

Egyptian Instructors and Massive Open Online Courses: An Attitudinal Intentional Study

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Abstract—This study aims at investigating the Egyptian instructors' attitude and behavioral intention to use and develop massive open online courses (MOOCs) (i.e., asynchronous, open-access, web-based courses geared toward enrolling hundreds of learners at a time). The study sample consists of 235 Egyptian university instructors belonging to nine Egyptian universities: Cairo, Ain Shams, Port Said, Suez, Mansoura, Helwan, South Valley, Damietta, and Zagazig universities. The data collected were analyzed within the framework of the Technology Acceptance Model (TAM) stating that there are three factors that influence the users' decision about why, when and how they use modern technology: (1) perceived usefulness (PU), (2) perceived ease – of – use (PEOU), and (3) external variables. The results showed that the Egyptian instructors displayed strong positive attitude towards MOOCs ($M = 5.56$ and $SD = 66\%$). Furthermore, the results showed that the participants have strong behavioral intention to use MOOCs ($M = 4.99$ and $SD = 0.70$) and strong behavioral intention to develop them ($M = 5.91$ and $SD = 0.53$). The results also displayed a moderate correlation between the participants' attitude and behavioral intention to develop MOOCs ($R = 0.474$).

Keywords—Massive open online courses (MOOCs), technology acceptance model (TAM), attitude, behavioral intention

1 Introduction

Six of the twenty-three shifts proclaimed in the Egyptian Education Strategic Blueprint from 2019 to 2030 concentrate on technology-enhanced renewal in making the educational process more attainable and supporting lifelong continuous learning [1, 3, 5]. One of the basic and substantial strategies for these transformations is via promoting universities to reinforce Massive Open Online Courses, usually abbreviated as MOOCs.

Within the framework of the immense development in open educational resources, both virtual technology-enabled teaching, learning platforms and MOOCs are viewed as modern trends in learning. MOOCs refer to a number of courses given via an online platform to masses of learners by government institutions or independent individuals, usually with and often without charges, depending on the kind of the provider, and in

many cases with no pre-requisites. The course participants can ask for certificates only upon the course completion [2, 4].

MOOCs shatters all the traditional obstacles that allow individuals to enroll in academic courses without concerning about the distance, tuition fees, and prior educational knowledge. Furthermore, MOOCs offer good chances for instructors to reach a huge number of learners all over the world. Therefore, the Egyptian university academics should make full use of the groups of MOOCs to ameliorate their teaching and learning strategies and endeavors [3-5].

Beckstrom's report displayed two essential Egyptian government initiatives which positively influence e-learning in the Egyptian educational settings: (1) the Internet and (2) Personal Computer Initiatives. As for the first initiative, the Ministry of Information Technology has kept a totally free Internet access nationwide since 2001, where more than 15.623 ports have been erected. Regarding the second initiative, low-priced PCs and Laptops were made available to all Egyptian learners and academics within an installment plan financed by interest-free loans. Further, miscellaneous e-learning projects were launched by many Egyptian public universities since 2001 such as:

- HEEPFE: Higher Education Enhancement Project, sponsored by World Bank
- MEDA: Open-source platform for Higher Education, sponsored by UNESCO
- Tempus projects: sponsored by European Commission Directorate. [6, 7, 12]

2 Research Study Background

Most Egyptian learners and academics recently showed much interest and eagerness towards MOOCs, dropout rates from online courses are immensely growing. Approximately, less than 12.6 % of enrolled students finished their online courses in 2019. [6, 9, 13] It led many researchers to question the quality standards of teaching and learning in the online courses and to examine the reasons lying behind MOOCs non-completion. Nevertheless, the researchers cannot precisely define the reasons of these dropout rates, simply because the learners enroll in the online courses for various reasons [8, 10, 11].

Few research studies have been conducted on the factors that impact MOOCs' completion, among which are the academics' perceived attitudes and behavioral intention towards MOOCs [21, 24]. Another crucial factor was the extent to which MOOCs satisfy the needs of the learners. To accept and use a modern technological system, the user should form behavioral intention (BI), which is influenced by the attitude (A) which is the user's general impression towards technology. The Technology Acceptance Model (TAM) (See figure 1 below), an information system modeling how users accept and use modern technologies, states that there are three factors that influence the users' decision about why, when and how they use modern technology: (1) perceived usefulness (PU), (2) perceived ease-of-use (PEOU), and (3) external variables [17, 19, 22].

Perceived usefulness (PU) is the degree to which users conceive that using a specific system would enhance their performance. Perceived ease-of-use (PEOU) means that the user believes that the new system is handy and effortless. If the technology is not that easy to use, no one will have a positive attitude towards it. External variables refer

to the social influence that directs one's attitudes. When PU, PEOU, and external variables are in place, users will have both the attitude and intention to employ the new technology. However, the perception of modern technology varies depending on age and gender of the users [15, 18, 20].

TAM was found to be very valuable in anticipating the acceptance and absorption of modern delivery tools of e-learning systems. Many researchers have shed much light on MOOCs acceptance by expanding TAM range of external variables. However, limited amount of research emphasizes the motivation that forces the users to adjust their behavior and embrace a particular technology system [14, 16, 23].

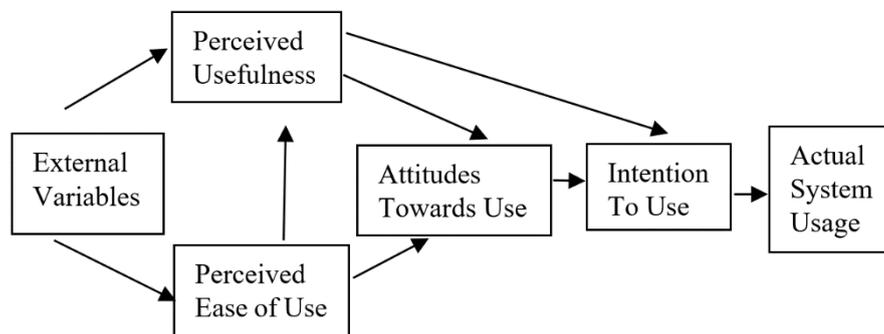


Fig. 1. Technology Acceptance Model

Therefore, the present study, within the framework of TAM, aims to define the correlation between Egyptian academics' general attitude (A) and behavioral intention (BI) to develop and use MOOCs. This study also presents a research framework for integrating the Technology Acceptance Model (TAM). The rationale behind adopting TAM is to test the dependent variable of accepting and using MOOCs and to define the correlation between attitude and behavioral intention. To define such a correlation, two research questions are raised:

1. Is there a significant relationship between Egyptian university instructors' attitude (A) and behavioral intention (BI) to develop MOOCs?
2. Is there a significant relationship between Egyptian university instructors' attitude and behavioral intention to use MOOCs?

3 Research Methodology

The research study combines two research designs: descriptive and correlational. The rationale behind using this combination of designs is that these two designs offer deep and promoted understanding to the differentiation existing among the dependent and independent variables. Furthermore, a quantitative approach was employed in this research study to gather numerical data from a set of questionnaires used to answer the

questions raised in the above section. This questionnaire was distributed both online and offline to augment the response rate.

3.1 The study sampling

This study sample consists of 235 Egyptian university instructors belonging to nine Egyptian universities: Cairo, Ain Shams, Port Said, Suez, Mansoura, Helwan, South Valley, Damietta, and Zagazig universities. The participants were selected randomly as the questionnaire was sent via mail and WhatsApp groups. The questionnaire was set in a google form to accelerate the process of data collection and to maximize the number of respondents. The Egyptian university instructors are involved in developing and using MOOCs in their classes. In this study, the data gathered using a Likert-scale questionnaire sent to respondents online and offline. Steven K. Thompson's equation is employed to calculate the sample size [25, 30] (see 1 below).

$$n = \frac{N p(1-p)}{(N-1)(d^2/z^2) + p(1-p)} \quad (1)$$

Where n is sample size; N= Population size (2561); z = confidence level at 0.95% (1.96); d = error proportion (0.05); p= probability (50%)

3.2 Instrument development

The questionnaire used in this research study consists of two major sections: section (1), comprises 14 items and handles the instructors' general attitude towards MOOCs and section (2) includes 14 items and focuses on the instructors' behavioral intention to develop and use MOOCs. Every item under each construct was measured using a five-point Likert scale. It is a kind of psychometric scale in which participants define their level of agreement and disagreement to each statement typically in five points: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; and (5) Strongly agree. The subjects responded to the questionnaire based on their self-perception. The attitude section was adapted from [26, 29, 24], and the behavioral intention to use and develop MOOCs was adapted from [28]; [31] and [32].

3.3 Instrument reliability and validity

To test the research reliability (i.e., the consistency of the research measure), the Cronbach's Alpha value of ≤ 0.60 is regarded not reliable, whereas that of ≥ 0.70 is considered totally acceptable. The reliability test for this research study is summarized and shown in Tables (1) and (2). Seeking the external validity and representativeness, the researcher randomly selected the participants.

Table 1. Cronbach’s Alpha values

Dimensions	Number of Items	Alpha Cronbach
Egyptian instructor’s attitude (A) to MOOCs	14	0.828
Egyptian instructor’s behavioral intention (BI) to develop MOOCs	7	0.891
Egyptian instructor’s behavioral intention (BI) to use MOOCs	7	0.875

Table 2. Cronbach’s Alpha for each item if excluded

Item-Total Statistics				
Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
S1	81.11	524.215	.565	.952
S2	81.17	525.834	.533	.953
S3	81.16	522.545	.558	.954
S4	81.09	521.256	.542	.952
S5	81.19	513.165	.654	.951
S6	80.26	523.079	.503	.953
S7	81.44	514.062	.653	.951
S8	81.32	515.709	.609	.952
S9	80.54	524.589	.566	.952
S10	81.72	519.692	.628	.951
S11	80.60	517.494	.541	.953
S12	81.62	508.599	.644	.950
S13	81.65	518.755	.549	.952
S14	80.41	535.808	.574	.956
S15	81.85	511.480	.627	.950
S16	81.90	509.553	.719	.950
S17	81.75	511.752	.667	.951
S18	81.43	511.106	.614	.950
S19	81.84	514.459	.647	.951
S20	81.94	522.368	.509	.953
S21	80.73	524.826	.555	.952
S22	80.92	545.350	.516	.957
S23	81.91	507.372	.600	.950
S24	80.58	531.759	.504	.954
S25	81.63	522.832	.537	.952
S26	80.52	544.451	.541	.956
S27	81.85	519.650	.697	.952
S28	81.12	510.187	.692	.950
S29	81.17	510.157	.692	.950
S30	81.15	510.187	.692	.950

4 Results

Table 3, dealing with the descriptive analyses for Egyptian Instructors’ attitude towards MOOCs, shows that item [2] — *I feel exultant when using MOOCs in my class* —has scored the highest mean as $M= 5.56$ and $SD= 0.66$, with 66 % degree of

agreement comprising 155 respondents who strongly agree to this statement, and 24.2%, N=56 respondents agree to this statement. Item [10] – *without MOOCs, my colleague will be better* – scored the lowest mean as M=1.86 and SD =0.71 with 1.1% degree of strong agreement and N = 3 respondents. Item [4] – *MOOCs in classrooms are very enjoyable* – comes second to item [2] with M= 5.38, SD = 1.14, and 65.5 % degree of agreement and N= 153. Item [5] – *I abhor employing MOOCs in my classes* – comes second to item [10] with M=1.87, SD = 0.6, and 2% degree of strong agreement to this statement and N= 4.7. Item [10] – *I feel jubilant that there are many options to teach via MOOCs* – comes third to item [2] with M= 5.32, SD = 1.33, 63.3% of strong agreement to this statement with N = 148.8. These results disclose that Egyptian university instructors form positive attitudes towards MOOCs inside and outside classes. Further, they feel jubilant as MOOCs offer different options to teach via MOOCs.

Table 3. Descriptive analyses for Egyptian Instructors’ attitude towards MOOCs

No.	Item	M	SD	Agreement Scale				
				1	2	3	4	5
				%	%	%	%	%
1.	MOOCs do not dismay me at all.	4.21	1.05	1.6	7.50	13.6	13.3	64
2.	I feel exultant when using MOOCs in my class.	5.56	0.66	0.0	0.80	9.0	24.2	66
3.	I feel ill-at-ease because of MOOCs.	2.64	0.73	56.5	13.9	12.8	15.6	1.2
4.	MOOCs in classrooms are very enjoyable.	5.38	1.14	1	9.30	14.0	10.3	65.4
5.	I abhor employing MOOCs in my classes.	1.87	0.60	1.0	2.20	77.5	17.3	2
6.	I hate debating with others over MOOCs.	3.99	0.44	1.2	10.2	78.1	8.2	2.3
7.	To save time, I use MOOCs.	3.68	0.71	3.5	10.1	15.3	68.7	2.4
8.	Reading on how to use MOOCs is time wasting.	3.29	1.18	2.8	7.5	14.1	11.9	63.7
9.	I try to evade MOOCs whenever it is possible.	3.81	0.55	0.7	2.80	15.7	78.0	2.8
10.	Without MOOCs, my college will be better	1.86	0.71	6	4.70	13.6	74.6	1.1
11.	I detest using MOOCs to learn something new.	2.15	0.38	2.3	5.60	86.5	4.4	1.2
12.	Students can use MOOCs in all courses.	4.45	0.78	6.1	7.4	82.3	2.8	1.4
13.	Using MOOCs motivates the learners to exert much effort in learning.	4.61	0.72	1.2	2.40	17.1	14.3	65
14.	I feel jubilant that there are many options to teach via MOOCs.	5.32	1.33	1.6	5.80	13.6	15.7	63.3

Table 4, dealing with Egyptian instructors’ behavioral intention to develop MOOCs, shows that item [3] — *All instructors should develop teaching materials in MOOCs* — has scored the highest mean as M= 5.91 and SD= 0.53, with 5.2 % degree of strong agreement and 83.2 % degree of agreement comprising 195 respondents. Item [4] – *I intend to attend conferences and sessions on how to develop MOOCs* – has come second to item [3] as M=4.99 and SD = 0.74 with 6.6% degree of strong agreement and 78.4% of agreement with N = 184.2. Item [5] – *I have no intention to develop MOOCs in the coming 6 months* – scored the lowest mean with M= 2.23, SD = 0.72, and 4.2 % degree of strong agreement with N= 9.8. Item [6] – *I am not going to develop MOOCs in the coming 12 months*– comes second to item [5] with M=2.25, SD =0.65, and 3.2 % of

strong agreement and 3.4 % degree of agreement comprising approximately 8 respondents.

Table 4. Egyptian instructors’ behavioral intention to develop MOOCs

N.	Item	M	SD	Agreement Scale				
				1	2	3	4	5
				%	%	%	%	%
1.	I can develop MOOCs in this semester.	3.57	.87	0.0	73.4	8.2	12.0	6.4
2.	I am going to develop MOOCs in the coming 6 months.	3.63	.92	0.0	71.0	7.8	13.4	7.8
3.	All instructors should develop teaching materials in MOOCs.	5.91	.53	0.0	2.2	9.4	83.2	5.2
4.	I intend to attend conferences and sessions on how to develop MOOCs.	4.99	.74	1.8	4.2	9.0	78.4	6.6
5.	I have no intention to develop MOOCs in the coming 6 months.	2.23	.72	4.2	74.6	10.2	6.8	4.2
6.	I am not going to develop MOOCs in the coming 12 months.	2.25	.65	76.2	5.4	11.8	3.4	3.2
7.	I intend to design MOOCs in my teaching and learning activities.	4.90	.48	0.0	3.0	11.4	79.8	5.8

Table 5, covering Egyptian instructors’ behavioral intention to use MOOCs, shows that item [3] — *I am going to attend conferences and sessions on MOOCs usage.* — has scored the highest mean as M= 4.99 and SD= 0.70, with 4.8 % degree of strong agreement and 74.8 % degree of agreement comprising 175.8 respondents. This finding demonstrates that the Egyptian university instructors have true intentions to use MOOCs in their teaching and learning settings and to attain this goal they will attend sessions and conferences on MOOCs usage. Item [1] — *I intend to employ MOOCs in the next semester* – has come second to item [3] as M=4.98 and SD = 0.54 with 8.6% degree of strong agreement and 78.2% degree of agreement with N = 183.7. Item [5] — *I have no intention to use MOOCs in the near future* – scored the lowest mean with M= 3.91, SD = 0.51 and 6.3 % degree of strong agreement and 77.5% degree of agreement with N = 182.1. Item [5] — *Using MOOCs is time wasting* – comes second to item [4] with M=3.93, SD =0.51, and 5.6 % of strong agreement and 78.8 % degree of agreement with N = 185.

Table 5. Egyptian instructors’ behavioral intention to use MOOCs

N.	Item	M	SD	Agreement Scale				
				1	2	3	4	5
				%	%	%	%	%
1.	I intend to employ MOOCs in the next semester.	4.98	.54	0.0	3.0	10.2	78.2	8.6
2.	I intend to use MOOCs for teaching and learning activities.	4.91	.41	1.0	2.0	7.4	82.8	6.8
3.	I am going to attend conferences and sessions on MOOCs usage.	4.99	.70	2.4	5.6	12.4	74.8	4.8
4.	I have no intention to use MOOCs in the near future.	3.91	.51	.4	2.9	12.9	77.5	6.3
5.	Using MOOCs is time wasting.	3.93	.51	0.0	3.4	12.2	78.8	5.6
6.	I am not going to use MOOCs at all.	4.61	.71	4.6	6.3	16.3	72.0	.8
7.	I intend to use MOOCs in the coming 12 months.	4.70	.51	0.0	4.4	13.2	76.4	6.0

Pearson Coefficient Correlation was employed to examine the correlation between the Egyptian instructors’ attitudes and their behavioral intention to use and develop MOOCs. The results showed that that there is a strong positive correlation between the Egyptian instructors’ attitude towards MOOCs and their behavioral intention to use them, as $R=0.719$ (i.e., the coefficient value lies between ± 0.50 and ± 1) and $P = .000$. Thus, the null hypothesis (H_0) is rejected and the alternative one (H_1) is accepted as p-value is less than 0.05. Table (6) below also shows that there is a moderate correlation between attitude and the behavioral intention to develop MOOCs as $R = 0.478$ (i.e., the value lies between ± 0.30 and ± 0.49 and $P = 0.000$). Thus, the null hypothesis (H_0) is rejected again and the alternative one (H_1) is accepted as p-value is less than 0.05. Furthermore, the results showed a strong correlation between behavioral intention to develop MOOCs and the behavioral intention to use them as $R = 0.529$ (i.e., the coefficient value lies between ± 0.50 and ± 1) and p-value = 0.000. These results mean that if the Egyptian instructor’s attitude towards MOOCs is low, their behavioral intention to develop and use MOOCs will also be low and vice versa.

Table 6. Pairwise Spearman Correlations

Sample 1	Sample 2	Correlation	95% CI for ρ	P-Value
BI to use MOOCs	Attitude	0.719	(0.642, 0.782)	0.000
BI to develop MOOCs	Attitude	0.478	(0.367, 0.576)	0.000
BI to develop MOOCs	BI to use MOOCs	0.529	(0.423, 0.620)	0.000

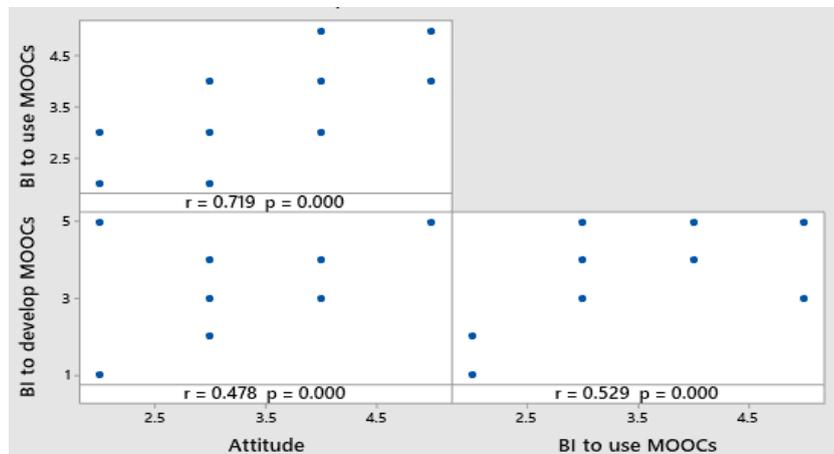


Fig. 2. Spearman Correlation: Matrix plot of attitude and behavioral intention to use and develop MOOCs

5 Discussion

A massive open online course is a gratis online course that enhances learning in different subjects and is fully open to anyone with access to a computer and the internet [33, 45, 46]. Massive open online courses aim at connecting learners with their instructors and with each other. Egyptian instructors' resort to MOOCs in the awake of the COVID-19 outbreak [34, 44]. This study raises two major questions: (1) Is there a significant relationship between Egyptian university instructors' attitude (A) and behavioral intention (BI) to develop MOOCs? and (2) Is there a significant relationship between Egyptian university instructors' attitude and behavioral intention to use MOOCs?

As for the first question, the results showed that if the Egyptian instructors' attitude towards MOOCs is high, their intention to develop MOOCs will be at the same level. This finding is in consistency with [35, 37, 43] that examined the correlation between the Spanish and Portuguese instructors' attitudes towards MOOCs and found that these instructors have extremely positive attitudes towards the online courses, but they lacked the administrative support as it has been a prerequisite for those who wanted to develop MOOCs to take permission first. This finding goes also with [36, 42] that studied the instructors' attitudes toward video lectures in MOOCs. [36,39, 42] revealed that the instructors were eager to develop video lectures more than delivering face-to-face lectures. The researcher attributed this result to the fact that the Egyptian instructors are marked by the rapid absorption of modern technologies, thus developing online course will be a sort of amusement to an Egyptian instructor.

As for the second question, the results showed that there is a strong rather than moderate correlation between the Egyptian instructors' attitude and behavioral intention to use the massive open online courses. That is, the results showed that if the Egyptian instructors' attitude towards MOOCs is high, their intention to use MOOCs will be at the same level. This finding is consistent with [39, 41] who examined the correlation between the Emirati and Saudi instructors' readiness to employ MOOCs and found that these instructors have employed MOOCs even before the spread of COVID 19, and that they have developed very sophisticated online courses. The researcher attributed this result to the immense care, attention, and finance the Saudi and Emirati governments give to the instructors who make full use of online courses.

6 Conclusion

This study examined the Egyptian university instructors' attitude and intentional behavior to make full use and develop massive open online courses. The study included instructors from nine high-profile universities in Egypt. The study concluded that the Egyptian instructors have positive attitudes towards MOOCs and have high readiness to use and develop massive open online courses in their teaching activities. Furthermore, the Egyptian instructors regard MOOCs as a sort of amusement for themselves and their learners.

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