

“Transformation of higher education sector through massive open online courses in Saudi Arabia”

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ARTICLE INFO

Mohammad Rishad Faridi and Ryhan Ebad (2018). Transformation of higher education sector through massive open online courses in Saudi Arabia. *Problems and Perspectives in Management*, 16(2), 220-231. doi:[10.21511/ppm.16\(2\).2018.20](https://doi.org/10.21511/ppm.16(2).2018.20)

DOI

[http://dx.doi.org/10.21511/ppm.16\(2\).2018.20](http://dx.doi.org/10.21511/ppm.16(2).2018.20)

RELEASED ON

Wednesday, 30 May 2018

RECEIVED ON

Sunday, 05 November 2017

ACCEPTED ON

Wednesday, 02 May 2018

LICENSE



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JOURNAL

"Problems and Perspectives in Management"

ISSN PRINT

1727-7051

ISSN ONLINE

1810-5467

PUBLISHER

LLC "Consulting Publishing Company "Business Perspectives"

FOUNDER

LLC "Consulting Publishing Company "Business Perspectives"



NUMBER OF REFERENCES

19



NUMBER OF FIGURES

6



NUMBER OF TABLES

5

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BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy,
40022, Ukraine

www.businessperspectives.org

Received on: 5th of November, 2017

Accepted on: 2nd of May, 2018

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TRANSFORMATION OF HIGHER EDUCATION SECTOR THROUGH MASSIVE OPEN ONLINE COURSES IN SAUDI ARABIA

Abstract

Higher education needs to respond to ever changing demands and expectations of present and future potential students. In order to amplify access to educational materials for students who endeavor to learn, various methodologies are used with the help of technology. Education is redefined and democratized by enabling anyone to learn from the world's experts by a click of a mouse. Higher education institutions are venturing to gain better understanding of the phenomenon of Massive Open Online Courses (MOOCs) and its paradigm shift towards open global education. This study endeavors to study how MOOCs can be seamlessly integrated into the present scenario of traditional and learning environment. The commercialization with marketing of MOOCs in KSA's higher education sector is also discussed. Finally, this study recommends adaptive home grown organic introduction of blended learning with the MOOC platform. With the advent of internet technology, students are now able to access diversified and latest courses which are participatory, collaborative with digital skills, well distributed, engaging and self-paced. This concept enables them to attain lifelong learning and brings scalability at a virtual zero cost to the students. The overall impact of technology on the learning management system will be explored. An attempt is made to introduce and accelerate learning and teaching strategies and tools to enhance student employability with their present usage of technology. The objective of the study is to comprehend the readiness level of learners by incorporating open learning platform, build an innovation model, which involves stakeholders with a holistic perspective that will enable a congenial learning management system, how the deanship of information technology and distance learning change course from a support-based deanship to a strategic-based deanship.

Keywords

life long learning, MOOC, education, information technology, learning management system

JEL Classification

I23, M21, O31

INTRODUCTION

Globally, an initiation for improvement has been backed by the General Assembly at United Nation vision 2030 by focusing on the Sustainable Development Goals (SDGs): Goal 4, which particularly focuses on the quality of education, transformation from the formal school, college, to higher education learning, etc., to a lifelong learning concept. As per the United Nations Development Program, "Reaching the target of inclusiveness and improving the quality of education assures with conviction that education is one of the most powerful weapons and a proven vehicle for sustainable development". The fulfillment of this goal largely depends on providing access to education at all levels and increasing enrolment rates in schools, particularly for women and girls. However, the idea should not be struck in basic literacy skills alone. There should be continuity in the learning scales in order to achieve the universal education goals. Also, gen-

der difference needs to be addressed effectively. An effective and feasible solution for this approach is offering online courses on a mass basis thanks to the advancements in information technology. The relevance of the study is how MOOC will change the mind set of learner, the way they learn and live? More importantly, how MOOC can be integrated into the traditional education system without any disruption and disturbance?

Applicability tested

Vision 2030 of Kingdom of Saudi Arabia framework stands on a blend of social and economic policies to prepare the nation to be prosperous with sustainable economic future by leveraging the nation strengths with growth and development policies. This aligns very well with the United Nations Development Program by 2030, “substantially increase the number of youth and adults with having the need-based skills, which may be technical and vocational skills, which will help in employment, suitable job opportunities and encourage entrepreneurship and business leaders”.

Technology becomes an integral part of today’s student’s life. The big question is how to increase students’ engagement with more impetus on participation and interaction through the appropriate use of technology. Hopefully, that will bring about a transition from traditional classroom to digital classroom, limited time participation to 24/7 real time virtual interactive participation between faculty and learner, jotting notes to inculcating digital notes approach and improving the grading system of students not just by mere assessing their exams testing, but evaluating holistically “degree of engagement and involvement by the learner”, etc. “The Sustainable Development Goal 4 ensures the impact, the inclusiveness, equitable quality education, and also to promote lifelong learning opportunities for all”.

Introduction, intervention and, finally, the impact of MOOCs in achieving Sustainable Development Goal 4 by 2030.

The Objectives of the research paper are outlined below:

- To assess how Massive Open Online Courses (MOOC) will complement and supplement the learning status quo of existing students who are enrolled in their respective programs to be an enabler.
- To map the perception and expectation of learners attitude in incorporating open learning platform.
- To develop an innovative learning model for a dynamic learning management system.
- To design a smooth seamless processes through collaboration of various colleges with the Deanship of Information Technology and Distance Learning for the regular base program at Prince Sattam Bin Abdulaziz University, Al Kharj, Kingdom of Saudi Arabia.

The significance of this research paper is two-fold. Firstly, how effectively higher education can open learning platforms, which are technology based, drive the quality of teaching, learning and create a conducive interactive learning environment. Secondly, how to build a modular model which will facilitate teaching and learning to new heights by incorporating an innovative model, that can be produced by other learning institutions to administer and practice in the Kingdom of Saudi Arabia.

Despite the fact that MOOCs programs started in 2008 worldwide, the statement of the problem accentuates its penetration in different parts of the world and continues to be at varying rates like any other service or offering. There is dearth of understanding in the context of Kingdom of Saudi Arabia as to how much awareness and benefit MOOCs programs have gained and returned.

1. RESEARCH DESIGN AND METHODOLOGY

In this research, the data are collected from primary, as well as secondary sources, in Prince Sattam Bin Abdulaziz University in 2017. Primary data are obtained from the learners of different colleges through their responses to a questionnaire. Secondary data are collected from various journals, books, web sites, magazines, etc.

The objective of the study revolves around measuring the interest level and impact perception of MOOCs and delivering a model to better penetrate into such courses and programs, if required in a perspective of broadening the academic rigor and skill development of the youth in the Kingdom.

In order to study the penetration and perception levels of MOOCs programs among students in the Kingdom of Saudi Arabia, a sample survey has been conducted (Goksu et al. 2018; Unpacking the revised Bloom's taxonomy: developing case-based learning activities, 2016; Sandeen, 2013; Kurhila, 2012). 200 respondents who are pursuing their bachelors in Prince Sattam Bin Abdulaziz University in and around its affiliated colleges constituted the sample. A structured questionnaire was administered to elicit a variety of such information connecting MOOCs as awareness, adoption, areas of interest, belief and perception and experience and satisfaction level among the respondents.

Statistical tools have been used to analyze the data and determine the outcome from the findings. Simple percentage figures and different percentile estimates such as Top Box or Top Two Box scores, and Net Top Box score (difference between the top choice and bottom choice) are provided. In addition, we provide Z-score to percentile rank, which converts the raw score into a normal score, because rating scale means generally follow a normal distribution.

In addition, Coefficient of Variation is also presented. Higher values indicate higher variability. The CV is a measure of variability, unlike the first four, which are measures of the central tendency, so it can be used in addition to other approaches.

Factor analysis has been applied to identify most important factors determining the benefits of pursuing MOOCs. Principal Component Analysis was used as extraction method.

2. LITERATURE REVIEW

Massive Open Online Courses (MOOCs) have completely revolutionized higher education and its potential to access to education.

"Over the last twenty years, technology has reorganized how we live, how we communicate, and how we learn. Learning needs and theories that describe learning principles and processes should be reflective of underlying social environments" (Siemens, 2004).

George Siemens

It has enabled elite courses from elite universities available for free or at a very low cost. It has removed barriers ranging from geography, race, ethnicity, gender, and economies of scale. Students' main reasons for taking a MOOC are advancing in their current job and satisfying curiosity. Technology has played major role in propelling the MOOC concept. In spite of digital divide and disparity to access to internet and availability of electricity in developing countries, still students are now able to access to diversified and latest courses which are participatory, collaborative with digital skills, well distributed, engaging and self-paced. This concept enables them to attain lifelong learning and brings scalability at a virtual zero cost. The overall impact of technology on the learning management system will be explored. The current study focuses on proposing a MOOC platform in Saudi education system for greater access to education. MOOC requires a combination of sufficient schooling and transition to college-level material, availability of web access and reliable electricity. In Saudi Arabia, these basics are freely available and affordable. An attempt is made to introduce learning and teaching strategies and tools to enhance student employability with their present usage of technology. Nevertheless, it is cogent that MOOC will never replace traditional brick and mortar teaching model of one-on-one classroom learning. However, underlying idea of this paper is to introduce a versatile learning model

that best fits between traditional classroom and online learning environment and bridged via best use of available technological tools in Saudi higher education sector. A model will be proposed based on the statistical results drawn from the conducted study.

Scalability of MOOC is humungous. According to Dolan (2014), MOOC is easy to be created, taught and learnt. It is indeed “deMOOCacy era”. According to Anderson (2012), MOOCs build the reputation of a learning institute. According to Dolan (2014), MOOCs from educator’s perspective have been an effective tool to reach huge student population with interacting with the best scholars, also, it’s an opportunity to gain quick visibility with larger audience.

Learner’s motivation to participate in MOOC and enroll in the respective course of their interest is also a significant area of focus to the stakeholder (Yuan & Powell, 2013). The factors that spur student motivation to learn include future economic benefit, development of personal and professional identity, challenge and achievement, enjoyment and fun (Yuan & Powell, 2013). These factors must be taken into account for course design and pedagogy. Hence, in the long term, one of the key take-aways would be a MOOC-based program of study that leads to a degree.

With the rapid global growth of online learning, as it has become a major feature of higher education environment, the university has to be at par to be flexible, resilient, and entrepreneurial and to look forward online for new opportunities to develop their provision and profile (UK, 2013). Lastly, precision built MOOC programs would be a breakway of the assumption that students need to attend campus programs to acquire all the knowledge and skills for necessary credentials (Mazoue, 2013).

From Figure 6 of hierarchy of MOOC, the levels of Bloom’s Taxonomy can be assessed. In the lowest level (0-12 months) of the pyramid, the students would be able to make a recollection of a wide range of material, from specific facts to complete theories and, hence, acquire knowledge that would represent the lowest level of learning outcomes in the cognitive domain. In the level two

(13-36 months), students acquire comprehension and application skills from MOOC certification bodies. In the level three (36-48 months), students would acquire analysis and synthesis skills and, hence, obtain undergraduate degree. In level four (48-72 months), student would acquire evaluation skills and, hence, be able to obtain Master’s degree.

Asper Nkhoma, lam, Sriratanaviriyakul, Richardson, Kam, and Lau (2017), students incremental learning can be measured with four quadrants, which are reflected in the revised Bloom’s Taxonomy: knowledge application, higher-order thinking, professional evaluation and, finally, knowledge improvement.

Goksu and Gulcu (2016) state that with the rapid development of technology, this triggers in changing the way we teach and learn. For this reason, there has been revision in the original Bloom’s Taxonomy of 1956. Revised Bloom’s Taxonomy helps in optimization and development of educational programs, which are based on usage of technology, blended learning and keeping in view the characteristics of digital native learners.

According to Sandeen (2013), some colleges and universities started recognizing MOOCs and duly approved in giving credit with the faculty verification. University of Helsinki, Finland was perhaps the first university to recognize it (Kurhila, 2012). This made other universities, especially in the US, to follow by licensing MOOCs content and integrated into the campus-based courses.

One of the most interesting and promising aspects of MOOCs is the occurrence of high level of experimentation and rapid prototyping of technology-based assessment. This has had positive insinuations for assessment of scholars and professionals. However, it would be impossible to engage adequate manpower to conduct all assessments required in a course mainly due to massive level of scale of MOOCs. Further, several MOOC providers have a mission to improve student learning in foundational courses, especially among first generation. With its focus on outcomes, the assessment community has inherently questioned the validity of the “inputs only” model for quite some time.

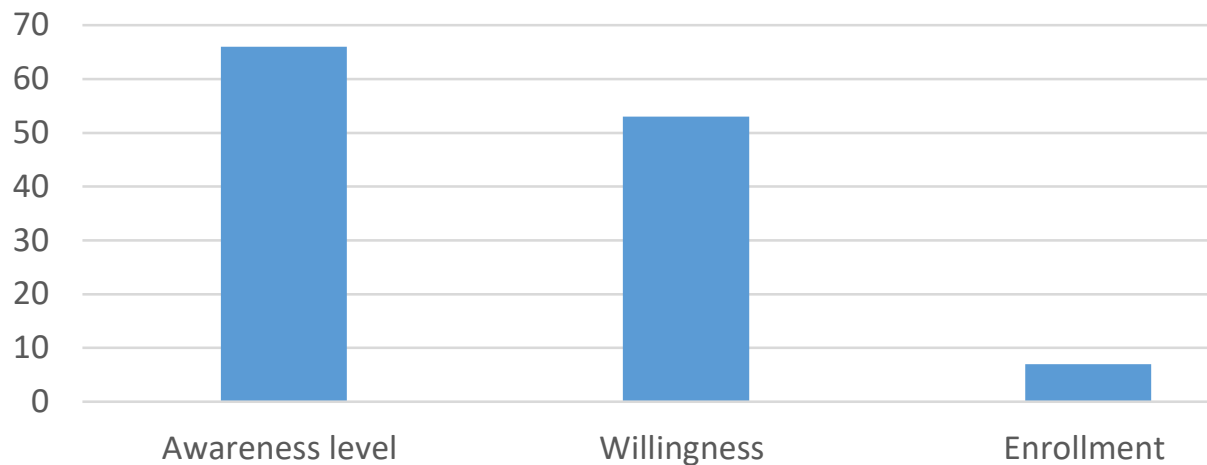


Figure 1. Descriptive statistics

3. RESULTS

3.1. Data analysis and findings

Table 1. Descriptive statistics

Awareness level	66%
Willingness	53%
Enrollment	7%

Around two third of the students surveyed are aware of the MOOCS but the enrollment rate is

relatively poor. Out of 7 enrolled cases, 4 students got enrolled for web designing course, two for creative writing and one for Forex management.

Similarly, the largest source of recommendation is teachers (57%), followed by friends (29%) and web sources.

It is clear from Z-score presented in Table 2 that preference for business-related courses is higher than that of personal programs such as hobbies, extra-curricular activities, etc.

Table 2. Potential areas to pursue online courses

Source: Data analysis.

No	Courses	Mean	Percent priority	Top Box	Net Top Box	Z-score, %	CV
1	Communicating skills	3.04	34	20	9	22.91%	42.57
2	Analytical skills	2.99	35	17	5	21.56%	42.91
3	Time management skills	3.29	38	18	17	25.28%	32.41
4	Personality development	3.15	46	19	2	26.69%	43.37
5	Global skills	3.08	42	10	-3	22.07%	38.80
6	Creativity	2.87	33	7	-4	15.95%	39.51
7	Innovation	2.74	28	12	-7	16.17%	46.58
8	leadership skills	2.99	35	22	5	23.47%	46.70
9	Problems solving skills	2.72	29	13	-5	16.16%	47.63
10	Extracurricular activities	2.35	17	9	-19	8.91%	52.16
11	Numeracy skills	3.01	38	20	6	23.33%	45.17
12	Decision making skills	3.34	44	19	16	27.80%	33.57
13	Computing skills	3.34	45	17	14	27.31%	32.75
14	Updating skills to be competitive	3.06	47	22	1	26.30%	48.45
15	Professionalism	3.23	46	25	10	29.10%	43.31
16	Pursuing hobbies	2.25	15	2	-25	4.90%	47.01
17	Business skills	3.45	55	27	18	33.77%	38.07
18	Critical thinking skills	3.18	47	21	8	27.31%	42.73
19	Study contents as per the syllabus	2.75	33	12	-6	16.92%	47.48

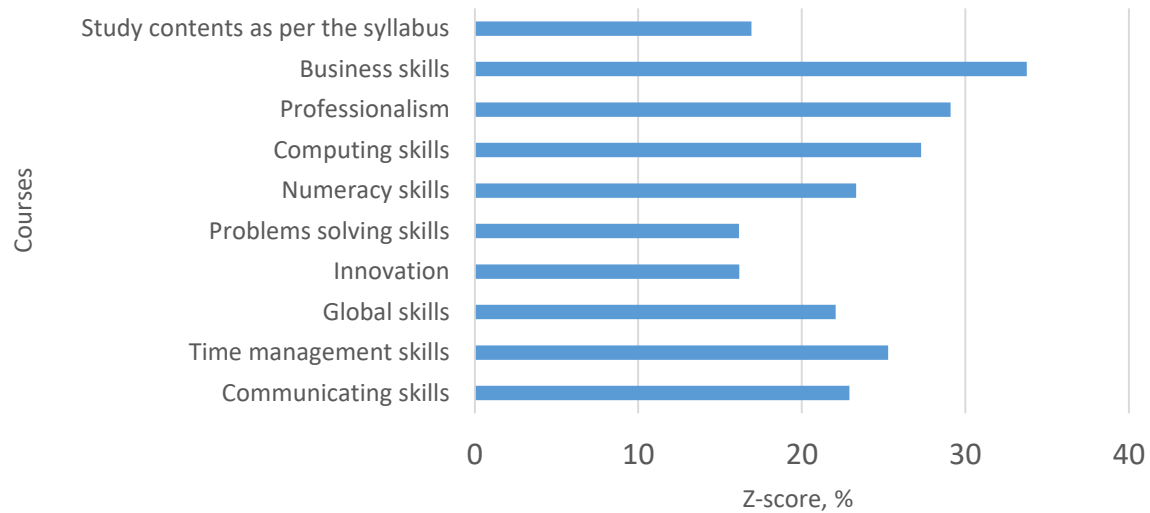


Figure 2. Potential areas to pursue online courses

Table 3. Perceptions on online learning

No	Perceived statements	Mean	Percent priority	Top Box	Net Top Box	Z-score, %	CV
1	Technology enables my learning	3.86	73	35	31	45.21%	30.14
2	Learning is important than the means to learn	3.39	55	22	16	31.34%	37.00
3	Learning takes most in the classroom	2.61	30	10	-20	15.38%	52.20
4	Learning takes most outside the classroom	3.45	56	34	21	35.24%	42.09
5	Learning takes at both classroom, as well as outside	3.13	48	20	1	26.99%	45.33
6	Online learning at my self-pace, increases networking, no cost, and at my convenience	2.91	21	12	4	15.51%	36.91
7	MOOCs are not recognized and accredited	2.87	15	9	3	11.71%	33.09
8	MOOCs are not accepted by the employers	2.73	20	7	-6	11.80%	39.26
9	Learning is more important than the grades	3.25	50	12	5	25.70%	35.36
10	Belief in lifelong learning	3.19	51	10	-4	25.34%	38.25
11	Future of teaching and learning will be more digitalized and technology-based	2.81	39	12	-11	19.35%	48.96
12	Pressure of studies and fear of failing is hindrance towards MOOCs	3.6	54	15	15	31.95%	23.69
13	Faculty makes aware of the availability of MOOCs	2.63	22	7	-12	11.89%	44.12
14	Ready to pursue MOOCs course to help regular program	3.05	48	10	-2	22.37%	40.99
15	Ready to pursue online course if they are from world famous universities	3.19	51	18	3	27.48%	42.43
16	Ready to pursue MOOCs if recognized and provide employment	3.2	49	15	7	25.79%	38.47
17	Ready to pursue MOOCs if college or university guide in the enrollment	2.91	39	11	-4	19.58%	43.71
18	Ready to pursue MOOCs if someone guides and help	2.94	39	9	-3	18.94%	40.97
19	Need more information about MOOCs	3.24	50	12	10	24.70%	34.30
20	MOOCs will facilitate pursuing Master's	2.63	22	8	-10	12.06%	44.45203
21	MOOCs will facilitate in own business	3.08	21	9	7	14.26%	27.95
22	MOOCs will improve relationship with stakeholders	2.67	18	4	-15	10.57%	39.86

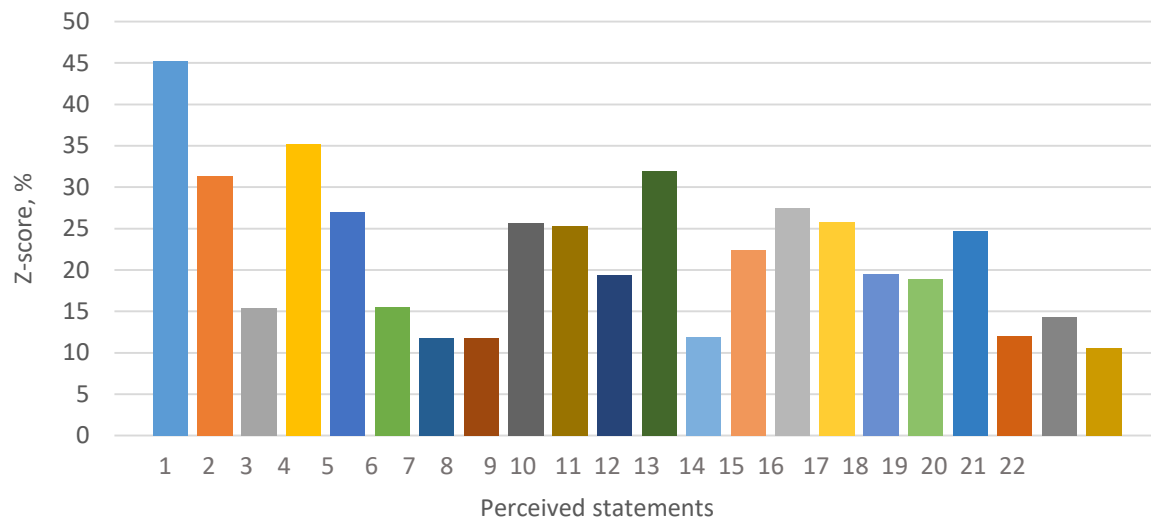


Figure 3. Perceptions on online learning

Table 3 offers a perception mapping towards various aspects of MOOCs. The role of technology as an enabler is very much highlighted by the respondents. This also pinpoints that certain modifications MOOCs should be ensured for better penetration. These include recognition of the courses, employment opportunities, more support from the current colleges/universities, more information, etc. This reminds that MOOCs need a non-anonymous style, especially among Saudi students. Given the popularity of MOOCs among many other nations, it is perceived that Saudi students are not well exposed to the real benefits of MOOCs.

Factor analysis: we applied factor analysis in this study to determine the factors that have a significant effect on potential benefits of pursuing MOOCs. Two factors were identified as affecting the benefits of using multi-currencies. These factors were obtained using rotated component matrix extraction method.

Table 4 shows factors affecting the benefits of pursuing MOOCs, using the Principal Component Analysis.

The first factor is the role of technology for learning as indicated by technology as a learning enabler with a factor value of 663, better value for convenience and cost saving with a factor loading of 0.795 and, finally, value of learning rather than obtaining grades with a factor loading of 0.614. This factor has an Eigen value of 2.198, showing that it is a strong determinant of realizing benefits of pursuing MOOCs.

The second factor is the complementary aspect of MOOCs, as shown by support for regular program with a factor loading of 0.817 and facilitator for Master's programs with 0.722 and business facilitator with a value of 0.738. MOOCs was considered as a stakeholder relationship builder with a factor score of 0.619. This factor has an Eigen value of 1.624. A higher Eigen value (above 1) is an indication of better effect of the factor on the variables used.

Table 4. Factors affecting the benefits of pursuing MOOCs

Variable	Component 1	Component 2
Technology enables learning	0.663	0.0621
MOOCs at self-pace, increases networking, no cost, and convenient	0.795	0.021
Learning is more important than the grades	0.614	0.038
Ready to pursue MOOCs course to help regular program	0.052	0.817
MOOCs will facilitate pursuing Master's	0.063	0.722
MOOCs will facilitate in own business	0.018	0.738
MOOCs will improve relationship with stakeholders	0.027	0.619

Note: Extraction method: Principal Component Analysis. Rotation method: varimax with Kaiser normalization.

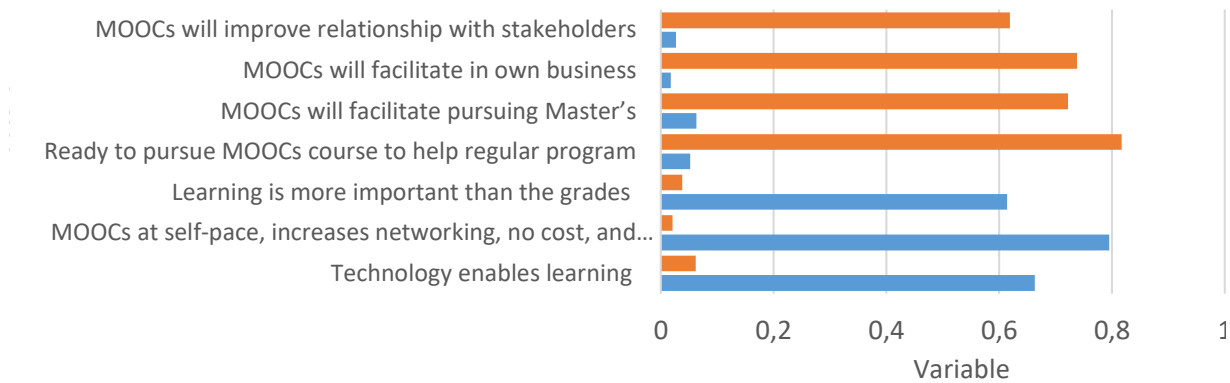


Figure 4. Factors affecting the benefits of pursuing MOOCs

3.2. Factors to consider

Creating a platform for massive continuous life-long learning and the courses that will be offered must be separated from land-based education system. It should offer a viable solution to the problem of providing global access to educational credentials.

Recognizing the important role in reducing cost and expanding access, improving the quality of student learning should be of top priority. Hence, there will be a need of sophisticated learning architecture that can effectively adapt to the individual needs of the learner (Mazoue, 2013).

MOOCs can be flawlessly inserted at various levels into the undergraduate program. Initially, from the basic MOOC to focus on skills, then, transforming traditional curriculum to a blend of various learning methodologies and, finally,

Master's enabled by MOOCs, it is a lifelong learning concept.

The above structural chart depicts the functional flow of a blended learning environment. A collaborative approach between the University and MOOCs is proposed to be working simultaneously. The University operates under the control and regulation of Ministry of Higher Education. In the University, Deanship of IT and Distance Learning are taking the control of directing MOOCs to various colleges (C1, C2.....) and each college will liaison with a coordinator deputed by the Deanship of IT and Distance Learning. MOOCs is spread across each semester (S1, S2.....) according to the level of semester. On the other hand, to amplify the MOOCs, Deanship of IT and Distance Learning will directly interact with Stakeholders for the improvement of the community in an effective way. This will reinforce the commitment of PSAU towards community.

Table 5. The Eigen values of the factors affecting the benefits of pursuing MOOC

Component	Initial Eigen values			Extraction sum of squared values			Rotation sum of squared values		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	2.198	34.256	34.256	2.198	34.256	34.256	2.025	33.147	33.147
2	1.624	23.841	58.097	1.624	23.841	58.097	1.797	24.95	58.097
3	825	12.269	70.366	–	–	–	–	–	–
4	0.648	11.23	81.596	–	–	–	–	–	–
5	0.354	9.56	91.156	–	–	–	–	–	–
6	0.68	7.358	98.514	–	–	–	–	–	–
7	0.427	1.486	100	–	–	–	–	–	–

Note: Extraction method: Principal Component Analysis.

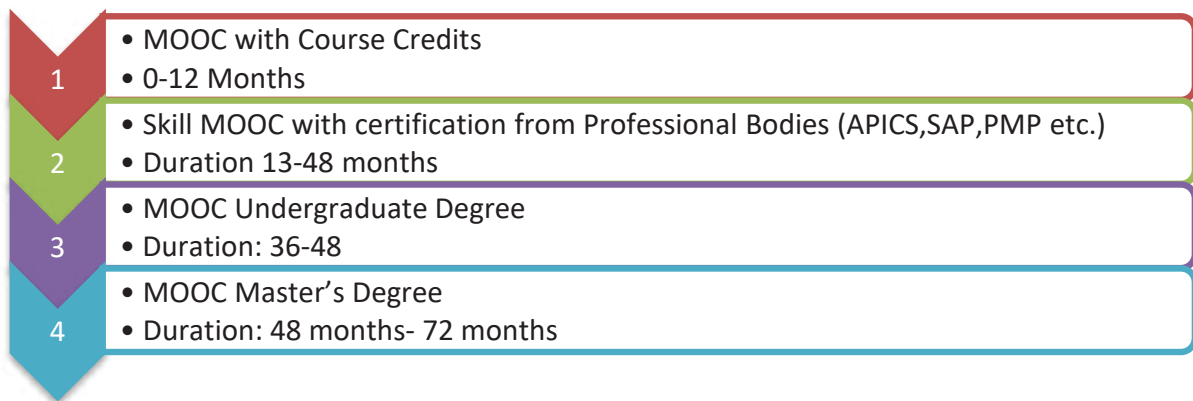


Figure 5. Hierarchy of MOOC

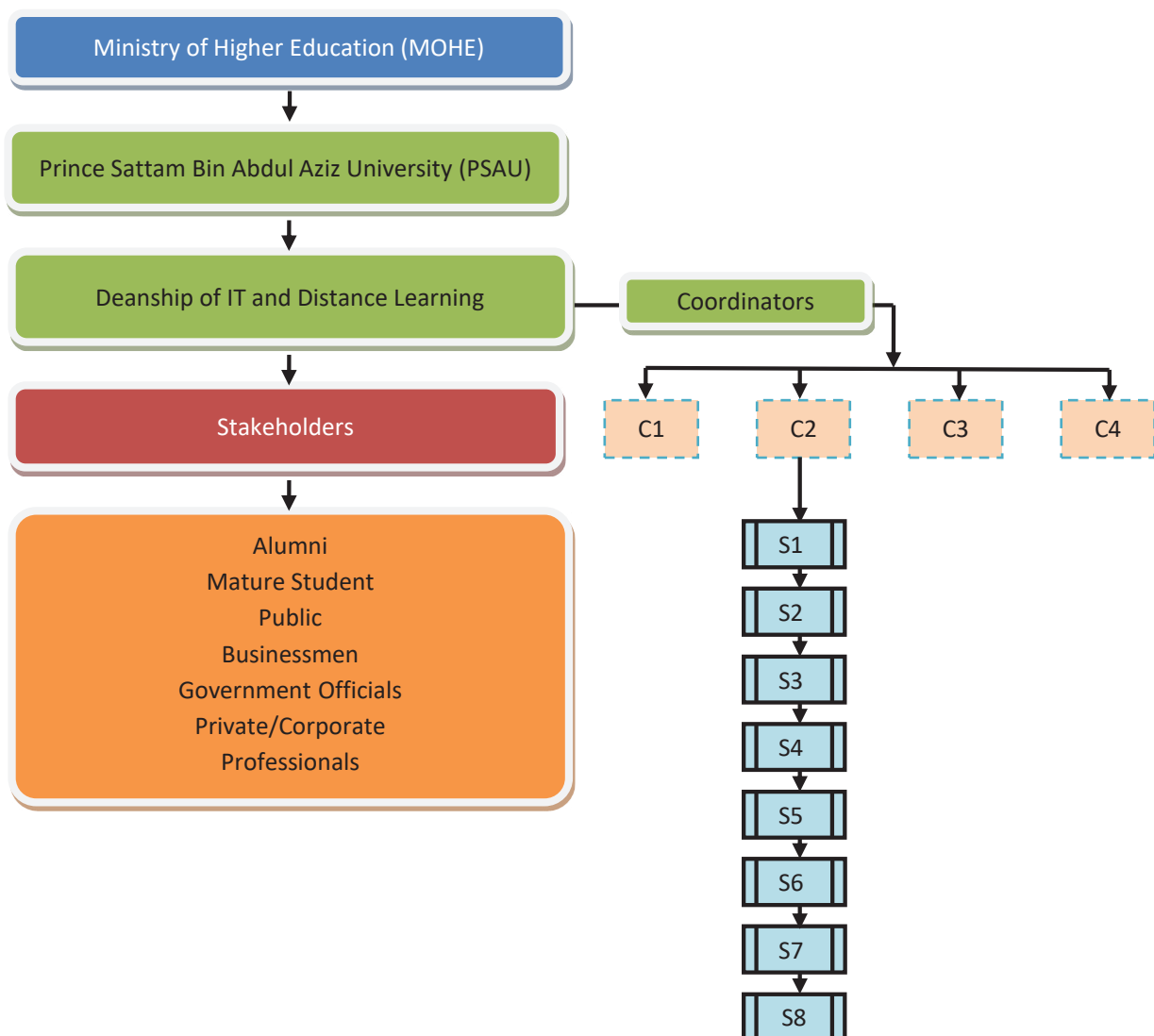


Figure 6. Proposed structure of MOOC at Prince Sattam Bin Abdulaziz University, Kingdom of Saudi Arabia

CONCLUSION AND IMPLICATIONS

It may be too early to elicit that MOOC may be fundamental game changer for tradition providers of higher education and how those institutions might adapt whether in providing MOOC or not. Although some universities are considering offering highly selective MOOC that would account for regular course credits, however, they do require organizational changes related to sustainability, pedagogy, credit, and capacity. Even with many challenges posed by MOOCs, they still offer a low cost provision and present opportunities for new and existing providers and learners continue to benefit from it in one way or the other.

The learners come from a variety of learning backgrounds ranging from vocational learners, educators and researchers, higher education students, and hobby learners. This low cost or free learning model offered via third party platforms using broadcast and distribute peer learning establishes a whole new paradigm shift in representing a new relationship between academics, students, institutions, and education technology firms. There is myriad of opportunities in the field to develop effective approaches that blend online and free approaches with more traditional fact-to-face and paid for models.

Since this research study was particularly for the College of Business Administration as a convenient sample, researchers are encouraged to pursue further perspectives from taking data from various colleges and universities in Kingdom of Saudi Arabia in order to get much clearer and holistic overview.

RECOMMENDATIONS

The university can further upgrade its own Learning Management System (LMS) by incorporating non-proprietary and free web-based resources and integrating required software components into a structure course. Since new platforms have a lot in common with their conceptual ancestors, Learning Management Systems (LMS), developers can easily upgrade it to move online. Although LMS are more advanced in when it comes to quiz/assignment design, MOOC lack those features yet they have integration of questions with videos that LMS can be improved and upgraded upon (Kay, Reimann, Diebold, & Kummerfeld, 2013).

Referring to the case of MOOCs that not only awards the certificate of completion, but additionally those platforms also offer career services to students and employers on the basis of performance on their courses, a similar approach can be designed on bespoke model (UK, 2013). Universities in its endeavors of long-term strategy recognize its MOOCs for academic credit. Alternatively, the university can collaborate with existing MOOC platforms being offered by a variety of providers in order to leverage technology that would eventually assist in developing a potential business model. Some of the suggestions recommended from this research are as follows:

- Prince Sattam Bin Abdulaziz University can differentiate themselves globally by introducing blended learning with a MOOC platform.
- It will create an effective education eco-system by aligning the current learners (digital natives) who are technology savvy.
- It will enable a student centred learning environment with a collaborative approach.
- This will be an approachable mechanism to quickly reach the students' parents.
- MOOC need to be embedded into the curriculum for a smooth transitioning.

- Deanship of IT and Distance Learning at Prince Sattam Bin Abdulaziz University should change the name with the need of the hour to Deanship of IT and Lifelong Learning. Since, with the advent of technology, it is no more distance, but in fact, it is the connectivity 24/7 online, as well as offline.
- This initiative reiterates the “Kingdom of Saudi Arabia Vision: 2030” of digitalization of education by “refining the national curriculum” a step to accelerate and boost education initiatives (Gazette, 2013).

Capitalizing MOOCs

Given the MOOCs invasive penetration in higher education, it is quite a burning topic of how to capitalize and make money from its products offerings. Although it is a widely accepted fact that MOOCs have their own set of underlying problems. The major one is the completion rate of around 10 percent (Holmes, 2013). Dave Cormier, the man who coined the term “MOOC”, told the Wall Street Journal, “Nobody has any idea how [monetization] is going to work”. Even the eternally optimistic CEO of Udacity, Sebastian Thrun, admits the industry is in “a state of experimentation” when it comes to business models (Holmes, 2013).

Majority of the MOOCs are the building stems of the current education system. They all provide free online courses and lectures. Average MOOC course offering ranges to 50,000 and some are even larger than the universities. That’s why MOOCs are so special, since they are elite, but funded by venture capitalists (VCs). If they are funded by VCs, when do the VCs see return on their investments (ROI). Hence, one of the ways to seek ROI is designing a course in such a way that the product is worth paying for. Firstly, charging students to pay for elite courses. Secondly, allow schools to pay for MOOC courses if those courses are offered on university campus. Thirdly, offer students additional paid resources ranging from library resource access and tutoring.

In KSA’s higher education sector, universities can devise courses by teaming up the major MOOC players like Udacity, EdEx, and Coursera to offering micro-credential, where students pay for nanodegrees focused skill training with a verifiable certificate type credential upon successful completion. Those credentials, then, may be recognized by Ministry of Higher Education.

Future opportunities and studies

In line with the Vision 2030 of Kingdom of Saudi Arabia, it is imperative to involve all stakeholders with bottom up model with a sustainable effort. MOOC is a powerful tool in integrating with accelerating speed, reducing cost of operation with high level of scalability. It is an opportunity for a global connection and networking, which blends with diversity and sharing best practices. Education policy makers are encouraged to frame a national policy to gear up by blending the traditional, as well as technology and innovative means of teaching and learning. There has been initiatives in Arab world, but some universities have to take a lead in certifying and validating the courses and approving suitable credits to the learners who undergo MOOC courses.

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