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Rising Public Interest of Thai Domestic and International MOOC Providers: A Google Search Analysis

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Abstract

Internet search trends can be used to evaluate public interest in massive open online courses (MOOCs). This study investigates relatively popular search terms relating to online learning and MOOC providers in Thailand and worldwide using data from Google search. The selected search terms are queried using Google Trends®, and the search location is limited to Thailand. Search volume indices in four quarters, from 117 weeks or 27 months, January 1, 2018 to March 31, 2020, are described and compared by trend analysis. Correlations between online learning and search terms relating to three domestic Thai MOOC and two international MOOC trademarks are evaluated. Preferred terms relating to online learning in Thailand are written in the Thai script, but terms relating to MOOCs are written in Thai and English scripts. The number of searches for "online learning," "MOOC Chula," "MOOC Mahidol," and "edX" increases over time. The two local MOOC providers demonstrate positive correlations with "online learning" searches in the first quarters of the three-year study. Geographical attributes indicate that search concentration is mostly in the capital. Originality/Value- Insights into search trends may help educators promote open courses in the region direct to students' interest. Understanding this technique may help MOOC providers promote their courses in different geographical locations. Besides, this study possibly explored the possibility of an increasing exponential growth curve of interest after the COVID-19 pandemic outbreak.

Keywords: Google Trends, Internet search, MOOC, online learning, public interest

Introduction

The "Internet of things" can be represented as rapidly evolving advanced utilization for daily life and outcomes from the various developmental aspects of the Internet and network technologies. In education, the worldwide trend is to integrate online resources into traditional classroom learning. Internet-based learning has garnered public interest, as it is free of time, location, and cost limitations

(Chunwijitra et al., 2015; Boon, Rusman, Van Der Klink & Tattersall, 2005). Online learning may require educators and learners to engage in new ways of teaching and learning based on changes in novel support technologies from new effective multimedia sources. The number of registered users of massive open online courses (MOOCs), as a popular worldwide trend, is growing despite their relatively short history compared with other distance learning and online learning modes. MOOCs were first introduced by several university educators in 2008 through certain media supported by free website resources. Currently, the number of registered users continues to increase as various types of MOOCs are provided by standalone or cooperative organizations and institutes in the United States, where they were originally introduced, or outside the country (Baturay, 2015; McAuley, Stewart, Siemens & Cormier, 2020).

The increasing interest in MOOCs may be from their fundamental characteristics, such as openness, participation format, and distribution. The openness of MOOCs refers to their free access through the Internet. MOOCs are open to everyone and have no limitation regarding course registration. Moreover, MOOCs can be shared and distributed to increase learners' knowledge, and participation is voluntary. Courses are selected depending on students' interests and needs and allow them to contribute and interact with others. MOOC activities can support a learning environment where learners interact with learning materials. Thus, learners can disseminate the knowledge in their networks (Baturay, 2015; Cormier & Siemens, 2010). MOOCs have become mainstream among higher education providers offering various types of such courses, including xMOOCs (De Barba, Kennedy & Ainley, 2016).

In the context of Thailand, information, including research on MOOC trends, is limited. However, various organizations established a local MOOC project called Thai MOOC. Specifically, this project is a collaboration between the Higher Education Development Network University and the Thai Cyber University Project (Chunwijitra et al., 2020; Pradubwate, Pheeraphan, Sirawong & Trirat, 2020). Approximately 40 Thai universities offer cMOOCs and xMOOCs in 150 subjects. The average completion rate of learners in Thailand is higher than that in the world, which is approximately 5%, and half of registered learners complete popular courses. Owing to the success of MOOCs in Thailand, leading universities created their own pathways, such as Chulalongkorn University (MOOC Chula), Mahidol University (MOOC Mahidol), and Srinakharinwirot University (SWU-MOOC).

To measure public interest, Internet searches are employed as an effective alternative method. Such a method is used in several published studies in the healthcare sector (Cacciamani et al., 2019; Nuti et al., 2014; Tijerina, Morrison, Vail, Lee & R. Nazerali, 2019). Internet search data are considered as big data and can be used for search engine optimization and seasonal analyses for marketers. Such data are applied to examine trends in epidemiology, health promotion, and economics (Kim, Lučivjanská, Molnár & Villa, 2019; Kwan, Yong & Robinson, 2019). In the education field, Internet searches in Google are used to determine the number of searches for the biggest private university in northeastern Thailand. The results indicate that students search for the university name the entire year and not only at the beginning of each semester. Moreover, geographical maps are useful for examining search density in different provinces (Boonroungrut, Thamdee, Chaiinkam & Kim, 2020).

This study focuses on national public interest in online learning and several well-known MOOC providers using an Internet search indicator for the period of 2018–2020. The main objective of this

study is to examine search behaviors for terms related to online learning and MOOCs in Thailand by quarter. Thus, the following three research questions are asked.

1) What are the trends in online learning and the selected MOOC providers?

2) Which quarters show a significant relationship between online learning and the selected MOOC providers?

3) Where do interested MOOC searchers come from?

The findings of this study can benefit MOOC developers, marketing promoters, and educators supporting this learning system, thereby increasing its popularity.

Methodology

Data Sources

Data for this study were collected from Google Trends®, which has offered a search volume index (SVI) service since 2004. The website presents data in line graphs, geographical density maps, and temporal patterns, with weekly information on specific terms (Nuti et al., 2014). In addition, Google Trends identifies relatively popular search terms within specific territories. Google Trends also provides data in the form of relative search volume (RSV) indices, which can represent interest as high and low points in a graph or as numbers. Moreover, the website can help users determine public interest in specific regions and periods. RSV indices are calculated using an algorithm and presented on a scale of 0 to 100. However, Google Trends does not present actual search numbers, as they are too large to be explored with user-friendly programs (Boonroungrut et al., 2020). In terms of interpretation, the number 100 indicates the highest frequency of a search term, and 0 refers to insufficient data for a given term. Furthermore, Google Trends can help researchers predict the present (Choi & Varian, 2012).

According to Google, their market share was approximately 99% in Thailand from 2018 to 2019 (Doan, 2019). In this study, electronic searches were conducted for total of 27 months or 117 weeks from January 1, 2018 to March 31, 2020. Searches were conducted in two main categories, that is, general online learning terms and MOOC trademark terms. Language limitations included Thai (TH) and English (ENG). However, several popular terms normally used by the public were selected for the analysis, such as “online learning” (Thai and English), “e-learning” (Thai and English), “online course” (Thai and English), “Thai MOOC” (English), “MOOC Chula” (Thai and English), “MOOC Mahidol” (Thai and English), “edX” (English), and “Coursera” (English). To examine regional density, geographical comparisons of various popular trademark terms were performed to visualize variations in different provinces in Thailand.

Based on the data obtained from Google, this study determined that “online learning” (TH) was the most frequently searched term among the listed terms. The number of searches for several terms was insufficient for the analysis, as it was <1% compared with that for “online learning”(TH). Thus, the term “online learning” (TH and ENG) was only examined in this study, and the other general online learning terms were removed because of their data insufficiency. Moreover, insufficient data were obtained for the “Thai MOOCs” term (ENG); thus it was likewise removed from the analysis. In

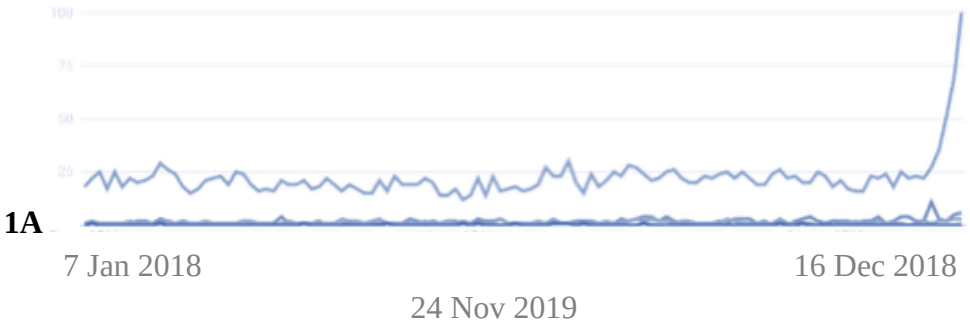
summary, the terms “online learning” (Thai), “MOOC Chula” (Thai and English), “MOOC Mahidol” (Thai and English), “edX” (English), and “Coursera” (English) were employed.

Data Analysis

Google Trends provides data as comma-separated values in a CSV file, which was tabulated in Microsoft® Excel. To explore distribution normality, the Kolmogorov–Smirnov test was used to confirm whether or not the data were normally distributed. The data as means were calculated and presented by quarter each year and overall. Spearman correlation was utilized to explore possible associations between the scores of the online learning (Thai) terms and those of the MOOC trademark terms. Corresponding line graphs and geological maps were presented at the Google Trends site. Descriptive statistics, the Kruskal–Wallis H, and Spearman correlation analysis were conducted using MS Excel and a statistics software for MAC OS. A two-tailed curve with $p < .05$ marked the statistical significance. Although this study did not use actual people as its sample, recommendations from the ethics committee on using information were strictly followed.

Findings

In the univariate linear regression analysis, the 117-week data demonstrated the following statistically significant positive associations: “online learning” (TH), with $\beta = .36$, $R2 = .13$, and $p < .01$; “MOOC Chula” (EN), with $\beta = .50$, $R2 = .25$, and $p < .01$; “MOOC Chula” (TH), with $\beta = .22$, $R2 = .04$, and $p < .05$; and “MOOC Mahidol” (EN), with $\beta = .39$, $R2 = .15$, and $p < .01$. The number of searches for the terms “MOOC Mahidol” (TH), “edX” (English), and “Coursera” (English) did not increase significantly during the studied period. In Figure 1A, the upper line represents the term “online learning” (TH), which was higher than the trademark terms. Moreover, the term “online learning” (TH) was higher than “MOOC Chula” (EN), which was 92.06%; “MOOC Chula” (TH), which was 92.69%; “MOOC Mahidol” (EN), which was 93.24%; “MOOC Mahidol” (TH), which was 97.03%; “edX” (English), which was 93.28%; and “Coursera” (English), which had insufficient data. Figure 1B presents the trademark terms without a comparison with the term “online learning” (TH). Notably, though the number of searches for “MOOC Chula” (EN) and “edX” (English) seemed to increase, only the search terms “MOOC Chula” (EN), “MOOC Chula” (TH), “MOOC Chula” (TH), and “MOOC Mahidol” (EN) presented statistically increasing values. In other words, the number of searches for “edX” was higher than that for “MOOC Mahidol.” However, its increasing rate was flat and showed no significant difference over the three years.



1A

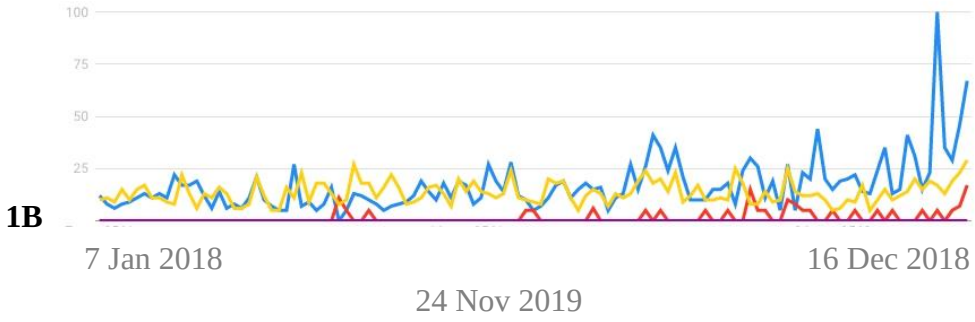


Figure 1 Graphs presenting SVIs and RSV indices of search terms from 2018 to 2020

Note: In Figure 1A, the upper line represents "online learning" (TH), and the lower lines are the five MOOC trademarks. Figure 1B magnifies the lower lines from Figure 1A; blue – MOOC Chula (EN), yellow – edX, red – MOOC Mahidol (EN), purple – MOOC Mahidol (TH), and green – MOOC Chula (TH; behind the purple line).

Table 1 *Descriptive information of relatively popular search terms (SVI)*

Search terms	2018				2019				2020
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Online learning (TH)	20.58	19.76	18.28	17.15	20.00	22.00	21.30	21.23	35.38
MOOC Chula (EN)	10.00	9.23	11.00	15.15	16.92	19.38	21.38	16.53	34.92
MOOC Chula (TH)	26.83	33.15	29.78	35.61	36.38	38.30	33.84	30.61	44.76
MOOC Mahidol (EN)	N/A	.38	1.42	.76	.38	.38	2.23	3.61	3.92
MOOC Mahidol (TH)	14.00	15.46	14.71	9.61	14.76	12.69	13.84	13.23	12.00
edX	16.08	13.07	14.14	12.61	12.69	16.00	11.30	11.61	16.76
Coursera	2.83	.38	1.42	2.38	1.92	1.92	1.46	.76	.76

Note: Only "online learning" (TH) scores are unweighted; Q1 represents the first quarter (Jan–Mar), Q2 represents the second quarter (Apr–Jun), Q3 represents the third quarter (Jul–Sep), and Q4 represents the fourth quarter (Oct–Dec).

Table 1 shows the seven relatively popular search terms during the nine studied quarters (Q1–Q4 for the period of 2018–2019, and Q1 in 2020). This study found that "online learning" (TH), "MOOC Chula" (EN), and "MOOC Mahidol" (EN) were significantly different during the different quarters, showing the following conditions: $H(8) = 40.19$ and $p < .01$, $H(8) = 43.61$ and $p < .01$, and $H(8) = 30.26$ and $p < .01$, respectively. These findings indicated changes in increasing public interest in these three terms. However, no difference was observed when the analyzed data from the four quarters (Q1–Q4) were merged.

In the Spearman correlation analysis in Table 2, national searches for the term "online learning" (TH) were positively correlated with the search term "MOOC Chula" (EN) in Q1, Q2, and Q3, with $rs = .39$, $rs = .45$, and $rs = .41$ at $p < .05$, respectively. "Online learning" (TH) was also positively correlated with the search term "MOOC Mahidol" (EN) in Q1, with $rs = .41$ and $p < .01$, and in Q4, with $rs = .40$ and $p < .05$. In addition, "edX" (EN) demonstrated a positive correlation with "online learning" (TH)

in Q2, with rs = .44 and p < .05. This analysis indicated that the higher the searches for "online learning," the higher the searches for the three MOOC trademarks but in different quarters.

Table 2 *Correlation analysis by quarter*

Correlation with search	Correlation coefficient (*p*-value)			
"Online learning" (TH)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
"MOOC Chula" (EN)	.39 (.05)*	.45 (.02)*	.41 (.03)*	.19 (33)
"MOOC Chula" (TH)	.13 (.42)	.21 (.29)	–.02 (.91)	.11 (.56)
"MOOC Mahidol" (EN)	.41 (.00)**	–.17 (.39)	.15 (.45)	.40 (.03)*
"MOOC Mahidol" (TH)	–.08 (59)	.24 (.22)	–.29 (.13)	–.09 (.65)
"edX"	.15 (.34)	.44 (.02)*	–.22 (.26)	.05 (.77)
"Coursera"	–.22 (.17)	.38 (.02)	.06 (.74)	–.27 (.17)

Note: * is $p < .05$ (2-tailed), and ** is $p < .01$ (2-tailed)

Geographical nation maps show that the overall interest in online learning and the MOOC trademark terms related to SVI values was highest in Bangkok (100%) and in Khon Khan (96%) and Chonburi (85%) Provinces. The relatively popular search terms in these areas were "Sukhothai Thammathirat Open University online learning," "free online learning Chula," and "online learning for the Comptroller General's Department." Figure 2A illustrates that interest in MOOC Chula was mostly from Bangkok (100%), Nakorn Pathom (93%), Nonthaburi (92%), Pathum Thani (75%), and Nakorn Ratchasima (64%). Figure 2B indicates that interest in MOOC Mahidol was mainly from Nakorn Pathom (100%), Nonthaburi (28%), Samut Prakarn (16%), and Bangkok (9%). Figure 2C demonstrates that interest in edX was mostly from Pathum Thani (100%), Bangkok (66%), Nonthaburi (64%), Chiangmai (58%), and Nakorn Pathom (43%). Unfortunately, insufficient data existed for the remaining search terms; thus, provincial analysis was not conducted.

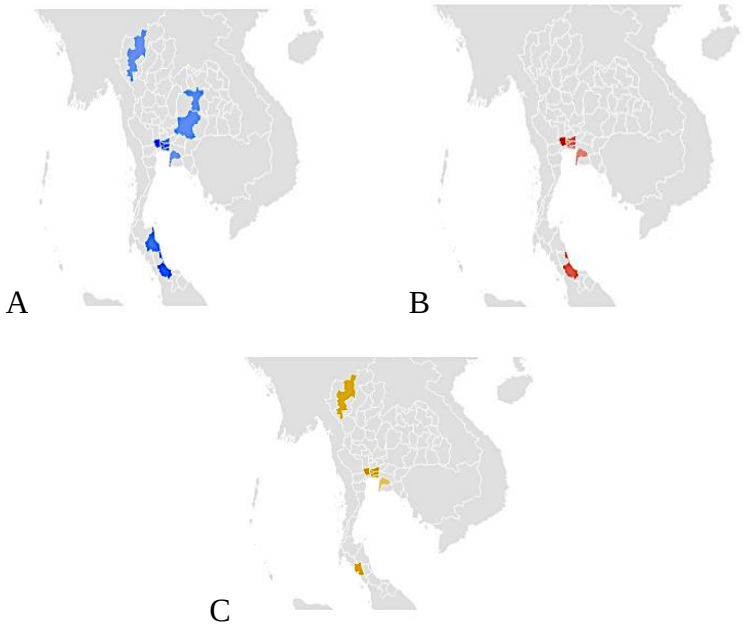


Figure 2 Geographical attribution of MOOC Chula (2A), MOOC Mahidol (2B), and edX (2C)
Note: Dark colors represent high density.

Discussion

This study uses Google search to examine public interest in online learning from MOOC providers in Thailand during the period of 2018–2020. In summary, the total number of searches for the six target MOOCs is less than 10% compared with that for the term "online learning." The main findings indicate that the number of searches for "online learning," "MOOC Chula," and "MOOC Mahidol" is high in the latest quarter (late 2019 to early 2020). Moreover, this study confirms that "online learning" (TH), "MOOC Chula" (EN), and "MOOC Mahidol" (EN) are significantly different during different quarters. The local MOOC providers, namely, MOOC Chula (EN) and MOOC Mahidol (EN), seem to receive considerable interest based on public online searches compared with the foreign MOOC providers. Additionally, the residents of Bangkok show the most interest in online learning.

These findings highlight the usefulness of Google search for assessing public interest, which can be employed to improve marketing strategies and course design. However, these results do not refer to the number of registered users in each MOOC provider. This study indicates that certain technical words may be better than others for searching. The beginning of the year or the first three months are the best times for learners to search for various MOOC providers in Thailand. However, registration considerations exist. Although MOOCs have the potential to balance high tuition fees and create wide learning communities, success rates are very low, and ensuring learners' autonomy in the learning process is difficult. Most important, assessments for receiving certificates are problematic (Karsenti, 2013; Steffens, 2015). Thus, knowing the level of public interest may help MOOC providers and educators prepare courses or programs in advance, as registered users, university or postgraduate students, and precocious high school and college students are included. Students can find similar subjects in MOOC courses as those in their traditional classes (Hone & El Said, 2016; Onah, Sinclair & Boyatt, 2014).

The findings provide evidence that the number of searches is high; however, this study is unable to determine whether this rate is from new learners or returning learners. Thus, dropout rates should be considered. Several studies indicate that dropouts occur mostly before the midpoint of a course, and students who pass this point most likely complete the course (De Freitas, Morgan & Gibson, 2016; Greene, Oswald & Pomerantz, 2015; Hone & El Said, 2016).

Moreover, five competencies affect participation, persistence, and continuity in MOOC learning, that is, English (linguistic) competence, background knowledge, broadmindedness, self-regulation and self-efficacy, and communication skills (Abeer & Miri, 2014; Conole, 2016). Linguistic limitations could explain why interest in the local MOOC providers is higher than that in the two well-known international MOOC providers. Moreover, Abeer and Miri (2014) believed that MOOCs should provide clear explanations, visualizations, communication, and various assignments. Notably, students with low basic competencies tend to drop out before the end of a course. If this statement is true, then the dropout rates in foreign MOOCs should be higher than those in local Thai MOOCs owing to English language limitations (Khamkhien, 2010).

Reviews by Baturay (2015) and Chunwijitra et al. (2015) indicate that MOOCs may be the most prominent trend in higher education, garnering interest from learners around the world. Watted and Barak (2018) believed that MOOCs can be developed as public knowledge and experience to serve diverse populations. Moreover, exchanging ideas could provide opportunities for enhancing and

empowering learners (Spoelstra, Van Rosmalen, Houtmans & Sloep, 2015). Several studies claim that MOOCs are increasing in Thailand (Chaiyajit & Jeerungsuwan, 2015). According to Theeraroungchaisri and Khlaisang (2019), Thai MOOCs will gain popularity because the system is well integrated with other institutions in the country with more than 300 courses (mooc.thaicyberu.go.th). By cooperating with local and foreign developers, several countries, such as Japan, have set a goal of creating sustainable lifelong learning. However, in this study, general interest in Thai MOOCs is not observed compared with that in the Chulalongkorn University and Mahidol University MOOC providers. This weakness can be a barrier against future developments if learners cannot find their website to register to such courses. In terms of implications, insights into search trends can assist educators promote self-awareness and self-improvement in open courses in the region and the world. Understanding commonly used terms may help MOOC providers promote their courses in different geographical locations.

Limitations and Conclusions

The generalization of the findings is limited by three considerations. First, the number of SVIs was derived from searches by not only learners but also educators and MOOC technical teams. Second, this study did not use the academic year to classify the data, because schools and universities do not use the same academic schedule in their operation. Third, the data for 2020 covered only the first three months; thus each quarter contains an unequal amount of data. The first quarter in the correlation analysis included data from the period of 2018–2020. However, the second to fourth quarters included data only from the period of 2018–2019. Furthermore, this study determines that residents of Bangkok and cities around the capital show the highest interest. Future studies should include this trend and public interest after the COVID-19 pandemic (Utunen, Ndiaye, Piroux, George, Attias & G Gamhewage, 2020; Zhou, Huang, Cheng & Xiao, 2020), which could demonstrate a dramatic increase at the beginning of 2020.

In summary, these findings show that the Thai script is used to search for “online learning.” However, English is often used to search for “MOOC Chula” and “MOOC Mahidol.” This study confirms the increasing number of searches at the end of 2019 and beginning of 2020 for “online learning,” “MOOC Chula,” and “MOOC Mahidol.” However, no difference is observed in the number of searches in the first to fourth quarters when the data from each quarter are merged. This finding indicates that the number of searches, which represents public interest, may be high around the third to fourth quarters each year. The terms “MOOC Chula,” “MOOC Mahidol,” and “edX” demonstrate a medium correlation with “online learning” but in different quarters. Thus, the results suggest that MOOC providers utilize different strategies every quarter.

Acknowledgements

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