

Analysis of training programs related to Quality Management System: the Spanish case

1. Introduction

The economic globalization and the ultimate financial crisis have drastically altered the world economic order. Organizations have now been pushed toward providing more quality and respond more effectively to consumers' needs and fulfilling customer requirements. To adapt to this new environment, businesses need ways to improve their operations in different frontages including: better gain, serve and retain customers while reducing costs and improving their profit margins. Sound, documented evidence from the academic studies now confirms that implementing Management Systems (MS) can help businesses to achieve success on all of these frontages. Given that the majority of extant literature point toward that there is a significant relationship between the implementation of MS and/or Management System Standard (MSS) and customers' satisfaction, loyalty and business performance.

Furthermore, expectations about effective performance at work have changed radically over the past decade and will continue to do so. Since, it is now common for people to be recruited, selected and trained, besides being developed, reviewed and rewarded against the degree to which they add value to the organization (Pember, 2006). In addition, previously successful companies no longer exist, either at all or in their original form. Given that new types of enterprises continually emerge because of the new era of e-commerce, globalization and technological uncertainty that operate in different ways. Consequently, organizations nowadays demand high technical professionals with the cultural level, scientific and university education. They also require continuing education throughout life, not just in the macroeconomic and structural order but also as a means of personal fulfilment.

In general, education and training programs in Spain are closely linked to the labour market. They are also closely linked to the composition of the work force as well as the

nation's economic structure. Moreover, founded on the belief that the consistent use of adequate and properly trained employees is an absolute imperative to ensure success on all the frontages previously mentioned, this paper aims at identifying, discusses and analyzes the existing training programs related to Quality Management System (QMS) in Spain. The findings of this study may be useful for organizations trying to evaluate their QMS efforts. Thus, engage their people in order to face the competitive challenges that lie ahead, given that it is beneficial to tap into the potential of entire workforce and make learning available to all employees (Pun and Chin, 1999).

2. General Education System

Although, the teaching and/or the professional training language(s) depends on each autonomous community, the legislative structure of the education system in general is defined at national level by the Ministry of Education Social policy and Sport (Ministerio de Educación, Cultura y Deporte). Nevertheless, each autonomous community can develop their own complementary legislation and regulate the non-basic elements of the education system. In addition, they have executive and administrative powers which allow them to administer the education system within their own territory (Santiago et al., 2009). The current Spanish education system followed la Ley Orgánica de Educación (LOE) that corresponds to the Fundamental Law of Education in English as. As mentioned before, education and training programs in Spain are closely linked to the labour market. Figure 1 mapped and summarized the interrelationships between education, higher education as well as professional training and the world of work.

Please insert Figure 1 about here

Figure 1: Spanish education system and the world of work

3. Primary and secondary education

Generally, education in Spain is compulsory, free from 6 to 16 years of age and supported by the Government in each Region. Obviously, obligatory education starts at the age of 6 (primary school). Besides, at the age of 12, children are compulsory enrolled to secondary school (Educación Secundaria Obligatoria: ESO). At this point children are provided with either the basis for further high school studies or professional training. At the end of this stage, Students are often awarded with a certificate called Graduado/o Educación Secundaria. With this title, students have three options: they can opt for start working, start vocational training or intermediate education and voluntary continue to secondary education. The ultimate option leads to the Bachelor level (Bachillerato).

The Bachillerato is the final stage of the secondary education and it is not mandatory. The entry requirement is the ESO or a vocational training title (Formación Profesional de grado medio). The lessons at the Bachillerato are tailor-made to students' interests in future education. One can choose Artistic path, Natural Science and Technology path or Humanities and Social Sciences. The Bachillerato is also essential to enter the market labour or to gain access to university or to undertake further vocational education. Moreover, the option of professional training can be done in two ways. The first way is the vocational training at the intermediate level (Formación Profesional de Grado medio) which can be a substitute for secondary school and it finishes with a technician diploma (Técnico). The second way is the vocational training at the superior level (Formación Profesional de Grado Superior). The Formación Profesional de Grado Superior is a post matriculation school and it gives the title of technician diploma called (Técnico Superior).

4. Higher education and tertiary education

According to the Spanish Ministry of Education of the year 2014 data report, the Spanish higher education is composed of 82 universities spread over 236 campuses with physical presence and 112 with no physical presence. Out of the 82 universities, 50 were publicly owned and 32 private. In 2013, there were about 1.561 million University students in Spain. The figure represents about 1.75 universities per million inhabitants

and the equivalent of 24.6 per million inhabitants of the theoretical university population aged from 18 to 24 (Ministerio de Educación, Cultura y Deporte, 2014).

4.1. Under Graduate University Degree (Grado)

Like most of EU member states, Spain has undergone radical restructuring of its higher education system by fully implementing the Bologna process. Bologna process is a system of easily readable and comparable degrees with the aim of promoting European citizens employability and the international competitiveness of the European higher education system (Keeling, 2006; Crosier et al., 2012). In addition, the Bologna Process has encouraged manifold developments in the area of quality assurance both within higher education institutions and externally (Voegtle et al., 2009). Within this framework, university education is to be structured around two main cycles: undergraduate and postgraduate.

According to the Ministerio de Educación Cultura y Deporte (2014), during the academic year 2012-2013, the whole Spanish University System has produced 2 464 verified and taught Degrees in which 1.046 million students were enrolled. Out of it about 48 public universities offered 1956 degrees to 912 thousand students registered and 508 taught Undergraduate Degrees in 29 private universities to 134 016 students. Overall, 35% of those verified and taught Degrees were affiliated with Social Science and Jurisdiction, 27% to Engineering and Architecture, 16% to Humanity and Arts, 13% to the Health and only 9% to Science.

4.2. Masters and Doctorate Degrees

Access to the second cycle requires successful completion of first-cycle studies which is accomplished with a minimum of three years. The second cycle also covered two levels: the Masters and the Doctorate degree (Másteres y Doctorado). According to the Ministerio de Educación Cultura y Deporte (2014), in September 2013 there were 3 519 Master's Degrees registered, compared to 3 292 in the previous year. This figure includes 439 inter-universities Masters Degrees as well as 385 official Master's Degrees who are in the process of extinction but have led to a new verification. It should be

noted that a part from the 71 Master Degrees from the Universitat Internacional de Andalucía (UNED) and 24 Master Degrees from Universidad Internacional Menéndez Pelayo (UIMP), each University must independently register their taught Master Degrees. This must be done with the endorsement of their Autonomous Community and in accordance with the guidelines and conditions set by the government. Although the number of verified Master Degrees continues to rise, they have not yet reached the system stability level which is the extent to which Undergraduate Degrees are produced and those Degrees give access to the same Master's Degree (Ministerio de Educación Cultura y Deporte, 2014). Furthermore, there was about 10 531 Doctorate thesis dissertations read in 2012. This figure represents 11.1% increase over the previous year. Besides, since 2008 the number of reading thesis has increased by 35%. Only 17.7% of the theses are read by students under 29, and 54.4% under 35 years. In Spain 28% of Doctorate thesis are read with more than 40 years. These data are significant in view of the employment of doctors in Spain.

5. Management System standards

As we previously argued the increased use of QMS is not surprising because of the exponential increase of MS, MSS, Total Quality Management (TQM) etc. For example, in 2012, there were over 1.101 million certificates of International Standardization Organization (ISO)¹ 9001 issues across 184 countries. This figure represents a 2% increase since 2011 and the number of businesses choosing to adopt ISO9001 is likely to continue to grow. Following the obvious success of ISO 9001 and ISO 14001, additional management systems standards have been developed for a variety of applications. A quick look at these new standards shows that they contain many of the basics of ISO 9000 that was used as a catalyst of the existing tendencies. With the purpose to induce organizations towards a structural model based on the logic of strategic quality management that has evolved during the last 100 years or more.

Nevertheless, these new management systems standards all include practices associated with their specific purpose. In addition to Quality Management Assurance

¹ ISO standards in Spain are created by los comités técnicos de normalización (CTN) and are labelled as norma UNE (Una Norma Española) or UNE EN (UNE Estándard Europeo).

(ISO 9001) and Environmental Management Systems (ISO 14001), the following list offers a brief summary of other management systems standards that have been developed and deployed during the last 15 years: Food Safety Management Systems, as defined by ISO 22000:2005 contains MS principles associated with assuring safe food. Occupational Health and Safety Management Systems, as defined by OHSAS 1800:2007, contain MS principles associated with the reduction of Human Health and Safety Risks. Energy management systems, as defined in ISO 50001:201, Energy Management Systems, is an important new MS related to the management of energy use. In addition, ISO 26000:2010 provides guidance on how businesses and organizations can operate in a Socially Responsible way. Information Security Management in ISO 27001:2013 helps organizations to keep information assets secure. Moreover, ISO 28000:2007 for Specification for Security Management Systems for the supply chain etc.

Quality products and services can be delivered best externally and internally when QMS is efficiently focused on the same target (Pun and Chin, 1999). In general, MSS contain basic concepts that can be applied to achieve any desired goal. However, MSS alone will never fix a mismanaged organization. Evidently, successful implementation and operation of MSS requires good management and more importantly a crowd of properly trained workforce. Given the obvious truth that MSS can help prevents problems from occurring and possibly adds value to the organization. However, without the involvement of properly trained employees, it cannot itself do the procedures, the documentations or all the paperwork and records. Therefore, the following section discusses the existing training related to QM in Spain.

6. Education and Professional Training in Quality

In general, quality can be defined in different ways. For example it can mean excellence, zero defects, satisfying customer needs or operational improvement. Moreover, Quality Assurance, Quality Management as well as Quality Management System and Quality Management Standard can all be defined in different ways. In this document, all these terminology will be used interchangeably because here they mean anything related to MSS.

After a thorough understanding of the Spanish education as a whole, we scanned the existing training related to management system standards and classified them into 4 different groups as presented in Figure 2. The existing education and professional trainings were classified according to the University and No-university education, as well as to the Official and Unofficial qualification. The rationale of the taxonomy, which consider 4 different groups as presented in Figure 2 was sought to design a logical framework which highlight the same objectives avoid duplicative education and training programs. Official qualification here referred to those education programs and existing professional trainings that were fully accredited by the Ministerio de Educación Cultura y Deporte. Any other education programs and existing professional trainings recognized by the government but not accredited and registered in the Boletín Oficial del Estado (BOE) or the Authorized Autonomous Community were classified as Unofficial.

Please insert Figure 1 about here

Figure 2: Official and non-official QM training in Spain

6.1. University Official education and training programs

To obtain the existing official university program related to quality, we did an exhaustive search of the database (Registro de Universidades, Centros y Títulos: RUCT) maintained by the Spanish ministry of education. The searching keywords comprised “quality”; “business”; “business” administration”; “tourism” etc. The results of the search indicated that from the 2464 registered Undergraduate Degrees and 3292 Postgraduate degrees, there were only a tiny minority of 94 verified and taught university programs related to “quality”. After carefully scanning of those existing programs, we observed that there were some official Degrees such as: Doctorate in Biomedicine, quality of life and health as well as the Official Doctoral Program in general Education, Society and Quality of Life; Master in Continental Water Quality, Master in Taxation and International Taxation etc. that were not related to quality management education programs. Consequently, they were not taken into account in

this study. The overall results of the remaining official university programs presented indicated that there was no official Undergraduate Degree program related to Quality. On the other hand, as shown in Table 1 and 2 there was about 27 Official Masters and 6 official Doctorate Degrees totally offering programs related to QMS.

Please insert Table 1 about here

Table 1: Official Master's Degrees on QMS

Please insert table 2 about here

Table 2: Official Doctoral Degrees on QMS

Those officially awarded degrees included: Master in Quality Management; Integrated Master in Business Administration: Corporate Social Responsibility, Quality and Environment; Master in Food Quality and Safety; Master in Management of Occupational Risk Prevention, Quality and Environment etc. They also included awarded Doctoral Degree in Quality Management and traceability in food of plant origin; Doctoral Degree in Quality Management in Health Services and Doctoral Degree in Quality and Food Safety etc.

The modules thought in those Degrees include: the general introduction to the fundamental concepts about quality and management system as well as quality procedures, planning, organization and control. Moreover, students are introduced with Standardization, Certification and Homologation as well as Systems of quality assurance in Europe and Spain, international regulations on quality and environmental management. The modules thought also include an introduction to service quality, management standard integration .They focus on processes, integrated policy and planning of the integrated management system. As well as, identifying and assessing environmental management aspects, besides hazard identification and risk assessment etc.

6.2. Unofficial university training

6.2.1. Short Cycle Diploma (Ciclo corto)

Although the degree structure described above is already applied in most of Spanish Universities, there are universities that are still under revision how to adjust their programs to the requirements of the Bologna Declaration. Accordingly, those universities continued to offer short cycle courses (Ciclo corto). Indeed, Ciclo corto may be done in two different ways. On one hand, there is a first cycle which is oriented towards professional skills, with duration of two to three years and leading to the Diploma degree. On the other hand, the second cycle course that leads to the Licenciatura. It generally lasts two years for students that have gained a first cycle qualification or completed the Grado. Obviously, universities can still offer courses that lead to official degrees valid throughout Spain as well as courses that might not lead to a title but may be, for example, part of a professional specialization. As already mentioned, valid official degrees nationwide are those that are part of the Registry of Universities Centres and Courses (RUCT). Nevertheless, we were able to trace some diploma and/or Licenciatura in Business Administration, Economics and Business Administration, Business Management tourism etc. with some quality management module included in their programs. There is also Diploma related to Integrated Management Systems of Quality, Safety and Environmental management standards.

6.2.2. Personal University Degree (Titulo propio)

The continuous scientific and technological development, coupled with the evolution of the socioeconomic environment and increased competitiveness at the work level, is now forcing many professionals and students to continually recycle themselves and complete their education or training. Thus, many Spanish universities are now offering the opportunity for students and professionals to improve their career by taking Personal Training (Titulo Propio). Indeed, Titulo Propio can be a graduate and postgraduate program that is intended for the acquisition by the student specific training and multidisciplinary oriented academic or professional specialization. These programs are often designed by a university in collaboration with professionals and experts from different organizations. They are designed to respond swiftly and effectively to the needs posed by the society and the labour market. The access to the program related to quality depends on the number of credits and previous courses taken on the topic. For

example for Masters and Specialist courses, students must be in possession of a Bachelor's degree or a Degree or Diploma.

6.2.3. Undergraduate Degree (Grado)

As we previously discussed, Grado is the first university cycle training which is adapted to the European context academic studies so that the duration, the learning methods and evaluation of academic activities etc. are harmonized. The Grado degree aims to provide a general training directed to the preparation for the performance of professional activities. Our search indicated that there was no official Grado related to quality management. However, we have identified in our some unofficial Grado that keep track of the quality and environmental management systems implanted in different areas including water purification, desalination, integral water cycle, restoration, social health as well as in the textiles industry, food and beverages, metals and metal manufactures etc. We also identified some modules that keep careers on the large area of risk prevention, environmental quality in the area of chemicals, shipbuilding and automobiles. In addition, we found thought modules based on quality management system in tourism, clay and refractory products, pharmaceuticals and medical equipment. Moreover, we also found thought modules related to technical, social, economic and legal aspects that influence environmental quality management issues and quality management and risk prevention.

6.2.4. Masters Degree

Apart from the official Masters, there is also a wide range of masters that are unofficial yet classified as postgraduate studies. To access to those unofficial Masters studies it is necessary to have previously completed (like in the official Masters) a bachelor's degree or equivalent. In the quality field, we have identified scores of online universities, private companies and agencies of management system standard accreditation offering Masters Courses. The aim of most of those Master degrees is to provide participants with the knowledge, skills and competencies. In addition, those Master degrees provide knowledge on how to design, implement and monitor management system standards. As well as, they provide knowledge on how to integrate management system for quality,

environment and occupational health and safety. For example one of the leading agencies of MSS accreditation (AENOR) offers a Master Degree to people with no work experience and / or professionals with no previous knowledge of the UNE-EN ISO 9001:2008, EN ISO 14001:2004 and OHSAS 18001:2007 Standard, who want to be trained on how to carry out an integration project of the three management systems or are to take responsibility for an integrated management system as well as to anyone interested in acquiring an education that can develop your career in the future.

6.2.5. Training at work (University)

The Ley Orgánica de Universidades (LOU) recognized the quick rise of the knowledge globalization phenomenon. The LOU also acknowledged the process derived from scientific research and the technological developments are transforming the ways of learning, organizing, generating and above all the ways of transmitting knowledge. In that sense, Spanish universities as a whole are now intensifying their scientific research activities. In addition, they are also creating models that strengthen their research activities and knowledge diffusion as well as extending their national and international collaboration capability. To guarantee the quality of teaching and research, there is program for human resources training set by government. The program includes aid for training researcher staffs (la Formación del Personal Investigador: FPI) and university teachers (la Formación del profesorado universitario: FPU). According to the Ministerio de Educación Cultura y Deporte, 1.018 FPI y 810 FPU representing an investment of 75.5 and 54.2 million respectively were awarded in 2012. Those figures include university teachers and researchers in the field of quality.

6.2.6. Institute of Advanced Research (Instituto de investigación)

Instituto de investigación is a tertiary education which refers to programs offered by institutions that extend beyond universities. Instituto de investigación plays a role of overcoming the insufficiency of the departmental structure of Spanish universities, following the proposal of the LOU which foment the creation of university institutes as a focal point of research activity. Instituto de investigación is often devoted to advanced study and original research. It is also intended to provide sufficient qualifications for

gaining entry into advanced research programs and professions with high skills requirements. In addition, it is generally more practical, technical and occupationally specific. Besides, it aids networking in inter- universities cooperation to foster a work between researchers from different fields, on both national and international levels. Moreover, it promotes research from a multidisciplinary perspective including research related to quality management as a whole. It is noteworthy to mention that above the Instituto de Investigacion there is a Higher Council for Scientific Research (Consejo Superior de Investigaciones Científica: CSIC). CSIC main function includes the training of specialized personnel, the transfer of the research results to the business sector as well as supporting the creation of technologically-based companies.

6.2.7.Seminars and Conferences (University)

Most of Spanish universities encourage students and university teachers to participate in national and international conferences and seminars. Since, it is generally accepted that conferences, seminars and specific trainings offer opportunities to learn the latest improvement ideas, connect with likeminded colleagues and generate the impetus for change in the organization as well as researches where necessary. In addition, most universities encourage students and teachers to develop and make extensive use of their competence in research by intensively contributing to the knowledge transfer via scientific publication, seminars and conferences. In general, Spain often host a good number of national and international conferences related to QMS every year. In addition, the number of Spanish scientific publications related to QMS has exponentially increased over the past 15 years. This is probably due because the majority of Spanish companies are now implementing QMS. According to ISO (2012) survey, Spain with 59418 certifications was ranked second in Europe after Italy and third worldwide after China and Italy. Besides, Spain is also rank the top three for growth in the number of certificates in 2012 follows by China and Romania.

6.3. Official Non-university training education related to quality

Most of accredited non-university educations are vocational training. Vocational training is typically provided in centres based in both public and private schools and

also through distance education. As it was explained earlier, vocation trainings are tailor-made as an alternative for students who do not want to attend university but seek a practical and higher education that qualify them to join the workforce. We have also searched through the database maintained by the Spanish National Institute of Qualifications (Instituto Nacional de las Cualificaciones and Educaweb) to identified existing vocational trainings related to quality management. The Spanish National Institute of Qualifications is responsible for defining and updating the National Catalogue of Professional Qualifications. The results of the search presented in Table 3 indicated that there are some official registered education and professional training in glass, textile and leather industry. There are also official training in transport, retails and restoration.

Please insert table 3 about here

Table 3: Vocational education and training related to QMS

Some of the modules thought (modules created/launched) are related to characterization of testing and monitoring supplies, finished products and process manufacturing. There is also a thought module related to the products processing based on the environmental quality standard instructions that ensure the quality and safety of operations. We also identified some modules that assist in the organization and development of quality control of products in textile and leather. Some of those modules also sharpened students with the ability to monitor the implementation of such quality control and where appropriate may conduct technical tests to check the product/service technical specifications that ensuring compliance with management and environmental standard systems. Some discuss the certification and the regulation on registration whereas others tackle the issues related to the evaluation, authorization and restriction of chemicals especially when it concerns the protection of human and environmental health.

Moreover, there are modules discussing the basic strategies of customer satisfaction and quality service in retails and small own businesses. Moreover, some modules relate to cost management training and quality of service of Road Transport as well as the characteristics and the implementation of quality systems and continuous improvement

of trucking service and logistics. They are also modules that define and plan restoration service processes according to the service standards and organizational procedures.

6.4. Unofficial Non-University education related to quality

6.4.1. Técnico and Técnico superior (Vocational Training: technician and advance technician)

According to the LOE, Spanish economic model can be achieved if the education system trains tomorrow's workforce adequately and efficiently. With the aim of moving the economy towards a sustained growth path and to improve linkages between education and business, Spanish government often promotes professional career development training program through the Centros Integrados de Formación Profesional. Those training programs are mainly professional training and intermediate vocational educations specifically made for people who want to enhance or change their career. Our search related to quality indicated that there were some thought modules for example related to: quality, safety and environmental protection in the restoration which trained professionals on how to analyze the process of design and implementation of management systems as a whole. This is particularly made for quality assurance and environmental management as well as how to adequately adapt them in the organization. Some others modules are based on how to analyze data obtained during quality and environmental management processes and propose actions for continuous improvement of the company and / or entity.

Another module related to quality management in the food industry emphasized on how to analyze the quality and environmental management plan of the company based on the management system established. Moreover, some other modules lay emphasis on how to act responsibly in the workplace and on how to comply with environmental protection regulations. Furthermore, other modules also introduce students on how to analyze legal requirements and quality standards that a product must meet to ensure consumer safety. Besides, quality management and environmental control in textile industry offer to students the knowledge capability on how to analyze the samples of

materials of textiles in progress and in finishing process as well as how to determine the suitable test procedures and quality control.

6.4.2. Training at work (organizations)

In Spain, a large proportion of human capital accumulation in the form of training takes place inside the organization. Therefore, it is not a surprise that most of the employers offer to their employee training regarding the recognition of the importance of documenting processes and environmental quality management as well as ensure that they understand their usefulness as elements of the organization management.

Furthermore, professionals or employees generally gained knowledge or experience based on some practical training offered by the organization. For example quality control in the receipt and dispatch of chemical products required some special training at work relate to quality control systems used in the process control of raw materials and finished products that conform to the quality management of the chemical process. Moreover, it is also necessary for employees to be able to perform physical and chemical measures variables related to quality and raw materials product control in addition to provide adequate associated logistic documentation.

6.4.3. Seminars and conferences (organizations)

A seminar in general is a form of academic teaching or professional training offered by a commercial or professional organization. It has the function of bringing together small groups for recurring meetings, focusing each time on some particular subject, in which everyone present is requested to actively participate. Organizations often see seminars as the perfect opportunity for employees to learn some skills and improve their know-how. Given that they create conditions for continuous learning and development of competence, innovation and dissemination of the results achieved at all levels of the organization. Consequently, it was not a surprise to see many Spanish companies that are now investing to develop seminars, training courses or workshops related to quality. Moreover, in order to refresh or update their employees' knowledge and skills, most of

the organizations also sponsored a limited number of staffs to participate in national and international conferences and seminars.

6.4.4. Consultants

In general, many companies that opt to implement management system standards and achieve ISO registration often encounter numerous problems including but not limited to, the lack of formal structure related to work process, insufficient internal control procedures, uncomfortable level of the knowledge approach, as well as the limited number of employees and/or the employees natural resistance to change. In order to reduce these problems and increased effectiveness of the management standard, many Spanish companies often hire external consultants to help implement the management standard or to discuss the document of the various works in progress. Some other companies hire external consultants to train their employees and to provide advice on how to improve the process and maximize the productivity.

Additionally, not all consultants are external to the organization. We were able to trace internal consultants in bigger Spanish organizations. Those internal consultants also take on many of the same roles as their external counterparts.

7. Conclusions

Current social and economic conjuncture has caused changes in the labour market, in which most of the people opt for specialization training curriculum as a differentiating factor. In such context, one of the main challenges for the education and professional training is to meet the changing skills needs of individuals and the world of work in accordance with the principle of lifelong learning. While demand for new skilled workers is increasing, it is also necessary to attend to developing and upgrading the skills of the existing workforce and to promoting labour mobility.

In addition, most of businesses operating in the domestic and international markets are now characterized by a growing awareness of the importance of quality, safety and environmental management system standards. Therefore, many organizations have started to incorporate them as differentiating factors in their business strategy as well as

training their employees or seeking new professionals in the domain. Furthermore, many people have also started to incorporate such demanded professional training to consolidate and improve their employment and career or to improve their positioning in the competing job application search that increasingly demands education and training specialization.

Moreover, the existing literatures also acknowledge that the best-trained and better-educated workforce has had effects on the business performance and the individual employment opportunities. Consequently, this document was intended to identify the existing education and professional training in Spain related to management system standards. In pursuit of this objective, this document first attempted to understand and describe the multifaceted character of Spanish education and professional as a whole and their relationships with the labour market. Thereafter, this study thoroughly searched the existing education and the professional training related to quality and management system standard. The overall output results were classified into four different groups including: Official University, Unofficial University, Official Non University and Unofficial Non university.

In short, the concern about the employment and earnings in Spain has led the national government and the governments of the autonomous communities to launch measures designed both to continue increasing the quality of the workforce and to ease the difficulties encountered when entering the labour market. One of such measures is the education and professional training related to quality management. Obviously, education or training related management system standards provide to students and professionals the knowledge tools and experience that will ensure that their organization competitiveness goes beyond the limits imposed by the current management model. In addition, it helps to drive the organization development towards excellence.

This study has several acknowledge limitations which should be addressed in the future. For example, the score of education and training programs related to QMS in Spain indicates that QMS is not just a bureaucracy or it is not something that must be done to obtain a piece of paper to meet customer demands or to satisfy customer needs (Yaya et al., 2014). Yet, the results of this study suggest that the majority of education

and training programs related to QMS are unofficial & non-university and unofficial & university thought education programs. Thus, prompting call for future research topics to examine the fundamental objectives of professional education. Especially for critically new programs such as those related to quality management in general and QMS in particular. Such investigations may suggest better understanding on how best attain the purposes of officialising such education and training program nationally and internationally.

Moreover, general thoughts on professionalization theory argued that a high degree of enabling education and training will lead to a high degree of professional effectiveness. Based on that it will be interesting for further analyses to explore if there is any differences in term of employment, high paid workers and performance at work between the official Vs the unofficial university education and training programs and between the official Vs the unofficial non-university education and training programs. Finally, this study was confined only on QMS in one country with the higher number QMS certificate. Besides, this study also acknowledges that education system may vary from country to country, for example, Spain Vs USA or Spain Vs China. Consequently, future researchers may replicate the study in other settings and to a culturally different country.

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References

Crosier, D., Horvath, A., Kerpanova, V., Kocanova, D., Parveva, T., Dalferth, S., and Fernández-Sánchez, G., & Rodríguez-López, F. (2010). A methodology to identify sustainability indicators in construction project management—Application to infrastructure projects in Spain. *Ecological Indicators*, 10(6), 1193-1201.

- INE: Instituto Nacional de Estadística (2012), “Census 2012”, Retrieved 24 February 2014,
- ISO (2012), *The ISO Survey of Certifications – 2012*, International Organization for Standardization, Geneva.
- ISO standards in Spain are created by los comités técnicos de normalización (CTN) and are labelled as norma UNE (Una Norma Española) or UNE EN (UNE Estándar Europeo).
- Keeling, R. (2006). The Bologna Process and the Lisbon Research Agenda: the European Commission’s expanding role in higher education discourse. *European Journal of Education*, 41(2), 203-223.
- LOU (2013), “Ley Orgánica 6/2001, de 21 de diciembre, de Universidades; Última modificación: 10 de diciembre de 2013” retrieved 26 January 2014
- María Jesús Frigols Martín (2008), “CLIL implementation in Spain: An approach to different models”, Retrieved 25 February 2014
- Ministerio de Economía y competitividad (2014) “Invest in Spain” Retrieved 19/03/2014
- Ministerio de Educación, Cultura y Deporte (2014). “Datos Básicos del Sistema Universitario Español. Curso 2013/2014” Retrieved 22 February 2014.
- Pember, M. (2006). Sorting out the standards: what every records and information professional should know
- Pun, K. F., & Chin, K. S. (1999). Bridging the needs and provisions of quality education and training: an empirical study in Hong Kong industries. *International Journal of Quality & Reliability Management*, 16(8), 792-810.
- Rauhvargers, A. (2012). *The European Higher Education Area in 2012: Bologna Process Implementation Report*. Education, Audiovisual and Culture Executive Agency, European Commission. Available from EU Bookshop.
- Santiago, P., Brunner, J. J., Haug, G., Malo, S., & di Pietrogiacomo, P. (2009). *OECD Reviews of Tertiary Education*. Spain: OCDE.
- Suárez, J. A. G. (2006). *Qué es el Espacio Europeo de Educación Superior? El reto de Bolonia. Preguntas y respuestas*. Edicions Universitat Barcelona.
- The world factbook - CIA (2013), “Spain” Retrieved 19 March 2014.

- Voegtle, E. M., Knill, C., & Dobbins, M. (2011). To what extent does transnational communication drive cross-national policy convergence? The impact of the bologna-process on domestic higher education policies. *Higher education*, 61(1), 77-94.
- World Bank Group (Ed.). (2012). *World Development Indicators 2012*. World Bank Publications.
- Yaya, L. H. P., Marimon, F., & Casadesus, M. (2014). The revitalising effect of ISO 9001 on dissatisfied customers. *Total Quality Management & Business Excellence*, 25(7-8), 856-864.

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Table 1: Official Master's Degrees on QMS

Code	Title	University	Status*
4310603	Integrated Master's Degree in Business Administration: Corporate Social Responsibility, Quality and Environment	Universidad de Vigo	BOE
3001719	Master's Degree in Food Quality and Safety	Universidad del País Vasco/Euskal Herriko Unibertsitatea	AC
4311623	Master's Degree in Food Quality and Safety	Universidad del País Vasco/Euskal Herriko Unibertsitatea	BOE
4311693	Master's Degree in Food Quality and Safety	Universitat de València (Estudi General)	BOE
4312696	Master's Degree in Management, Evaluation and Quality of Training Institutions	Universidad de Sevilla	BOE
4311833	Master's Degree in Management of Quality and Environment	Universidad Católica San Antonio	BOE
3002803	Master's Degree in Management and Quality Systems	Universidad Católica San Antonio	AC
4312610	Master's Degree in Management for Quality Education Centers	Universidad Francisco de Vitoria	BOE
4311204	Master in Quality Management and Traceability in plant foods	Universidad de Extremadura	BOE
3001980	Master's Degree in Quality Management	Universidad Jaume I de Castellón y la Universitat de València	AC
4312079	Master's Degree in Quality Management in Health Services	Universidad de Murcia	BOE
3002784	Master's Degree in Quality Management in Health Services	Universidad de Murcia	AC
4310953	Master's Degree in Quality Management	Universidad Jaume I de Castellón y la Universitat de València	BOE
3000169	Master's Degree in Management of Occupational Risk Prevention, Quality and Environment	Universidad de Valladolid	AC
4310997	Master's Degree in Management of Occupational Risk Prevention, Quality and Environment	Universidad de Valladolid	BOE
4314173	Master's Degree in Management of Occupational Risk Prevention, Quality and Environment	Universidad de Valladolid	AC
4311605	Master's Degree in Management of Food Safety and Quality	Universitat Politècnica de València	BOE
3002658	Master's Degree in Occupational Risk Management, Quality and Environment	Universidad de Málaga	AC
3002185	Master's Degree in Quality Management Systems, Environment and Prevention of Occupational Risks	Universidad Católica de Valencia San Vicente Mártir	AC
4310350	Master's Degree in Quality Management Systems, Environment and Prevention of Occupational Risks	Universidad Católica de Valencia San Vicente Mártir	BOE
4312160	Master's Degree in Integrated Quality, Environmental and Occupational Risk Prevention	Universidad San Pablo-CEU	BOE
4312875	Master's Degree in Integrated Management of Safety, Quality and Environment	Universidad a Distancia de Madrid	BOE
4311404	Master's Degree in Safety and Food Quality	Universidad de La Laguna	AC
3001640	Master in Safety and Food Quality	Universidad de La Laguna	BOE
4311896	Master's Degree in Integrated Management Systems of	Universidad	BOE

	Occupational Safety, Quality, Environment and Corporate Social Responsibility	Internacional de La Rioja	
3001533	Master in Technology and Food Quality	Universidad de Granada	AC
4310573	Master's Degree in Technology and Quality in Agro-Food Industries	Universidad Pública de Navarra	BOE
*The accredited authority: AC= Autorizado por Comunidad Autónoma; BOE: Publicado en el Boletín Oficial del Estado (BOE)			

Table 2: Official Doctoral Degrees on QMS

Code	Title	University	Status*
4000694	Official Program of Doctorate in Quality Management and Traceability in plant and foods	Universidad de Extremadura	AC
4001587	Doctorate in Occupational Risk Prevention, Quality and Environment	Universidad de Málaga	AC
5600630	Doctorate Program in Quality, Safety and Food Technology	Universidad de Zaragoza	BOE
5310688	Official Integrated Doctoral Program in Business Administration: Corporate Social Responsibility, Quality and Environment	Universidad de Vigo	BOE
5310719	Official Program of Doctorate in Quality, Safety and Food Technology	Universidad de Zaragoza	BOE
5310763	Official Doctoral Program in Food Quality and Safety	Universidad del País Vasco/Euskal Herriko Unibertsitatea	BOE
5311737	Official Doctoral Program in Quality Management in Health Services	Universidad de Murcia	BOE
5311799	Official Doctoral Program in Occupational Risk Management, Quality and Environment	Universidad de Málaga	BOE
5310449	Official Doctoral Program in Technology and Food Quality	(Conjunto)	BOE
5311646	Official Doctoral Programme in Technology and Quality in Agro-Food Industries	Universidad Pública de Navarra	BOE
*The accredited authority: AC= Autorizado por Comunidad Autónoma; BOE: Publicado en el Boletín Oficial del Estado (BOE)			

Table 3: Vocational education and training related to QMS

Code	Title	Qualification
VIC621_2	Quality tests in glass industries.	Técnico en control de calidad
TCP622_3	Quality control of textile and fur products	Técnico en control de calidad
UF0922	Cost Management and Service Quality of Transport by Road	Técnico superior
UF2382	Service Quality of proximity for small retail businesses	Técnico superior
HOTR0409	Process Management Service in Restoration	Técnico superior
HOTR0508	Service Quality for Bar and Cafeteria	Técnico superior

Figure 1: Spanish education system and the world of work

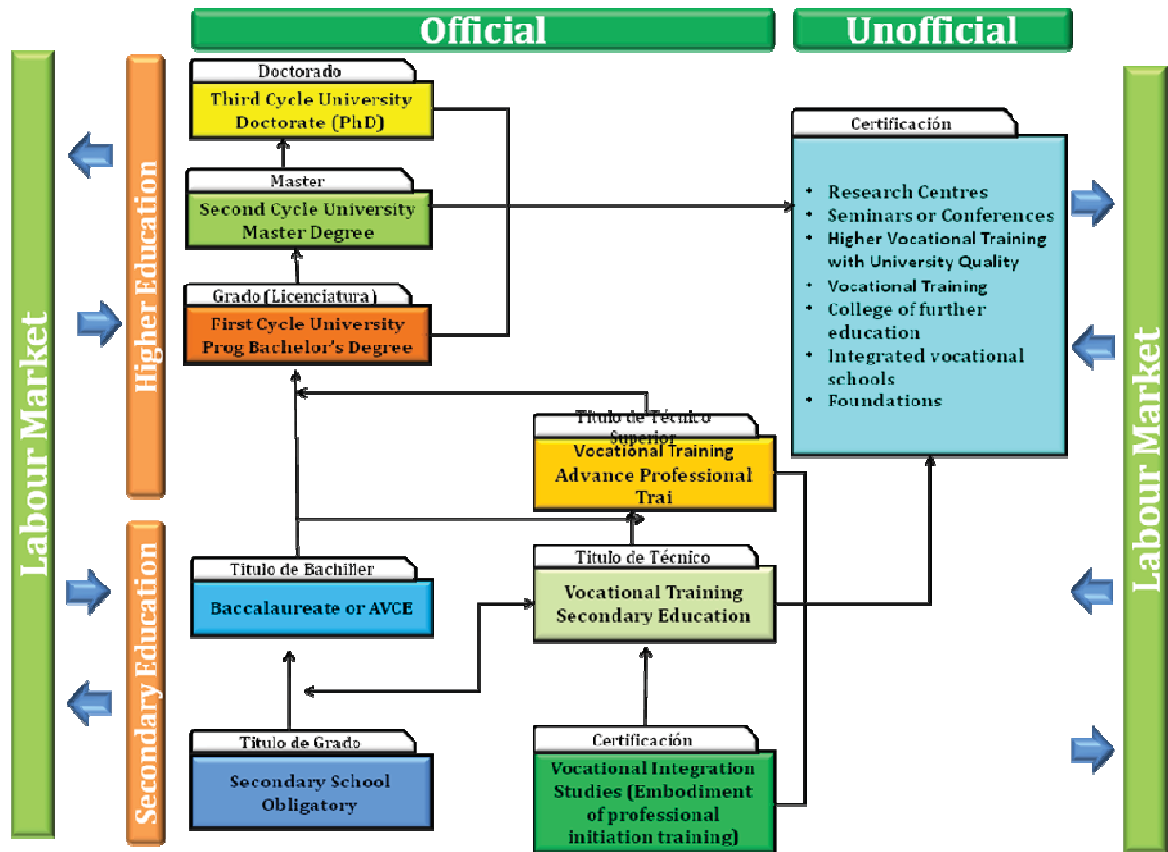


Figure 2: Official and non-official QM training in Spain

