistakes in each HEI. Undoubtedly, this is a fundamental role in management, which would start with the results evaluation to generate the restructuring of a HEI. In addition; they should be analysed in a systematised way and be compared with the university environment of the region, in order to demonstrate the good practices that generated positive results from other HEIs, affirms [25–27].

It is important to emphasise that not everything is accountability that not everything is efficiency indicators, and it is not possible to work only to respond to the political agenda now. In Ecuador, since 2008, this is the trend in HEIs have been involved and innovation processes have been hampered by the lack of HEI autonomy, as it points out [28].

If we take the traditional structure of an HEI, as a starting point but it is not because of a lack of innovation, affirms [29,30]. It is because it has been so functional and dynamic that includes its own bureaucracy and inertia, which universities have walked and operate more than a hundred years and it means that some endorsements they have. On the other hand, it is not advisable to start empirically experimenting on a trial-and-error basis, which would imply putting out only the fires of the moment, and this would imply reducing the efficiency and quality of the academic project of an HEI, since an inexperienced model lacks and dies in time.

The traditional structure made up of rectors, academic vice-rectors, vice-rectors for research, deans at national universities cases, which involve the vice-rectors of the campuses, who articulate their work with the assistant directors of each campus, it implies a prior process of basic research to identify the processes that have been successful and correct the others. Besides, the reduction of bottlenecks in administrative processes is something that must be incorporated with the use of technology, in fact, the main task is to reduce paperwork and dedicate time to academic management and strategic planning. The best university is not only that one, which has implemented ISO quality or a specific process for each procedure. On the contrary, efficiency implies minimising time with the usage of technology in procedures that involve administrative staff, teachers and students as well as the university has a national character, it requires a greater dedication of the actors to achieve this objective, mentions [31].

The vice-rectors at the national level must articulate both academic and research activities. In the first case, the academic cloisters are developed in coordination with the vice-rectors of the campus and these in turn with the deans, the vice-rectors for research articulate undergraduate and postgraduate products based on research lines that involve research groups in the evaluation and assessment processes, which have a direct impact on society.

The vice-rectors of the campuses are the executors who promote the articulation of academia and research; they are actors who cannot get preferences for one of them, they have to decide, only for academia or only for research. In addition, a vice-rector must also

guarantee the sustainability of a campus; he/she has to present projects and programmes with quality, optimal investment in current assets, and must be a leader who conducts in a safe, transparent and timely manner. He/she must get agility to make decisions, as well as delegate activities and inherent procedures to management, administrative, academic and research issues. The Vice Rector of the campus cannot govern alone, but neither with a small group, because he/she must articulate the human talent to achieve the objectives outlined in the HEI navigation chart; but also, he/she must generate science and provide concrete solutions to society. The dialogue capacity makes him/her a primordial actor, because he/she must achieve objectives without an imposition, he/she must be clear and timely in the transmitted messages to the university community to avoid errors or false interpretations that warn of insecurity or improvisation in his/her decisions.

For this reason, faculties must take the lead in the control of teaching planning and the optimisation of human teaching talent. In addition, they must evaluate the professional profile, the merits that the teacher fulfils throughout his/her career, the mission and vision appropriation by the HEI's collaborators and the competences and skills that the teacher has in terms of disciplinary, pedagogical and technological knowledge. According to this information, the academic leaders have to locate the relevant subjects related to their undergraduate and postgraduate training. It should be kept in mind that a postgraduate programme has given an additional competence to an undergraduate degree, but it does not replace it, so that, it is not only the teacher's postgraduate degree important, his or her entire training background should determine which area of knowledge should be assigned him/her to work in. As a result, faculties will gradually generate the teaching staff, according to an appropriate academic management of the faculty, proposes [32].

On the other hand, Deans, who have been supported the academic management at the universities, have an important role to play in innovating the academy and taking on the challenges of an inclusive education today, so they have to update the institution curriculum and academic programmes with a social responsibility. Deans are in charge of leading the educational and training spaces, so that they have to efficiently determine and choose those professionals that the HEI needs to attract, involving countries that have the greatest impact on the creation of value-added products, according to [33]. This involves taking on the acquisition of the English language knowledge to articulate teachers to these postgraduate studies. This vision, which countries such as Brazil and Colombia have achieved, is a good example to follow to generate the medium and long-term results for an HEI. For developing countries, which want to identify their needs is simple, because they are related to the generation of knowledge that is important to change the productive matrix. These will be the profiles that must be attracted in order to change the present and the future of the society. Deans become into the axis of the academic unit of the universities that are a national character. See Table 1, the curriculum vitae presented in the table indicates the importance and relevance of getting faculties and Deans when it is a national university.

It will be part of the Dean's task to recognise and value the efforts of the teaching staff as an academic body composed of human beings. It is necessary to enrich their spirit that motivates and encourages their daily work in each HEI; this means that the Dean is the leader who facilitates the participation and integration of an HEI.

Furthermore, it is a preponderant function of an HEI to assess whether the number of PHDs has influenced the academic and research environment, in both undergraduate and postgraduate levels, if pedagogical and didactic quality has been assumed in a responsible way for each individual faculty member. Furthermore, it is recognised that a doctorate degree is closely related to basic or applied research; however, it is necessary to show the results obtained in a real context to know whether the research is contributing to the knowledge society and the disadvantaged communities with tangible products of the applied research in which a HEI has invested.

Table 1. Summary—Responsibility levels.

Management	Faculty	Career
National	✓	✗
Optimisation	✓	✗
Trans-disciplinary	✓	✗
Multi-disciplinary	✗	✓
General Vision	✓	✗
Teaching cloister	✓	✓
Academic Curriculum	✓	✗
Management	**Dean**	**Director**
Management	National	Campus
Institutional decisions	National	Campus
Vision	Wide	Reduced

Figure 3, shows the cross-layers that must be included in the academic management in a developing country, where Brazil and Colombia have stood out for their vision in terms of investment. They have invested in doctoral scholarships, in priority areas for research, in the management of a single governmental institution, which is represented by the Ministries of Education of each country, where a holistic solution is included from primary, secondary and higher education.

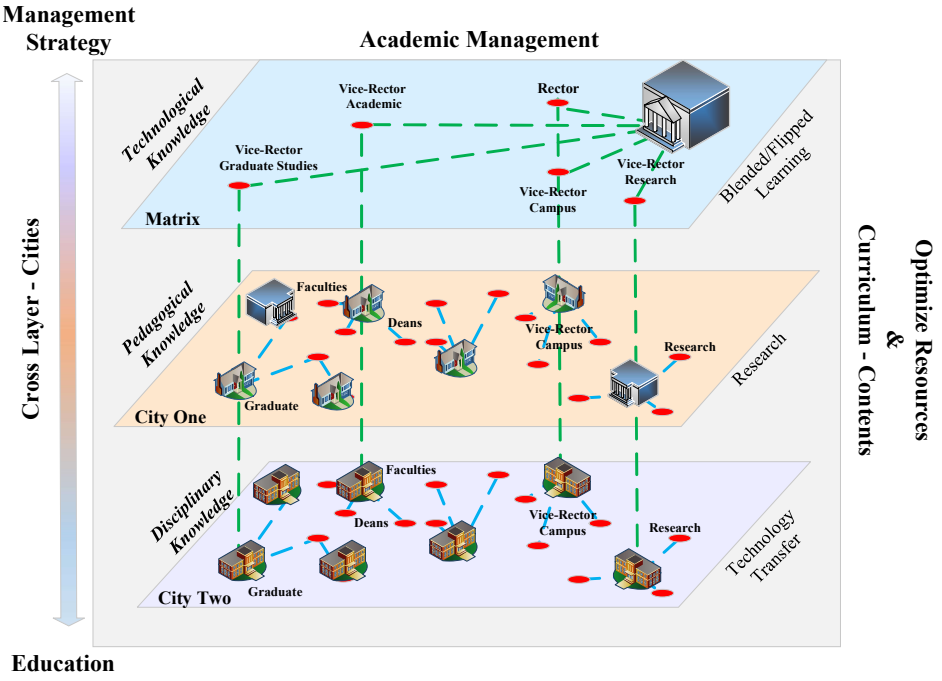


Figure 3. Cross Layer of Education to Latin America based on Management and Strategic Planning. Source: Authors.

3. Problem Formulation

This paper warns about the need to incorporate a change in the traditional model of training human talent in order to optimise efforts and resources based on the choice of a fourth level study centre according to countries, universities and authors depending on the scientific impact. To implement this model implies taking on the challenge of breaking down the barriers of English as a universal language in the scientific field. This implies minimising the risk and time required to carry out the studies compared to

academic offers in Spanish; it will help to increase the knowledge that comes from highly competitive scenarios.

The necessity of incorporating a motivational mechanism to learn English aggressively has to be taken as a challenge for higher education institutions (HEIs). It will also be a strength for countries, which get the dollar as their single currency.

Therefore, the premise indicates that the training of human talent does not lie in the quantity of fourth-level scholarships. On the contrary, it lies in the quality and capacity to locate countries with greater development in the areas previously analysed, which get the possibility of generating reverse engineering, patents and entrepreneurship with high deployment of exportable value-added products. Consequently, they become mechanisms for changing the productive matrix, which is mostly associated with commodities in the region.

Teacher professional development as an ongoing activity requires special interest by an HEI. In order to maximise efficiency and minimise resources in unsuccessful training with no impact on the academic or research environment requires an innovative process to achieve academic and curricular transformation. To do this, it is enough to look at countries, which have had significant achievement or are world powers, as well as countries in the region that have excelled in reading the script properly. For example cellular technology, who is developing it? Wearable technology, which university is a good reference in health and medicine? Which country in the region has reached scientific experience? Which countries are the owners of the agricultural and food industry and what technology did its developers use? Which university has been involved in it? It is the least that should be followed in these processes.

Moreover, the field of basic research has already begun to be related to applied research, reverse engineering is already a reality in HEIs. Researchers are already providing real and concrete solutions in favour of the most vulnerable societies, the equation $R + D + i + T + B$ is fulfilled, which implies Research, Development, Innovation, Technology Transfer and Business. Where the technology transfer office or department is undoubtedly the one who will have clear evidence of linkage with society and not a department that increases the bureaucracy of the HEI; and in the Business case, it implies the possibility for HEIs to get involved with companies to generate concrete solutions and self-finance new research. In the latter case, this is a constraint for countries in the region such as Ecuador, where the generation of resources for HEIs is restricted.

It is worth pointing that the above-mentioned equation generates a clear and unquestionable link with society, which implies credibility, sustainability, resilience and prestige for an HEI. Therefore, understanding the type of education required in the region is not difficult, because HEIs must contribute to society with studies; they must get a vision to identify and generate sources of employment according to the value-added products, which must be linked to the needs of developing countries. Therefore, it is necessary to evaluate in a responsible manner which careers have completed their cycle: which classic careers continue to contribute to the society? Moreover, which careers should emerge?

The changes in the academy are not given by the creation of a scientific article [34], professional, academic or by resolutions and regulations, they are given by decision and vision of what, how, with what and where is possible to change or include to achieve the goal. Therefore, it needs a political will and strategic planning of the main actors within the academic management of the HEI, by avoiding improvisation and the resolution of problems of the moment as much as possible.

Strategic planning involves optimising resources in a HEI and investing in laboratories with real equipment, which are not only used for teaching purposes. It also involves actions of faculty actors, which implies assessing needs and articulating research projects that can obtain competitive funding to serve research and students in a concrete way.

The number of hours assigned for teaching and research activities for HEIs in the region, and particularly in Ecuador has been of special concern, because the resources to achieve sustainability in a HEI are directly related to the reduction of research hours in

order to increase teaching hours. This implies an adequate management to avoid affecting the results that a HEI that has achieved in terms of basic or applied research, therefore it is necessary to evaluate the teaching staff's competences according to the results, since if the teacher does not develop research, it is necessary to manage the teaching resources in an appropriate way.

The proposal of this paper is to present a system of social responsibility based on an organisational change of roles, since, if they are not adequately defined, the processes are difficult to follow or attributions are overlapped, therefore specific responsibilities are required. Part of the planning in a HEI is the internal and external communication strategy, which should transmit the achievements to the university community and society. It must be able to empower the community with the strategy message of the HEI's management model. It should socialise the strategic objectives that are achieved on a day-to-day basis. What kind of undergraduate and postgraduate programmes it maintains. It should inform if the HEI has already internationalised the curriculum in which there is an exchange of students and professors between universities in the region and in the future with developed countries in a specific area of knowledge.

National higher education institutions must maintain the message of institutional unity, but not of their bureaucracy and administrative inefficiency. It must transmit a message that it is sustainable in terms of its capacity, in its human and technological resources and its highly efficient, thereby demonstrating a change from passive to active management that is based on strategic planning, which is also inclusive because it takes care of the poorest in society.

Table 2 shows how to evaluate the management positions, which are articulated to the academic management from the Vice rector and Deans. In this table, it is proposed to reduce the risk that exists in the election of academic managers with technical criteria involving academia and research at the HEI.

Table 2. Rubric for Election of Management Positions.

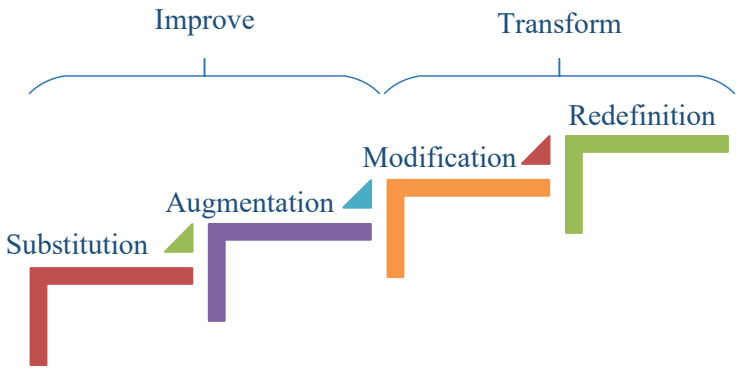
Description	Assessment Weight-Age	Qualification
Institutional Position that Applies	Various	Merits
Years of Service	9 pts	Value for Antiquity
Highest Academic Degree	8 pts	Highest level
Evidence of Academic Management	8 pts	Previous Management Fees
Evidence of Investigative Management	8 pts	Research Group Coordination
Scientific Production	8 pts	Web of Science—Scopus—Scielo
Academic Assessment Average	8 pts	Last Three Periods
Number of Theses directed in Degree	8 pts	At least six
Number of Theses directed at Postgraduate	8 pts	At least three
Directed Research Projects	8 pts	At least four
Academic or Research Recognition	8 pts	National or International
Consult Students	5 pts	On-Line Survey
Consult Professors	5 pts	On-Line Survey
Oral presentation—5 min	9 pts	Before an Evaluating Jury

HEIs should have a mechanism that includes the members' input who are part of academic co-governance, but first the conditions, skills and attitudes of potential managers must be assessed, primarily based on merit. It has to be evidenced in their experience and trajectory, since experience will give an intrinsic value to the academic management, therefore, it must be articulated with competences in both academia and research fields since the University is made up of both issues and one cannot be ruled out or, on the contrary, treated separately. Governance in the health crisis has denoted the need for change and some contributions are presented in [35–37]

4. Road Map to Reduce Risk in Academic Management

This paper warns about the advantages of using technology to generate indicators to facilitate the HEI's academic management, as well as a mechanism to facilitate strategic planning to reduce inefficiencies in management processes.

The region's organisational structure around academic management presupposes a change, but there is no doubt that this issue implies a political decision to optimise public spending resources. Consequently, see Figure 4, a model relevant for academic management is shown to know how technological pedagogical content knowledge (TPACK) is called, "what" and "with what" the teaching model is incorporated to the new HEI needs based on disciplinary knowledge, pedagogical knowledge and technological knowledge. On the other hand, see Figure 5 which is in the model of substitution augmentation modification redefinition (SAMR) which does not allow to define articulated learning and neither integrate technology to profile a stage of upgrading from the analogue world into the digital world.



Substitution	Augmentation	Modification	Redefinition
Books and Theses	Underline - Take notes	Manage References Scientific	Scientific Article - Academic High Level

Figure 4. Substitution Augmentation Modification Redefinition Model. Source: Authors.

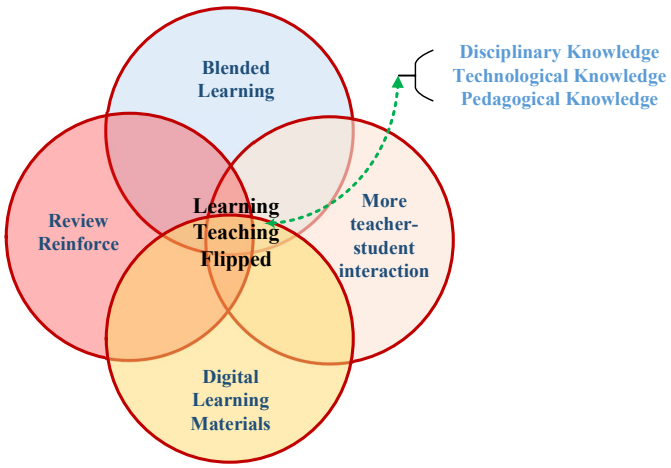
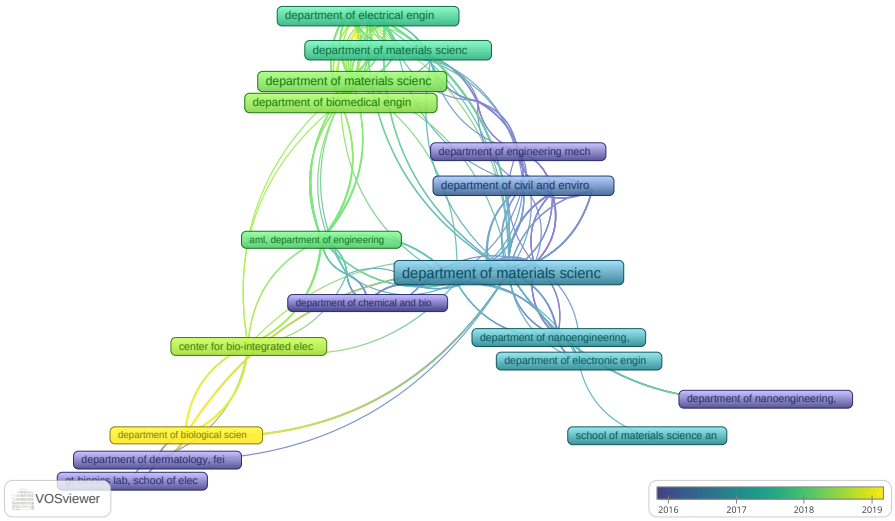


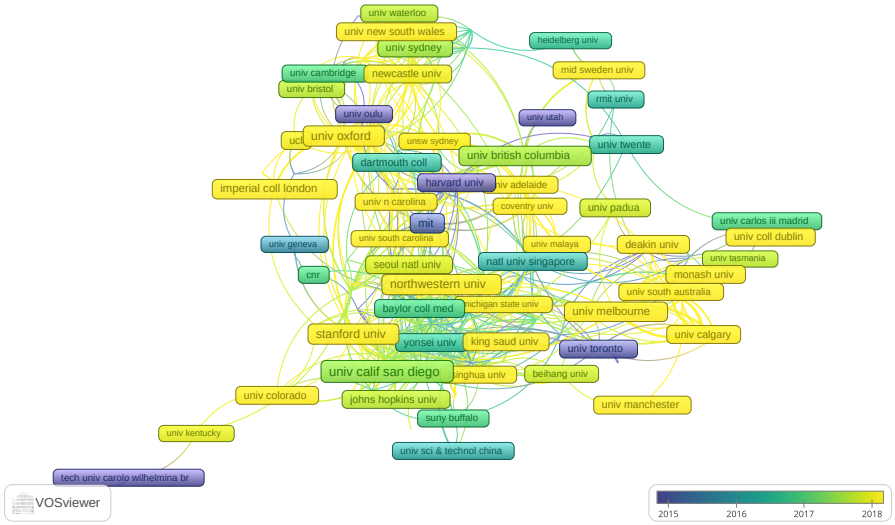
Figure 5. Technological Pedagogical Content Knowledge (TPACK) Model. Source: Authors.

Figure 6 shows the most relevant research groups and universities' names, in relation to the area of knowledge in the field of Wearable Technology and its relationship with health. Particularly in specific solutions for people with any kind of disability, which articulates almost exactly, with what Forbes has already said about the future careers and specialities in the Table 1. In this way, the possibility of reducing the risk of investment in teacher training in doctoral programs is determined.

In addition, two relevant aspects for developing countries are fulfilled, which are related to the future professional profiles, changing the productive matrix and the generation of economic remittances for the countries, as they get the option of exporting products with added value as opposed to the sole sale of raw materials, which is characteristic of the countries in the region. To carry out the bibliometric analysis in networks to obtain this information, the VosViewer free access software was used, and a computer with an Intel® Xeon® E3-1535M CPU of 2.90 GHz, and 64 GB of RAM memory. The databases used for this study are related to those with the greatest impact in terms of quality and scientific recognition, such as Web of Science and Scopus.



(**a**) Scopus—Universities—Health



(**b**) Web of Science—Universities—Health

Figure 6. Case study: Network map showing the relations between various Universities in the Wearable Technology & Health—(**a**) Scopus. (**b**) Web of Science. Source: Authors.

Table 3, presents the scenario of the professions with the highest demand; as well as the university career specialisations that have the greatest future. It also shows the University ranking, which gets associated careers with professional success according to the Forbes source for the year 2020.

Table 3. The Professions and Specialisations With The Brightest Future According to Forbes—2020.

Professions	Specialisations	Top Ten Universities
Data analysts	Math	Harvard
Pharmaceutical talent	Robotics	Massachusetts Institute of Technology
Architecture and engineering	Agricultural Engineering	Stanford
Digital animation	Hospitality Management	University of California—Berkeley
Product designers	Health and Biotechnology	University of Oxford
Community relations	Pre-Law, With A Focus On Elder Law	California Institute of Technology
SEO Specialist	Quantum Engineering	Columbia
Block architect	3-D Printing Design	Princeton
Expert in cyber-security	The Liberal Arts—(Computer Science)	University of Cambridge
Physiotherapists	Aerospace Engineering	University of Washington

5. Conclusions

The main objective of this research has focused on changing concepts from human talent management to the accompaniment of human talent. This is capable of promoting competences in terms of results, which implies the value of their contribution to society, which is reflected as a merit. On the other hand, it is able to encourage to the future generations who are joining in higher education, because it is a student-centred education, but there is no doubt that without human talent the region will not be able to achieve competitiveness for the labour market.

Link with society has become an entity that is capable of achieving continuous training and connecting undergraduate and postgraduate students with the most vulnerable community and public and private enterprise, too.

This paper shows the relationship between researching, teaching and academic management, and it has provided a roadmap based on the bibliometric analysis that countries around the world are experiencing, it is a moderately stable and resilient management model, which was applied in situations such as the pandemic. Moreover, this technical criterion undoubtedly allows it to reduce errors and improvisation actions that could be taken by both vice-rectors and deans who are in charge of the mid-level management of an HEI. Linking research both in teaching and academia in general must transcend and they cannot be isolated in order to increase indicators and scientific visibility; it must achieve an internal and external contribution to society, it could be basic or applied research.

Another important aspect highlighted in this document is related to the way in which a matrix is articulated with its respective campus, which cannot be isolated government if this happened, chaos would be the operator for an HEI that is established in different cities and it is of national character. At this point, research, technology transfer (linking) and academic functions generate a cross-layers that implies an organisation in levels or strata that link the guidelines of the campuses and they imply an adequate communication system. Besides, having an adequate technological system reduces the risk of making an individual effort for each campus in a different city from the main campus. There is no doubt that the institutional image of quality, warmth, sustainability and resilience is one at a national level and there can be no doubt in the eyes of society.

Furthermore, the importance of a clear, timely and dynamic articulation of the performance of each campus of a HEI is emphasised, whereby centralised but decentralised administrative management should be ensured by the figure of the dean. In order to increase efficiency at each campus, it is also pointed out that HEIs should not be exclusively devoted to complying with a country's body of higher education regulations, as this reduces the capacity for action and reaction of their authorities who focus their efforts, physically, mentally and psychologically, on aimless and constantly changing policy regulations. On the contrary, HEIs should get so clear about their pedagogical model that it should be articulated with their navigation chart. Avoiding losing their future horizon, since their social responsibility has to do with offering society not only professionals, but

also with the possibility of generating sources of employment, since industries require skills and abilities in a different way than the one proposed by the academy.

It is important to emphasise that the HEIs in the region (case study: wearable technology & health, and Chile appears in other areas of knowledge) particularly in Brazil and Colombia have correctly read the booklet on teacher training at doctoral level. They have evaluated the human talent, they have identified research lines that they have developed, and they have evaluated the important countries in these areas of knowledge. On this basis, they have carried out an investment in training but with responsibility, they think that the human talent reinserted in the academy will not only take the HEI to a better position, so it will promote a change in the productive matrix of a country, professionals who have gathered the knowledge that is required for developing countries. Hence the importance of measuring merit in human talent, since HEIs are made up of human beings, require the encouragement that lies in the effort they put into their day-to-day university activities.

Thus, this work warns about the importance of strategic planning in the academic and administrative fields, evaluating the future careers, which really generate technology transfer, not only shown year after year in Forbes; but also, it must restore the academic value to HEIs; which will allow them to finance research in a sustainable way. There cannot be any uncertainty, the processes must be analysed, but also it must act in a dynamic and timely manner in accordance with the turn taken by the creation of new knowledge in the academic field at university level in each of the faculties. There can be no trial and error model because it would be the loss of a HEI's credibility. HEIs must be able to evaluate in a responsible way, which degree programmes have lost the society's and the business world's interest. Consequently, they have to be closed these old academic projects; instead, they have to evaluate which degree programmes are required by an increasingly demanding technological world.

The previous bibliometric analysis results can be interpreted as a perspective or roadmap on ongoing training of human talent in higher education. Findings in each area of knowledge indicate a trend for future work. In accordance with this, it will be possible to define sectors of greater relevance for the countries of the Latin American region. In this way, the real areas where a strong investment or education policy is needed to provide a scholarship are identified.

Finally, professions are defined in which teachers with extensive knowledge are required, so that investment should be focused on motivating teachers with these skills in order to balance general and specific fields appropriately.

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