RUFORUM Working Document Series (ISSN 1607-9345), 2018, No. 17 (1): 175-182.
Available from *http://repository.ruforum.org*

Research Application Summary

Evaluation of RUFORUM online platforms

Kato, J., Nnam, J. & Otto, F.

Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)
Plot 151/155 Garden Hill, Makerere University Main Campus, P. O. Box 16811, Kampala, Uganda
Corresponding author: j.kato@ruforum.org

Abstract

In the recent past, a great number of online platforms have been introduced on the market showing different characteristics and services. A series of features should be taken into account when one evaluates online platforms, starting from their functionality and usability in the context of the human, social and cultural organization within which it is to be used. The analysis of the features of a system is not sufficient. It is important to understand how they are integrated to facilitate the online platform functionality and what principles are applied to guide the way a system is used. Different online platforms have been developed to help RUFORUM to execute its objectives. Some of the platforms developed include online African Agricultural Higher Education Capacities Indicator Platform (HEACI), RUFORUM Information Management Systems (RIMS), Impact Platform, the RUFORUM blog, knowledge repository, websites and social media platforms, all which contribute towards RUFORUM's vision. This paper evaluates RUFORUM online platforms in terms of the accessibility, usability, information security, report submission, policy, visibility/ dissemination, schedule management, participant management and connection with social networks.

Keywords: ASTI, OIP, RIMS, platforms, RUFORUM

Résumé

Dans un passé récent, un grand nombre de plateformes en ligne ont été introduites sur le marché présentant différentes caractéristiques et services. Une série de fonctionnalités doit être prise en compte lors de l'évaluation des plateformes en ligne, en commencant par leur fonctionnalité et de leur utilisabilité dans le contexte de l'organisation humaine, sociale et culturelle au sein de laquelle elles doivent être utilisées. L'analyse des caractéristiques d'un système n'est pas suffisante. Il est important de comprendre comment ils sont intégrés pour faciliter la fonctionnalité de la plateforme en ligne et quels principes sont appliqués pour guider la façon dont un système est utilisé. Différentes plateformes en ligne ont été développées pour aider RUFORUM à réaliser ses objectifs. Certaines des plateformes développées incluent la Plateforme en Ligne des Indicateurs des Capacités de l'Enseignement Supérieur Agricole en Afrique (HEACI), les Systèmes de Gestion de l'Information de RUFORUM (RIMS), la plateforme d'impact, le blog RUFORUM, le référentiel de connaissances, les sites Web et les plateformes de médias sociaux, qui

contribuent tous à la vision de RUFORUM. Cet article évalue les plateformes en ligne de RUFORUM en termes d'accessibilité, d'utilisabilité, de sécurité de l'information, de soumission de rapport, de politique, de visibilité / diffusion, de gestion des horaires, de gestion des participants et de connexion avec les réseaux sociaux.

Mots clés: ASTI, OIP, RIMS, plateformes, RUFORUM

Introduction

According to European Commission (Demary, 2015) an online platform is an undertaking operating in two (or multi)-sided markets, which uses the Internet to enable interactions between two or more distinct but interdependent groups of users so as to generate value for at least one of the groups. According to Perset (2010), many online platforms retain some degree of control over the interactions they facilitate and this control may be quite limited and concerns data that users submit when creating their accounts or using a platform such as Facebook or Twitter. It can go further and include control over certain aspects of the transactions, such as quality standards and commission payments on Airbnb and BlaBlaCar. Amazon and Netflix retain wider control over prices as well as distribution of their own products. If online platforms were required to be pure intermediaries, Airbnb, BlaBlaCar, Amazon, Netflix or Facebook would not be considered online platforms. In addition, many websites function as both an intermediary and reseller platforms. For example, Amazon provides a platform for businesses to sell their products and for consumers to find products (Amazon Marketplace). If a platform is required to function solely as a marketplace, then Amazon would be excluded because of its reselling activity (Hagiu and Wright, 2015).

Online platforms serve an important role in bringing people and businesses together and range from small websites with a local reach to worldwide companies generating billion of revenues as they offer varied services such as internet search engines, online market places, video-sharing platforms, music and video platforms, social networks, and they to help facilitate social and commercial exchanges of goods, services and information which would not otherwise happen (Kalyvides, 2015). Online platforms have come to stay so it is important to understand the functions and goals of these platforms which may include usability and user experience goals. "Usability goals" refer to the use of interactive products that are effective, efficient, memorable, learnable and safe, and have fewer errors from the user's perspective (Preece *et al*., 2015). "User experience goals" refer to the feelings that cover all senses and are dependent on the user's prior experiences and values. It can be argued that usability goals and user experience goals determine whether the design of a particular platform can be considered as satisfactory or unsatisfactory (Preece *et al*., 2015).

An on-line platform must be able to efficiently and effectively manage the single components of the process and their interactions. A platform that has these characteristics must carry out four principal functions: communication, information sharing, information access and co-operation. These functionalities characterize both the pedagogical and technological approach (Colace *et al*., 2003). For technical requisites, the best solution to be adopted in platform design should be based on the utilization of a multilayered, web-based architecture (Anido-Rifón *et al*., 2001). In particular an e-learning platform must be web-based, in

this way the client can access the environment by simply using a web browser, without compelling the user to install other software into his/her computer or portable device. This characteristic should be always taken into account by industries producing distance training environments (Colace *et al*., 2003).

RUFORUM (Regional Universities Forum fo Capacity Building in Agriculture, see www.ruforu.org for details) has engaged in many activities of higher agricultural education and changed many people's lives in Africa and beyond. In order to showcase the impact of RUFORUM in the space of higher agricultural education in Africa as well execute the mandated objectives, different online platforms have been developed. Some of the developed platforms include Online African Agricultural Higher Education Capacity Indicator (HEACI) Platform, RUFORUM Information Management Systems (RIMS), Impact Platform, Knowledge repository, websites and social media platforms, and all contribute towards RUFORUM's vision of having a vibrant agricultural sector linked to African universities which produce high-performing graduates and high-quality research responsive to the demands of Africa's farmers for innovations and able to generate sustainable livelihoods and national economic development.

RUFORUM online platforms

As mentioned above, RUFORUM has implemented a number of platforms which are explained in this section.

Online Impact platform (http://ruforumimpact.org/). The online impact platform was developed in 2016 to show the impact of RUFORUM's contribution in high agricultural education in Africa. "Building the Africa We Want" is the African Union Agenda 2063, and RUFORUM was mandated to support the implementation of "Priority area one: Eradicating Hunger and Achieving Food and Nutrition Security" of the Science Technology and Innovation Strategy for Africa (STISA 2024) RUFORUM developed this platform to show its contribution in promoting higher agricultural education in Africa. This online platform shows different projects that RUFORUM has supported and how people's lives has changed. Example of impacts include the number of MSc and PhD graduates trained, research conducted, agriculture technologies developed, networking events held, research grants awarded, and tracking RUFORUM alumni in Africa.

RUFORUM Information Management System (RIMS) (http://rims.ruforum.org/). Through RIMS, RUFORUM has automated its operation of managing and administering its activities mainly grants, scholarships, Monitoring and evaluation, students, Principal Investigators (PI), and applications. All RUFORUM grants and scholarships applications, reviewing and reporting go through this platform. RIMS was meant to support the following modules grants management, students tracking, scholarship application, administrative and Monitoring and evaluation modules were partially developed and others were not developed due to limited funds available. RIMS currently houses over 50,000 records in the database.

RUFORUM Institutional Repository (http://repository.ruforum.org). A repository is a central place in which an aggregation of data is kept and maintained in an organized way, usually in computer storage. RUFORUM Institutional repository provides free access to

research materials such as publications, journal articles, theses and dissertations, conference papers, etc. RUFORUM repository contains over 2,000 publications available online for download at no cost, and promotes open access. The articles in the repository are organized according to authors, subjects, institutions, regions, countries and conferences.

E-Learning Moodle Platform (http://www.ruforum.activemoodle.com/). Moodle is a course management system (CMS); a free package designed using known pedagogical principles to help the educators to create effective online learning communities. Moodle is provided freely as Open Source software under the GNU Public License. This means Moodle is copyrighted, but you are allowed to copy, use and modify. In partnership with Vidya, Mantra EduSystems, RUFORUM developed a Moodle E-Learning platform in 2009 to support the member universities and 34 courses were fully developed and hosted on the platform and different courses were developed and include, PhD Aquaculture and Fisheries Science, he Aggricultural Information and Communiation Management (AICM), Dry Land Resource Management, Research Methods and other courses. Some few member universities that adopted the RUFORUM Moodle platform include Mekele University in Ethiopia, Egerton University, Kenya, and University of Nairobi also in Kenya.

Online African Agricultural Higher Education Capacity Indicator (HEACI) Platform. In 2013, RUFORUM in partnership with IFPRI conducted a survey among its member universities in Kenya with an aim of obtaining data on human capacity data collection activities as well as develop an African Agricultural Higher Education Capacities (AgHed) portal. Data were also collected from non-RUFORUM universities and other agricultural higher education agencies throughout Africa. The Agriculture Science, Technology Innovation (ASTI) was responsible for compiling analyzing, and publishing agricultural R&D data relating to institutional developments, investments, and human resource capacity in low- and middle-income countries. This platform was launched during the 6th Higher Africa Education Week in Nairobi Kenya, on 23rd October 2018.

RUFORUM Websites http://ruforum.org/. RUFORUM websites were developed to achieve the following objectives, a) to communicate to targeted audience on what RUFORUM is achieving in area of capacity building and research, b) Market RUFORUM to international organizations, government agencies, other networks, and donors, c) Engage Alumni in RUFORUM network research and other collaborative opportunities, d) Provide access to RUFORUM resources for students, universities, lecturers, service providers, etc, e) Communicate RUFORUM network research activities and outputs to government, agencies, farmers, agricultural research organisations, international organization and other networks, and g) To provide a platform for discussion on topical issues with researchers, students, farmers, government leaders and other stakeholders.

Social media platforms. Social media platforms such as Facebook, Twitter, LinkedIn, YouTube, mailing lists, blog are useful in disseminating information to RUFORUM member universities, students, university lecturers, RUFORUM staff, university managers, farmers, alumni, international and regional organisations, agricultural – Government and non-Government agencies, donors and other networks.

Parameters for Online Platform Evaluation

The following parameters were considered to evaluate the RUFORUM online platforms:

Accessibility: Accessibility means that anyone is able to perceive, understand, navigate and interact with the online platforms (Caballé *et al.,* 2014). Therefore, a platform should offer any person with an Internet access device, whether or not the bearer of special needs, the possibility to build and accomplish a course (Vaidya and Paranjape, 2014). So, this requirement should assess if the platform is accessible and visible on computers and mobile devices. In addition, it is necessary to verify whether the platform interface offers the possibility to select the language, so that the users can choose the one they are most comfortable with.

Usability: For usability (Fini, 2009) is the ability humans have in using a system in a facilitated way, with effectiveness and efficiency. The platform should offer intuitive and useful tools for editing and structuring content, encouraging its use, keeping a familiar environment for users and reducing the cognitive load of learning that involves its use.

Information security: Online platforms like e-learning platform (Moodle), security of information is so critical, i.e., only administrators and teachers are able to create, modify or delete course content. Students interact in basic form – participate in forums, answering questionnaires, writing collaborative texts – and only in specific situations they are allowed to create resources (Montes *et al.,* 2013). The authentication of a system is another important point to ensure that personal information and course materials are not deleted or improperly modified (Miguel *et al.,* 2013). For such reason, this requirement evaluates whether there is a need of a password to access to the course in order to verify the user's identity and whether there are rules to differentiate teachers' access from students' access.

Report submission tool: Sending mass email allows reports to be issued to participants like users subscribed to the RUFURUM mailing lists (mail Chimp). This requirement should be assessed if the platform offers the possibility to send e-mails to users subscribed.

Platform policies related to costs and copyright: According to Johnson *et al.* (2013) platforms typically offer the same tools, but what changes are policies for author's rights on materials produced and costs so that "something more" is available. In this requirement, it should be assessed whether the platform has clear information on the policies of costs and copyright of the deposited material.

Content management tool: The platform should allow access to materials in an easier way in order to attract participants for a positive online experience (Meinel *et al.*, 2013). To do so, it should support the distribution of multimedia content and provide resources for administration (Montes *et al.,* 2013). This requirement should be assessed whether the platform offers the ability to incorporate video, text, audio and images.

Visibility/dissemination (Marketing strategy): Online platforms should increase the visibility of the institutions. For that reason, this requirement will be assessed whether the

platform offers the marketing strategy or not.

Tools for managing participants. The platform should be able to receive feedback from users. Assessing, monitoring and analyzing participants' activities is extremely important, to help improve the organization's platform (Claros *et al.,* 2013)

Connection with social networks: Social network platforms allows high interaction among participants, enabling understanding, mutual aid and participation in learning activities (Claros *et al.*, 2013). According to Meinel *et al.* (2013), the platform should facilitate a network among participants and should not block the users in their own limits, but allow them to connect their learning experience with their social networks. Therefore, in this requirement it should be assessed whether the platform offers the possibility to connect with social networks, such as Facebook and Twitter.

From the evaluation in Table 1, it is observed that all the RUFORUM online platforms are accessible and visible online through different devices such as computers and mobile phones, it is only social media platforms which can be translated to other languages other than English. All platforms are easy to use with good navigation options, with secure information comprised of strong passwords and access control levels. Online impact platform and RUFORUM institutional repository do not allow sending of feedbacks/ messages to subscribers whereas the RIMS, RUFORUM Moodle and website and social media platforms sends the emails/ reports to subscribers through mailing lists like mailchimp, message broadcasts, etc., which help in disseminating the information to stakeholders. On cost of information, all RUFORUM online platforms are accessed at no cost, with free registration and subscription to access the information, and only RUFORUM Moodle and websites meet copyright requirements, other platforms are not copyrighted. With visibility, all the online platforms are searchable on the most popular web search engines like Google, yahoo, msn and this makes RUFORUM platforms visible on wide web. Only RIMS and RUFORUM Moodle meets schedule management parameter of setting up start and end dates because of the deadline functionality involved while other platforms do not have this functionalities. Repository, Moodle, websites and social media platforms provides an option of visitors to send feedbacks to website masters while OIP and RIMS do not provide for this option. All platforms have options to connect to social networks but it is only the websites and social media platforms meeting this requirement. With system security, all platforms require to have latest security updates accept Moodle which has not been updated for long time due to not being in use by the universities.

Conclusion

All platforms meets the high importance parameters of accessibility, usability, information security, platform policy, visibility, Participant management tool, and system security which make the platforms perform their main functionalities. There is need to work on the low and medium importance of the parameters to improve on the performance of some platforms more especially impact platform, RIMS, Moodle and Knowledge repository.

Table 1. Parameters for platform evaluation of each platform according to the established requirements

Parameters	**Description**	Importance	Impact platform	RIMS	Knowledge Repository	Moodle Platform	Websites	social media platforms
Accessibility	Accessible and visible on computer and mobile devices	high	✓	✓	✓	✓	✓	✓
	It makes it possible to change interface language	Low	×	×	×	×	×	✓
Usability	Level of usability	High	✓	✓	✓	✓	✓	✓
Information security	Password requirement	High	✓	✓	✓	✓	✓	✓
	Control of access level	High	✓	✓	✓	✓	✓	✓
Report submission tool	It makes it possible to send e-mails to subscribers	Medium	×	✓	×	✓	✓	✓
Platform policy	Cost information.	High	✓	✓	✓	✓	✓	✓
	Copyright information	Medium	×	×	×	✓	✓	×
Visibility/dissemination	Searchable on SEOs	High	✓	✓	✓	✓	✓	✓
Schedule management	It makes it possible to set project start and end dates	Medium	×	✓	×	✓	×	×
	It makes it possible to set the deadlines for sending activities.	Medium	×	✓	×	✓	×	×
Participant management tool	It enables visitors send feedback	High	×	×	✓	✓	✓	✓
Connection with social networks	It makes it possible to connect the platform with social networks	Low	×	×	×	×	✓	✓
System Security	Security updates	High	✓	✓	✓	×	✓	✓

Legend: ✓ It meets the requirement × it does not meet the requirement

References

Anido-Rifón, L., Llamas-Nistal, M. and Fernández-Iglesias, M. A. 2001. Component model for stardardized web-based education. Proceedings of the 10th international conference on World Wide Web, 2001. ACM, 86-95.

Caballé, S., Britch, D., Barolli, L. and Xhafa, F. A. 2014. Methodological approach to provide effective web-based training by using collaborative learning and social networks. Complex, Intelligent and Software Intensive Systems (CISIS), 2014 Eighth International Conference. IEEE, 64-71.

Claros, I., Cobos, R., Guerra, E., De Lara, J., Pescador, A. and Sánchez-Cuadrado, J. 2013. Integrating open services for building educational environments. Global Engineering Education Conference (EDUCON), IEEE, 2013. IEEE, 1147-1156.

Colace, F., De Santo, M. And Vento, M. 2003. Evaluating on-line learning platforms: a case study. System Sciences. Proceedings of the 36th Annual Hawaii International Conference. IEEE, 9 pp.

Demary, V. 2015. The platformization of digital markets: Comments on the public consultation of the European Commission on the regulatory environment for platforms, online intermediaries, data and cloud computing and the collaborative economy. IW policy paper

Fini, A. 2009. The technological dimension of a massive open online course: The case of the CCK08 course tools. The international review of research in open and distributed learning, 10.

Kalyvides, N. 2015. The benefits of online platforms main findings. Oxera Consulting LLP.

Hagiu, A. and Wright, J. 2015. Multi-sided platforms. *International Journal of Industrial Organization* 43: 162-174.

Johnson, D. H., Prandoni, P., Pinto, P. C. and Vetterli, M.2 013. Teaching signal processing online: A report from the trenches. Acoustics, Speech and Signal Processing (ICASSP), 2013 IEEE International Conference. IEEE, 8786-8790.

Meinel, C., Totschnig, M. and Willems, C. 2013. OpenHPI: Evolution of a MOOC platform from LMS to SOA. Proceedings of the 5th International Conference on Computer Supported Education (CSEDU), INSTICC, Aachen, Germany.

Miguel, J., Caballé, S. and Prieto, J. 2013. Providing Information Security to MOOC: Towards effective student authentication. Intelligent Networking and Collaborative Systems (INCoS). 2013 5th International Conference. IEEE, 289-292.

Montes, R., Molina, S., Gea, M., Bergaz, R., Bravo-Lupiáñez, D. and Ramos, A. 2013. Turning out a social community into an e-Learning platform for MOOC: the case of AbiertaUGR. Proceedings of the First International Conference on Technological Ecosystem for Enhancing Multiculturality. ACM, 489-493.

Perset, K. 2010. The economic and social role of Internet intermediaries. OECD Digital Economy Papers, No. 171, 49pp. OECD Publishing, Paris. https://doi.org/10.1787/5kmh79zzs8vb-en.

Preece, J., Rogers, Y. and Sharp, H. 2015. Interaction design: beyond human-computer interaction, John Wiley & Sons.

Vaidya, S. and Paranjape, A. 2014. Moocs—Changing the way of education. MOOC, Innovation and Technology in Education (MITE), 2014 IEEE International Conference. IEEE, 362-365.