MASSIVE OPEN ONLINE COURSES (MOOC) AND THE TRAINING OF THE STAFF: THE EXPERIENCE OF THE COSTA RICAN PENITENTIARY SYSTEM

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Abstract. A research work was carried out to determine and prioritize the training requirements of the Costa Rican Penitentiary System personnel, to analyze the feasibility of satisfying them through the use of MOOC (Massive Open Online Course). A mixed, exploratory type investigation was carried out by applying a training needs questionnaire, applied to the headquarters of the Institution, to know and prioritize the training needs of the personnel. In addition, the course offerings of various MOOC platforms were analyzed, and it was reviewed which MOOC platforms presented courses that could be applied to satisfy the existing requirements. Similar research antecedents were found, related to the diagnosis of training needs and the application of MOOC for continuous professional training in public and private organizations. The research allowed the identification of platforms that offer MOOC applicable to the satisfaction of the requirements of the Costa Rican Penitentiary System staff. The results obtained allow us to conclude that it is feasible to use MOOC in the training of the referred personnel, recommendations are generated for future research on the subject and the need to carry out a study about the effect of the lack of training in the Costa Rican Penitentiary System is raised.

Keywords: Training, government, distance training, employee, continuous training.

CURSOS ABIERTOS MASIVOS EN LÍNEA (MOOC) Y CAPACITACIÓN DEL PERSONAL: LA EXPERIENCIA DEL SISTEMA PENITENCIARIO COSTARRICENSE

Resumen. Se realizó un trabajo de investigación para determinar y priorizar los requerimientos de capacitación del personal del Sistema Penitenciario Costarricense, a fin de analizar la factibilidad de satisfacerlos mediante el uso de MOOC (Massive Open Online Course). Se ejecutó una investigación de

tipo mixta, exploratoria, mediante la aplicación de un cuestionario de necesidades de capacitación, aplicado a las Jefaturas de la Institución, para conocer y priorizar las necesidades de capacitación del personal. Se analizó además, la oferta de cursos de varias plataformas MOOC y se revisó cuáles plataformas MOOC presentaban oferta de cursos que pudieran ser aplicados en la satisfacción de los requerimientos existentes. Se encontraron antecedentes de investigaciones similares, relacionadas con el diagnóstico de necesidades de capacitación y la aplicación de MOOC para la formación profesional continua en organizaciones públicas y privadas La investigación permitió identificar plataformas que ofrecen MOOC aplicables a la satisfacción de los requerimientos del personal de Sistema Penitenciario Costarricense. Los resultados obtenidos permiten concluir que es factible utilizar MOOC en la capacitación del personal referido, se generan recomendaciones para futuras investigaciones en el tema y se plantea la necesidad de ejecutar un estudio sobre el efecto de la falta de capacitación en el Sistema Penitenciario Costarricense.

Palabras clave: Capacitación, gobierno, formación a distancia, empleado, formación continua.

Introduction

The term MOOC refers to the acronym for Massive Open Online Courses, consisting of free and specialized online courses, aimed at anyone interested in the subject, taught by professional experts in higher education. McAuley, Stewart, Siemens, & Cormier (2010) define MOOCs as an online phenomenon that has gained momentum in recent years, where the MOOC integrates the connectivity of social networks, the facilitation of a recognized expert in the field of study, and a series of freely accessible online resources. By its massive nature, a MOOC is oriented to the participation of several hundreds or thousands of students, who self-organize their participation according to learning objectives, knowledge, and skills of common interests. From its theoretical perspective, a MOOC does not require payment of registration fees, nor does it require prerequisites for access to the course. They are characterized by the fact that students have different expectations in their participation, as well as by the fact that they do not provide formal accreditation models. The first known MOOC was a course taught by George Siemens and Steven Downes in 2008, which was part of their thesis on connectionism. The result of this effort was later named MOOC by Dave Cormier and Brian Alexander (Downes, 2008). From this initiative, both higher education institutions and private companies have opened MOOC offerings, making them available to users, whether they are professionals or people who, without having specific training in the subject, are interested in it.

We can mention for example the project of Banco Santander and Telefónica, developed in 2013, called MiriadaX (https://miriadax.net/home), Coursera developed in 2011 by Stanford University (https://es.coursera.org), edX (https://www.edx.org/es/course) founded in 2012 by the Massachusetts Institute of Technology and Harvard University or Udemy (https://www.udemy.com) founded in 2010 by Eren Bali, Oktay Caglar, and Gagan Biyani.

Yuan, Powell, and Cetis (2013) described MOOCs as a disruptive innovation in higher education due to their free, accessible, and massive nature. It should be remembered that an innovation is considered disruptive when it creates a new market through the introduction of a new type of product or service, which tends to be simpler, cheaper, more reliable, and more convenient than previously existing products. These disruptive products, with no value in the conventional market, become stronger selling points in emerging markets and are characterized by two elements, namely technology and business model innovation.

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MOOC is an acronym of its abbreviation: Massive, the courses must be massive, that is, with as many participants as possible since anyone who wishes to enroll in it could do so. Open, because there are no restrictions or requirements to access it. This is possible because they use resources that are not proprietary and are available to the public free of charge. These courses are hosted on free access platforms (under registration) and, in general, the resources are published under Creative Commons licenses, which facilitate the use and sharing of creativity and knowledge. The online feature implies that the activities, evaluation, communication with facilitators and among peers are carried out remotely, in a virtual context. Participants can enroll from anywhere in the world, using technological platforms with the capacity to support a large flow of participants. Course, because they are learning-oriented courses.

Meltem Huri Baturay (2015) adds two characteristics to MOOCs, related to the participatory and distributed aspects. Participatory, as learning in a MOOC is enhanced by voluntary participation in both the creation and sharing of personal contributions and interactions with the contributions of others and distributed, as the MOOC is based on the connectivism approach; therefore, any knowledge must be distributed through a network of participants. Most of the course activity takes place in a social learning environment, where participants interact with the material and others' interpretations of it. Course readings and other learning materials act as starting points for discussion and reflection.

Sevillano, Vázquez, and Aguaded, cited by Aguaded-Gomez (2013), consider that the MOOC learning model can be a magnificent opportunity to take advantage of the possibilities offered by technologies, generating quality "ubiquitous" and "emergent" learning.

In turn, Fidalgo-Blanco et al (2014) point out that MOOCs are an evolution of the Open Course Ware movement. OCW for its acronym in English.

According to Teixeira et al (2015), MOOCs favor the social inclusion of people in education, disseminate formal and informal knowledge to a large audience, and facilitate the innovation of teachers in their pedagogical actions.

Cruz-Benito et al (2015) cite that some of the MOOC modalities encourage the creation of learning communities around their topics. A CISCO report, published in 2010, called "The Learning Society," points out that educational systems need to change since in the past learning was competitive, coercive, and paternalistic, while today it is collaborative, globalized, and universal. From this perspective, access to MOOC platforms offers users and members of the community interested in the subject of reference, the possibility of developing the knowledge, skills, and abilities required to meet the challenges imposed by the new characteristics and social trends of today.

Due to the fact that the Costa Rican Prison System has seen a reduction in the number of resources available for the training of its personnel, an amount that has decreased from 76,027,000 colones in 2013 to 13,113,659 colones in 2021[1] , there is a need to look for alternatives that allow providing quality training for personnel, without the need to invest large amounts of money.

According to information obtained from the Human Resources information system, the Costa Rican Penitentiary System has 5292 employees, who belong to 219 types of positions, distributed in 47 units that are geographically dispersed throughout the country. Many of the workers work rotating shifts and due to their functions cannot leave

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[1] Source, institutional budgets, visible on the website http://www.mjp.go.cr/Transparencia/RedTransparencia.

their jobs, so as not to neglect the care of the persons deprived of liberty in the institution's care. The above reasons prompted an investigation to verify whether the use of MOOCs was a feasible option for staff training.

Continuous training is a widely spread and accepted tool for the achievement of the organization's objectives, representing an organizational strategy that involves the direction and management of human resources (Pineda, 2007). This training, in recent years, has experienced an increase in the consumption of online training courses, whose motivation is centered on the effects of the economic crisis, which makes companies seek training actions that yield short-term profitability and forces professionals to prepare themselves in the best way to face the excess of labor supply (Ponce et al, 2010).

MOOCs are high quality training services that do not require the deployment of a large number of logistical activities for the attention of people, nor do they require the travel of attendees to a specific place or at a specific time, which reduces operating, logistical, and travel costs, savings that are important, considering the reduction in the budget for training activities that the Costa Rican Prison System has suffered.

In the research carried out, the existing training requirements of the Costa Rican Penitentiary System were analyzed and prioritized, with the objective of proposing the use of massive open online course platforms for the development of virtual training activities in their different areas of work, in the professional, technical, police, and administrative fields.

According to Reza (2006), the diagnosis of training needs allows to know the lack of knowledge, skills, attitudes, and aptitudes of people to effectively perform their job and reach their level of competence, which is the basis of a training plan, which must be constantly renewed, according to the organizational dynamics and which constitutes the success of the continuous process of professional training.

Moreira (2013) points out that the training needs analysis serves to establish the objectives of the program, as well as to identify the skills and knowledge necessary for employees to perform their work, so as to improve performance and productivity and, finally, to analyze potential participants, ensuring that the program fits the levels of education, experience, competencies, attitudes, and motivations of the participants.

Technology as a means of enabling new training spaces for staff, offers the Prison System the possibility of overcoming the difficulties arising from the geographical dispersion of staff, the existence of rotating schedules, and the lack of financial resources. Through the use of MOOCs, continuous learning is promoted, democratizing access to knowledge through the publication of free open online courses by prestigious universities or other professional groups.

The Costa Rican Penitentiary System was created by Law No. 4762 "Law Creating the General Directorate for Social Adaptation," which establishes its purposes and functions. It is made up of a Directorate, a Sub-Directorate, the National Institute of Criminology, an Administrative Department, the Training School, the Technical Department, the Industrial and Agricultural Department, and the Architecture Department. It also has institutional and semi-institutional penitentiary centers, community level offices, centers for the juvenile criminal population, centers for the female population in conflict with the law, Integral Care Units, as well as Social Insertion Units, Repatriation Units, and the Unit for the care of persons subject to monitoring with electronic devices. The same budget program includes the Prison Police Directorate,

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made up of the Departments of Supervision, Custody and Penitentiary Surveillance, Plans and Operations, Prison Intelligence, and Information and the Weapons Unit[2] .

As a result of the decrease in the budget allocation for training activities, the Costa Rican Penitentiary System has not been able to allocate sufficient resources to meet the training requirements of its employees, an objective that has been partially achieved by signing cooperation agreements with other public institutions, professional associations, non-governmental organizations or individually and, privately, through the investment of resources and the employees' own time, the latter having an impact on the employees' family assets and their free time.

Given the budgetary impossibility of allocating resources to meet the existing training requirements for the proper fulfillment of organizational goals and objectives, the Costa Rican Prison System must seek training and education alternatives that, with a minimum investment, allow workers to access world-class training, This is all in pursuit of operational excellence and the fulfillment of the mission that Costa Rican society has entrusted to it as the body responsible for the enforcement of judicial sentences handed down for the deprivation of liberty or other types of criminal sanctions.

Similar studies conducted by several authors were found as background to the research. Atiaja and Garcia (2020), in their study, "MOOCs an alternative for continuous training," analyze the potential of MOOCs for the continuous training of professionals. This is because educational institutions have adopted these courses, motivated by the health emergency caused by COVID-19, since thousands of people have resorted to them in order to train and acquire knowledge, competencies, and skills to perform in their work activities because, as a result of the pandemic, the education model migrated from a traditional model to a virtual one. The study was descriptive, applying historical-logical methods, analysis, and synthesis, ending with generalization-abstraction, through the use of primary and secondary bibliographic sources. The main findings are related to the fact that MOOCs have evolved according to the increase of interest in online learning, representing an alternative for continuous training due to their potential to meet the needs of updating, renewal or training of professionals in order to acquire competences or skills demanded by the knowledge society. In this sense, it is necessary to reconstruct MOOCs in order to overcome the pedagogical and technological challenges faced by these courses in order to improve the quality of teaching and learning.

Ruiz (2019), carried out a research entitled, "Impact of the application of a MOOC methodology in Ecuadorian university teaching," whose main purpose was the development of a methodology to define massive courses aimed at Ecuadorian civil servants linked to higher education. Its objective was to design a methodology to facilitate and improve the updating and improvement of the Ecuadorian civil service, in the educational field, through massive virtual processes since the Ecuadorian government has made achievements in public infrastructure and in the implementation of social policies, so it is essential to invest in human talent. This is one of the main problems of the education sector in Ecuador, for which the application of MOOCs becomes a necessity in terms of the optimization of economic and human resources. The research methodology was based on a multi-referential, multidimensional, and interpretative research, whose basis was the complement of methods such as case studies, interviews, surveys, statistical analysis, and triangulation of results, mixing field and documentary-bibliographic research at a descriptive-evaluative-correlational level. The main findings were that the methodology fulfilled its objective, allowing the construction of didactic material and the

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[2] Source http://www.mjp.go.cr/Dependencias/DGASDetalles

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development of activities, positioning itself in the teachers as a systemic process guiding the efficient development of a course. The leaders of the participating Universities expressed the importance of the methodology of the academic project, highlighting that this instrument allows making the decision to support the design of a MOOC for the instruction of the staff.

Aguilar de la Garza (2019) conducted a research called, "Model of quality indicators for massive open online courses (MOOC)," whose objective was to identify indicators to evaluate the quality of MOOCs offered as a strategy to strengthen teacher training and its application in the MOOC-LGEE-TEC offered through Coursera, in addition to analyzing the suitability of the use of MOOCs in training strategies for teacher professional development. Its main motivation was to measure the opportunities offered by MOOCs for the development of teaching professionals, considering both the need for continuous training to improve the competencies of practicing educators, and the need to complement the initial training of professionals who graduate year after year from teacher training colleges. Its general objective was to design a MOOC oriented to teacher training, based on a quality model validated by specialists, analyzing both the results of quality indicators and the learning obtained by the participants. A quantitative approach was applied, through a case study; using as instruments for data collection, an inventory of quality indicators from previous research, an administered questionnaire and diagnostic tests. Its main findings corroborate that in order to measure the success or quality of a MOOC, it is necessary to go beyond the number of participants enrolled or who complete the course satisfactorily since factors related to the acquisition of knowledge of the participants, as well as the promotion of self-regulated learning for professional development, must be considered.

For their part, Toapanta and Gavilanes (2018), in their research, "Metaphorization in MOOC courses for the acquisition of professional competencies," whose objective was to determine the relationship between metaphorization in MOOCs and the acquisition of professional competencies in the staff of the Ambato General Hospital of the Ecuadorian Social Security Institute, seeking to improve the learning process in the continuous trainings offered by that Hospital to its administrative, medical, nursing, and service staff through the application of metaphorical and iconographic contexts in MOOC courses. Through the use of MOOCs of metaphors and iconographies adapted to stories of any subject matter, they generated in the participants an innovative and creative environment for the development of professional competencies through the fulfillment of goals. The research had a propositional critical approach, using a bibliographic and field modality; of descriptive type, using methods such as the use of Cronbach's Alpha coefficient and the Wilcoxon signed ranks test. The conclusions of the research show that metaphorical MOOCs benefit the development of knowledge, skills, and attitudes, contributing to personal and professional training; as well as that the use of metaphors contributes to new online training alternatives. The proposal that was part of the research was implemented through the use of the MOODLE platform, on which a metaphorical MOOC was developed, applying the PACIE methodology, which constitutes a model that modifies the teaching role by an efficient tutorial action, motivating and carrying out the necessary accompaniment to reduce the dropout rates in virtual teaching courses. The course reached the participation of most of the Hospital's professionals, who passed the course and obtained their certificate. The main limitation of the research was that most of the staff had not taken online courses in recent years and, therefore, had not worked in MOOCs with graphical environments.

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Flores (2018), in the research conducted on the online training of the National Forestry Commission (CONAFOR), seeks to define a proposal for the creation of a self-sustainable virtual training program for CONAFOR since, in recent years, the Institution suffered a series of budget cuts, which affected the resources available to develop the training courses that are part of the annual training needs diagnosis. The objective of the intervention project was to define the functionality of designing and implementing an online course for the training of CONAFOR personnel, executing a pilot test for the creation of an online training program. The instruments used to collect information were the survey, the interview, the cause-and-effect matrix, and the SWOT matrix. Information was collected through e-mail and the application of a survey through the Survey Monkey site. The course applied in the pilot experience was developed using the MOODLE platform. The results of the research confirm the functionality of the design and application of an online course, which, according to the Commission's training manager, would constitute the basis for the development of a virtual training program that would have no operating costs and would strengthen proposals, in addition to reducing time. The participants stated that if the course is simple and short, it can be developed without affecting the work of the participants.

Corrales et al (2020) conducted a diagnosis of the training needs caused by the post-COVID 19 structural changes for the company Search. The research covered the company's key positions in order to innovate in the products and services they require based on the global disjuncture. The information collection methods used were online surveys and focus groups; in the analysis of results, aspects such as the perception of the job profile and training needs before and after the crisis, the main structural changes, and their impact on the execution of their functions and how the company could contribute to the achievement of the strategic objectives from the customer's perspective, after COVID 19, were evaluated. Finally, two Excel tools were designed, one with the different training topics proposed and the other with the graphs and tables of the information for the analysis of the information for the company and its recommendations for use. The main conclusion of the research was that employees need to develop their skills and knowledge more and more to improve their professional career and the service provided to the customer; so training topics were identified in different areas that aim to increase the quality of service and the development of the company's key employees to improve their skills.

The study conducted for the Costa Rican Penitentiary System had the following objectives:

General objective: Determine the priority training requirements of the Prison System personnel in order to verify the feasibility of satisfying them through the use of MOOCs.

Specific objectives:

- Determine the training requirements of the personnel of the Costa Rican Penitentiary System.
- Establish priority for existing training requirements.
- Characterize at least ten MOOC platforms that offer online training courses.
- Determine which MOOC platforms offer courses to meet the priority training requirements of prison system personnel.

Method

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Based on the objectives set, an exploratory mixed research was carried out in order to identify and prioritize the training needs of the Costa Rican Penitentiary System personnel and to verify whether these could be met through MOOCs. According to the research blog salusplay.com, mixed research (Teddlie and Tashakkori, 2009; Creswell and Plano, 2008; Bergman, 2008), integrative research (Johnson and Onwuegbuzie, 2004), multi-method research (Hunter and Brewer, 2003; Morse, 2003), multiple methods (Johnson, Onwuegbuzie and Turner, 2006), or triangulation studies (Sandelowski, 2003), involves the combination of qualitative and quantitative approaches in a single study, so that the quantitative results of the study can be used to conduct a qualitative analysis, The quantitative results of the study can be used to carry out a qualitative analysis to better understand the phenomenon, or the conclusions of a qualitative study can be applied to a quantitative study, and it is valid to complement one with the other in such a way that the strengths of both types are used, trying to minimize their potential weaknesses. In the research conducted for the Costa Rican Penitentiary System, the quantitative part was the classification of the information, carried out to define and prioritize the training needs of the personnel, while the qualitative part was the characterization of the MOOC platforms in search of courses applicable to the satisfaction of the existing training requirements.

The data were collected through the application of an online questionnaire (https://es.surveymonkey.com/r/6D55W2L), which was sent to 63 employees holding the position of Chief, who were asked for information on the training needs of their employees, classified by the specialty of the position as well as their respective prioritization.

Because it was necessary to achieve a complete diagnosis of the training needs of the personnel, as well as their level of priority, the study did not use a sample and worked with the entire population. It was decided to work with the people who occupy management positions and not directly with the personnel, in order to take advantage of the experience and knowledge that the managers have about the training needs of the personnel for the adequate performance of their work since it is the managers who evaluate the performance of the subordinates and detect the gaps and training needs, based on the results of the work of the employees.

The information collected through the questionnaire sought to characterize the person completing the instrument (position, years of service, and place of work), as well as the collaborators under his/her responsibility (job class and number) to finally collect the training requirements of the collaborators (occupational class, name of the course, level of priority, and number of hours of training required). A questionnaire administered electronically and not an interview was used, considering both the number of people required to participate and their geographic location.

The instruments developed for the research were validated prior to their application by two experts, who assessed the items that made up the instruments. They were asked to qualitatively evaluate their degree of relevance to the object of study as well as their degree of precision and adequacy. Ruiz (2002) refers that "expert judgment" is a procedure used to determine content validity, which consists of asking a group of people to judge an object, an instrument, a teaching material, or to give their opinion related to a specific aspect. In the case of the research conducted, content validation sought to analyze and evaluate the questions posed as well as to check whether the items included measured all the categories or descriptors to be measured. The selection of the experts was based on their background and experience in the field of training in the Costa Rican Penitentiary System. The evaluation modality was individual, with the instruments

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being sent to each of the experts who were to respond, without any interaction between them. The observations made by the experts were incorporated into the data collection instruments.

Once the data had been collected through the application of the questionnaire, we proceeded to the quantitative analysis of the information collected, tabulating it in order to generate the training requirements according to the positions for which they were requested as well as the level of priority assigned to each requirement. The tool used to tabulate the data was Microsoft Excel.

In order to verify the feasibility of satisfying the training requirements of the Costa Rican Penitentiary System personnel through the use of MOOCs, after tabulating the information collected through the questionnaire, we proceeded to analyze 33 platforms that offer MOOCs. The criterion for the selection of MOOC platforms was the authors' own construction, based on the consultation on the Internet of sites of platforms of educational institutions in Costa Rica, Latin America, and Spain, which offer MOOCs in Spanish language with content similar to the requested training courses. An analysis of the courses offered in Spanish on the Udemy platform was also incorporated. A content review process was applied to these platforms in which the name of the platform, its URL address, the name of the course, its content, objectives, activities, form of evaluation, methodology, role of the tutor/mediator, course programming, prerequisites, the technological platform used, the design/navigation used, the technical requirement for its use, its usability, the possibility of certification, course duration, and the possibility of following up the student's progress were analyzed.

According to Abela (2002), content analysis is a technique for interpreting materials such as texts, images, or recordings, which, when read and interpreted using techniques to explain and systematize their content, allow us to understand various aspects and phenomena, whether these are quantifiable or unquantifiable indications. The analyst must perform actions adapted to the nature of the material and the problem he is trying to solve. The article indicates that with the emergence of computers at the end of the 50's, software turns the computer into an efficient instrument for data processing, which constitutes the basis for numerous content analysis applications, being Sebeok and Zeps (1958) the pioneers of content analysis using computers; these researchers applied information retrieval routines to analyze popular legends. The author cites that the ability of computers to perform literal rather than numerical analysis has tipped the balance in the application of content analysis as a qualitative research technique.

The information derived from the review of MOOC platforms was the input to determine the feasibility of applying massive open online courses in the training of National Penitentiary System personnel.

Results

By conducting the research, it was determined that it is feasible to apply the courses offered by MOOC platforms to meet the priority training needs of Costa Rican Prison System personnel. This conclusion is based on the fact that of the 154 courses requested by the people who completed the questionnaire applied, it was possible to locate 74 MOOC courses offered by one of the analyzed platforms. The following is a summary of the results obtained, which were organized according to the objectives to which they respond.

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Objective: "Determine the training requirements of Prison System personnel".

This objective sought to determine the training courses, programs or activities that people in management positions considered necessary to improve the performance of the workers in their charge. The people who participated in the research indicated 154 courses, the 6 most requested are shown in Figure 1.
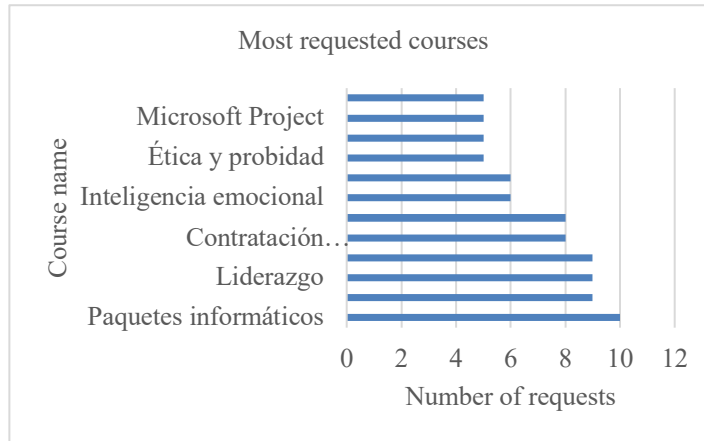

Figure 1. Most requested courses.
Note: Source: Own elaboration, data taken from the questionnaire applied.

Participants requested courses such as human rights, gender equality, prevention of sexual and workplace harassment, technical subjects, electricity, electronics, technological applications, health, administration, public policy, law, education, statistics, ethics, nutrition, management, soft skills, emotional intelligence, research, kitchen work, LGBTI, leadership, secretarial work and techniques, communication, administrative contracting, weapons handling, warehouse management, inventory management, mechanics, stress management, first aid, psychology-related topics, public relations, conflict resolution, prison systems, search techniques, security, customer service, family therapy, violence, use of time, teamwork, and telecommunications.

For most of the job categories, respondents specified more than one training requirement, with some categories, such as Prison Police, Systems Analysts, Prison Technical Professionals, and Social Work Professionals, for which more than 20 training requirements were indicated, which shows the urgent need for staff training in the institution.

Objective: "To establish the priority for the training requirements determined."

The training requirements indicated by the people who completed the questionnaire while being expressed had to be prioritized to determine which of them were preeminent over the others, with the purpose of seeking their satisfaction through the use of MOOCs. Figure 2 shows the 11 names of the courses that were most mentioned as priority 1 in the questionnaire.
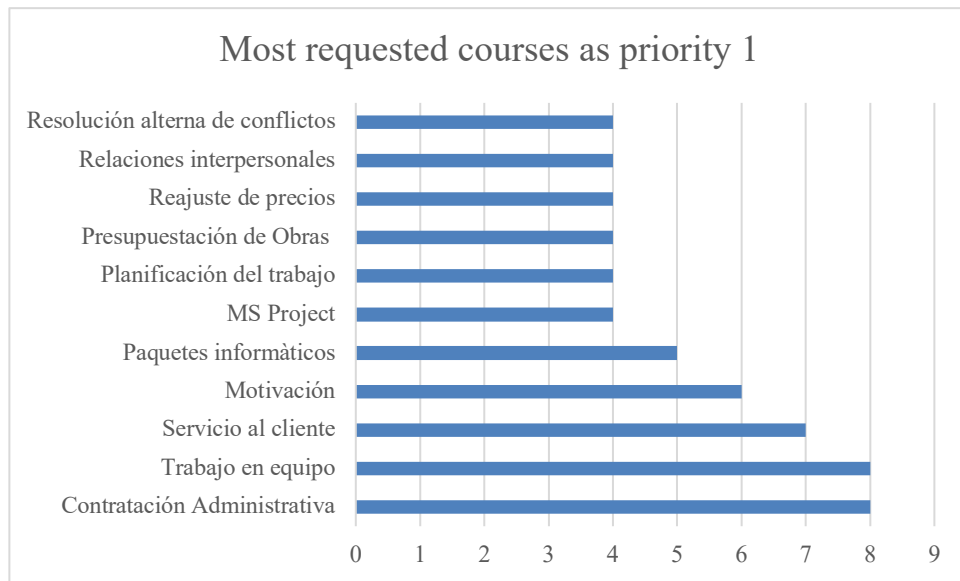
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Figure 2. Courses most cited as priority 1.
Note: Source: Own elaboration, data taken from the questionnaire applied.

For most of the classes defined, more than one course was established as priority 1, a situation that indicates that the lack of financial resources available to train personnel has prevented prison system officials from accessing the training required for the proper performance of their duties.

Objective: Characterize at least ten MOOC platforms that offer online training courses.

An evaluation matrix developed for this purpose was applied to the 33 MOOC platforms selected. Table 1 shows the names of the platforms analyzed, the main topics of the courses reviewed, as well as the number of courses evaluated in each of them.

Table 1
Summary of analyzed platforms

Platform	Institution	Main topic(s)	Number of Courses
UPE	Fundación Omar Dengo	Technology	68
EdX (Telescope)	Universidad Galileo	Technology	10
EdX and Open EdX	Ministerio Educación CR	Mathematics	38
UNED	Universidad Estatal a distancia CR	Pedagogy	4
INA	Instituto Nacional de Aprendizaje CR	Technology	76
Coursera	Universidad Autónoma Nacional de México	Technology, Business and Health	59
Coursera/EdX/UCC	Universidad Católica de Chile	Technology, Business, Electronics and Engineering	50
MiriadaX	MCA School	Business	3
MiriadaX	Universidad Juárez del estado de Durango	Law	1
MiriadaX	Universidad del país Vasco	Social	3

Platform	Institution	Main topic(s)	Number of Courses
MiriadaX	Universidad Francisco Gavidia San Salvador	Technology	1
MiriadaX	Instituto Tecnológico Telefónica	Technology	7
Platform	**Institution**	**Main topic(s)**	**Number of Courses**
MiriadaX	Banco de desarrollo de América Latina	Public Administration and Law	9
MiriadaX	Fundación telefónica	Technology	7
MiriadaX	Universidad de Murcia	Law	1
MiriadaX	Universidad Anáhuac	Technology	1
MiriadaX	Corporación Universitaria minuto de Dios	Social	1
MiriadaX	Universidad Politécnica de Cartagena	Statistics	2
MiriadaX	Universidad Europea	Law	1
MiriadaX	Universidad del Norte	Criminology and Business	2
MiriadaX	Fundación Alimerka	Nutrition	1
MiriadaX	Universitat Oberta de Catalunya	Technology	1
MiriadaX	Universidad nacional del Nordeste	Nutrition	1
MiriadaX	Universitat de Lleida	Social	1
MiriadaX	Instituto Cervantes	Teaching	1
MiriadaX	Universidad de Zaragoza	Technology	2
MiriadaX	Universitat de les Illes Balears	Technology	1
MiriadaX	Universidad Cooperativa de Colombia	Law and Business	2
MiriadaX	Universidad de Salamanca	Statistics, Business, Health	3
MiriadaX	Universidad de Málaga	Business	2
MiriadaX	Universidad del Rosario	Social	1
MiriadaX	Universidad de Cantabria	Social and Business	2
MiriadaX	Universidad Autónoma de Occidente	Education	1
MiriadaX	Universitas Telefónica	Technology and Business	4
Udemy	Udemy	Social, Technology and Business	33
Total			400

Note: Source: Own elaboration

As part of the findings related to the fulfillment of this objective, it was determined that although the platforms offer MOOCs that can be studied independently as a free course, there are also some that offer specialized programs, professional certificates, Master Tracks certificates, or professional degrees.

In the fulfillment of this objective, there was the limitation of not knowing the instrumental use of other languages by the employees, so it is recommended to future researchers that the questionnaire to be developed for the collection of information should include a query regarding the instrumental use of other languages as this can expand the number of courses and MOOC platforms that can be incorporated into the analysis.

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A finding related to this objective is related to the updating of information on MOOC platform courses since the companies or institutions that manage these platforms should strive to keep updated all the information regarding the courses they offer, specifically the information related to the opening date of the course; in the event that this date has already passed, it should indicate the new opening date or period.

Objective: "Determine which MOOC platforms offer courses to meet the priority training requirements of prison system personnel."

To meet this objective, a list of all the courses requested by the people who responded to the questionnaire was taken, as well as the content of the document generated as a result of the review of the platforms in order to determine which of the platforms analyzed offer MOOCs that were requested by those who participated in the research. Figure 3 shows the platforms where the largest number of MOOCs were located.
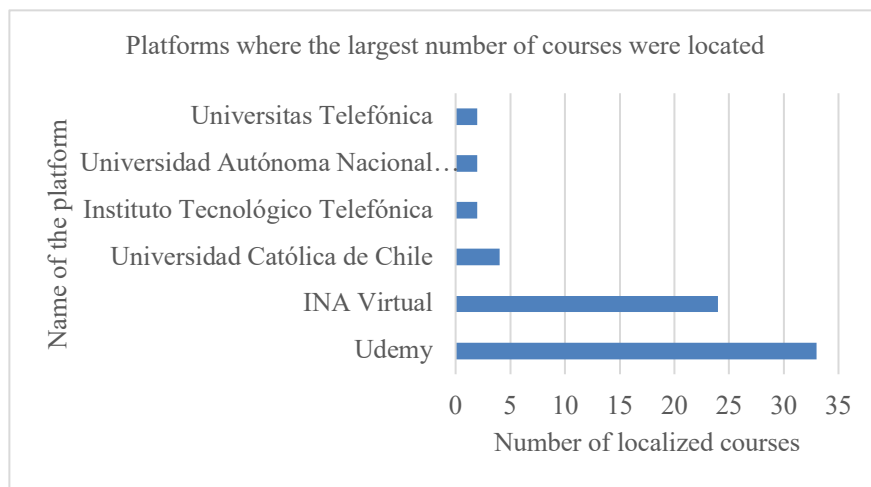

Figure 3. Platforms where the largest number of courses were located.
Note: Source: Own elaboration, data taken from the platform review document.

As a result of the review carried out by the researchers, it was found that there are other courses on similar topics that can also be used in the training of Prison System personnel; however, since the participants were asked to specify courses, they were not considered in the research. In this regard, a recommendation is made to future researchers, so that in the requirements questionnaire, training topics are requested, and not specific courses or activities since the search by topics can enrich the result of the research.

A finding related to this objective is that there are some courses that, because they are derived from special tools or specific techniques, are not offered on a massive scale. In this case, it is recommended that the Costa Rican Penitentiary System analyze the possibility of offering these courses, either through self-managed virtual platforms or through agreements with other institutions or universities such as the Universidad Estatal a Distancia (UNED), which offers two programs within its academic curriculum that include courses on weapons handling, frisk or search, security, alternative conflict resolution and peace circles. The UNED offers two programs within its academic curriculum that include courses on weapons handling, search and seizure, security, alternative conflict resolution, and peace circles, which can be offered as online or hybrid

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courses. These courses can be applied in the training of officials of the Penitentiary System and similar institutions with similar training requirements.

Of the 74 courses located, 63 were classified as priority 1; 2 as priority 2; 1 as priority 5; 1 as priority 12; 4 as priority 17; 1 as priority 18; 1 as priority 19; and 1 as priority 20. Figure 4 shows the distribution of localized courses, according to priority level.
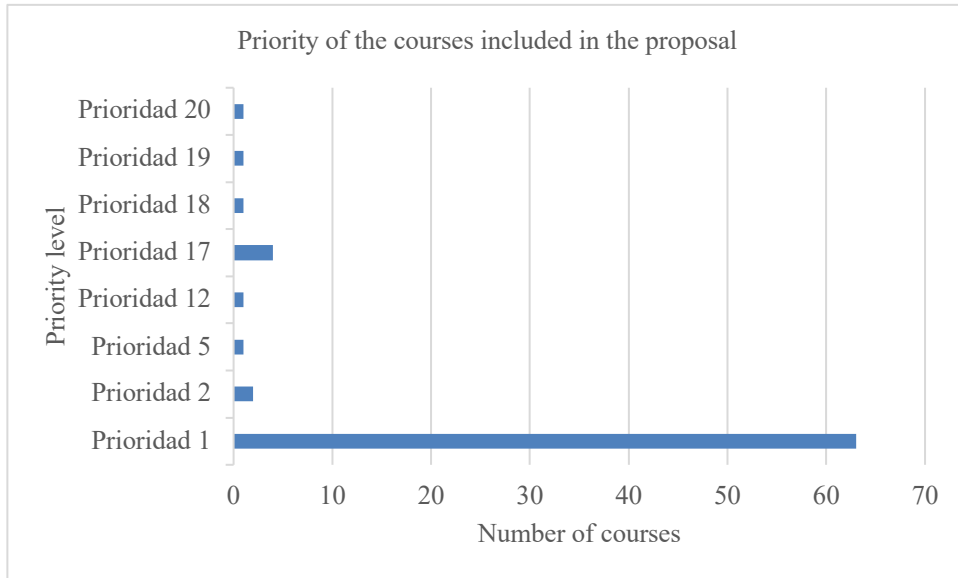

Figure 4. Priority of localized courses.
Note: Source: Own elaboration, data taken from the questionnaire applied.

The localized courses are applicable to the different types of positions in the Costa Rican penitentiary system. Figure 5 shows the number of courses applicable to the different types of positions.
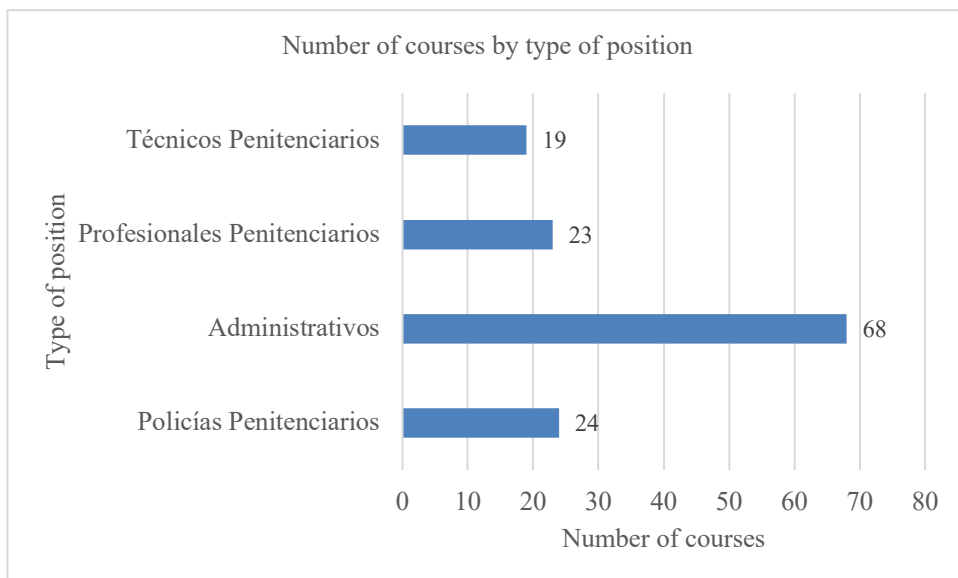

Figure 5. Number of courses by type of position.
Note: Source: Own elaboration, data taken from the questionnaire applied.

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Discussion and conclusions

Continuing education is an organizational strategy that involves the direction and management of human resources (Pineda, 2007), which in recent years has experienced an increase in the consumption of online training courses, motivated mainly by economic effects (Ponce et al, 2010) or by the effects of the pandemic resulting from COVID-19 (Atiaja and Garcia, 2020), which is why massive open online courses or MOOCs are an option that allows organizations to access international class training, without the need to spend large amounts of money.

Through our research, we detected the priority training needs of the personnel of the Costa Rican Penitentiary System, and with the results obtained, it was determined that it is feasible to apply the online courses offered by MOOC platforms to satisfy them. The data indicate that of the 154 courses requested by the people who completed the questionnaire applied; it was possible to locate 74 MOOCs offered by any of the analyzed platforms. These results are consistent with findings of similar research conducted by Atiaja and Garcia (2020), Ruiz (2019), and Flores (2018); this last research additionally provides results that indicate that a virtual training program would decrease operating costs and related times.

Considering that according to a study conducted by the Colombian University Observatory magazine (2020) as a result of the new reality that society has assumed in the face of the current health situation that is being experienced worldwide, product of the pandemic caused by COVID-19, virtuality will be the big winner; there is a trend towards the disappearance of face-to-face or semi-presential education courses, so that education at the corporate level should privilege institutions that demonstrate the best mix between virtualization and expert resumes.

As quoted by Mora (2019), "The constant change in society, in cultural, economic, and political terms, establishes different ways of educating the population and the birth of variable and dynamic educational models." This is why it is considered that both public and private organizations are opting for training programs based on platforms that develop and manage virtual courses, which are gradually replacing the face-to-face form of training, driving a radical change in the way people are educated and trained.

The research conducted shows that the Costa Rican Prison System has the possibility of migrating its traditional classroom training model to a virtual one, which will allow it to meet its training needs, making the most of the MOOC market offer.

The diagnosis of training needs developed through our research, allowed us to identify the knowledge, skills, and aptitudes required by officials of the Costa Rican Penitentiary System to effectively perform their duties. This diagnosis served as the basis for the development of the research in which the feasibility of using MOOCs to meet the training requirements of officials of the Costa Rican Penitentiary System was determined in such a way that it meets the criteria of quality, effectiveness, low cost, eliminating the need for students to physically move to a specific location. According to Amaya and Valles (2015), the accelerated growth that technology has experienced in recent years has modified the teaching-learning process, where resources such as MOOCs offer the possibility of sharing information and acquiring new knowledge, without the need to physically go to a classroom, attending students from all over the world virtually, so that people can prepare for the changing labor market. The use of MOOCs for personnel training promotes continuous learning, democratizing access to knowledge because through their publication it is possible for students to receive the knowledge imparted by

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prestigious universities or technical or higher education institutions, regardless of their geographic location.

The background information gathered for the elaboration of the research shows that the use of MOOCs for personnel training is a practice that has been implemented by several organizations, both public and private, which has yielded positive results in terms of costs and time. Mendoza, Álvarez, and Muñoz (2014) cite in their research work entitled, "MOOCs based on competencies and used as training tools: the Vagones de Ciencia case" that the popularity and impact of MOOCs is based on the fact that they offer massive and free education, using the advantages provided by the virtual spaces enabled by the use of the Internet, promoting social learning generated by the community of course participants. For his part, Novillo (2018) in his Master's thesis entitled "Design and implementation of a MOOC, applying the PACIE methodology, for the development of new pedagogical strategies with the use of ICT in teaching practice and optimize the teaching-learning process," points out that MOOCs constitute a suitable resource for the development of new pedagogical strategies, promoting innovative ideas through the application of educational methodologies that fit different types of learning. Considering that the results of the research conducted in the Costa Rican Penitentiary System indicate the existence of a large number and variety of training requirements, the application of MOOCs to satisfy them is not only a feasible situation but also desirable and convenient, both from the perspective of the official and from the institutional perspective since virtuality reduces the gaps that arise from the geographical location of people or the limited availability of time and resources required for their displacement. The availability of MOOCs developed by external institutions offers the advantage that the Costa Rican Penitentiary System is not required to invest time, effort, and resources in the assembly of training courses that have been published by specialized institutions, with extensive experience and professors of recognized trajectory in the topics of the courses they publish. The application of MOOCs in staff training will allow the Penitentiary System to strengthen its management capacity because as stated in the Adecco company blog (2020), "Continuous staff training allows employees to plan, improve, and carry out their activities more efficiently in collaboration with the other members of the organization." A properly trained work group is a motivated group, where people maintain high morale, which translates into a decrease in staff turnover as employees feel valued and important to the organization. Adequate training empowers people for a better performance of their work, helping them to solve problems, whether simple or complex, daily or singular, which reduces the need to establish schemes based on supervision and control because a trained employee is capable of self-management, improving the stability and flexibility of the organization through the development of new skills. Training also reduces the occurrence of work accidents since trained personnel will perform their work in a better way and with greater knowledge of methods, techniques, and standards that enrich personal and group management, allowing the introduction of improvements in processes and structures, which over time become knowledge and experiences that are added to the pool of organizational knowledge, promoting the evolution and continuous improvement of companies or institutions.

From the results of the research, the opportunity arises to conduct a study on the effect of the lack of training in the Costa Rican Penitentiary System since this factor can affect performance, productivity, costs, motivation, staff turnover, and occupational accidents, but, above all, the worst part is borne by the management of organizational knowledge since it prevents the organization from being able to self-analyze and improve itself, following the best practices at international level and the latest market trends.

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Finally, we would like to state that according to the information collected in our research, MOOC promoters should focus their attention on three fundamental aspects: student dropout, the financial sustainability of the MOOC business model, and finally the quality of MOOCs. Regarding student attrition, the dropout rate in MOOCs is very high, being close to 90%, according to studies by several authors. Armstrong (2014) reported that only 4% of students registered in a MOOC in Coursera completed their courses. Onah, Sinclair, and Boyatt (2014) place the dropout rate at 87%, while Rivard (2013) reported a 90% dropout rate. Campbell, DeBlois, and Oblinger, (2007) propose that despite the high dropout rate of MOOCs, the amount of data that emerges from these courses, resulting from the participation of learners, who perform some of the course evaluation tasks, allows to generate analytics to know how people learn (Learning Analytics). Gee (2012) proposes that high dropout rates may not be a major concern, but discovering why and at what stage students drop out could help design future quality metrics.

Regarding the financial sustainability of MOOCs, several authors point out the need for MOOC providers to establish a business model that allows them to maintain massive open online courses that respond to the demand generated by the proliferation of MOOCs. In this regard, some platforms such as Coursera, edX, and Udacity raise foreign exchange and receive donations from universities and foundations, thus managing to maintain a sustainable MOOC model. Dellarocas & Van Alstyne, (2013) found that some MOOC providers use certifications to monetize these courses in such a way that a learner can enroll a course and successfully complete it for free; but to obtain a certification issued by some recognized university, the learner must pay a fee, which varies depending on the course. Other institutions, such as the University of Washington, have tested a hybrid model, that is, a free MOOC offered at the same time as its paid version, which had a more rigorous academic model, allowing the learner to opt for university credits. Another way of attracting foreign exchange through MOOCs is through recruitment programs that use trainee databases to identify potential employees for companies.

According to Hayes (2015), the real revolution of MOOCs is the questions related to learning in a global society, in addition to the considerations of improving the quality and assurance of learning that these courses offer. Because MOOCs can range from carrying free university courses to simple interest in testing the methodology, it is difficult to discuss their quality in general terms as this will depend on the type of MOOC being evaluated. Downes (2016) states that the success of a MOOC is defined by the process rather than the results, considering this type of courses as a vehicle to discover new experiences due to the fact that each learner has their own objectives and success criteria, the quality of the course measured in terms of success will depend on each learner, reaching their own objectives. Yuan and Powell (2013) also propose that issues of quality, sustainability, pedagogy, completion rates, and credit awarding in MOOCs are of great concern to higher education providers and need to be addressed to ensure the quality of these courses.

Considering that self-regulated learning is one of the key competencies for the individual throughout life (Bartolomé and Steffens, 2015), this involves cognitive, affective, motivational, and behavioral components that provide the person with the ability to adjust their goals and actions to achieve the desired results depending on the conditions of the environment (Zeidner et al, 2000). It is necessary that MOOC providers analyze the market niche to which they are orienting their services in order to adapt them to the needs, interests, and particularities of their target audience, enhancing the benefits offered by massive open online courses in order to motivate learners not only to enroll

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but also to successfully complete the MOOCs in which they register, thus seeking to increase the number of positive experiences, which encourage a greater number of organizations and learners to opt for MOOCs for their continuing education, whether technical or professional.

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