

Learning logistics from MOOCs: an ample teaching cacophony

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Abstract

MOOC landscape is evolving, also boosted by distance-learning necessity of recent health crises. Logistics is an interdisciplinary area across business processes and functions, engineering, global views and sustainability. As lifelong learning appears a new norm and it is difficult for HEIs to provide a programme with both sufficient focus on foundational skills as well as topical expertise, students and practitioners can turn to MOOCs for complementary instruction. This study presents a data collected from 198 logistics-themed MOOCs across four major platforms (edX, Coursera, FutureLearn and Udemy) to evaluate the topical availability across main areas of direct logistics expertise. Regardless of relative abundance, the study suggests both thematic gaps and criticism of MOOC development priorities. The study allows to argue against feasibility of compiling a full online programme of MOOCs, lack of linkages and of coherent design. Within current paradigm, MOOCs shall remain complementary not a substitute to college programme experience.

Keywords: *Logistics knowledge areas, supply chain competences, MOOCs, future of higher education, lifelong learning.*

1. Introduction

While some online elements were supporting college teaching already in the beginning of the 21st century, a whole new era emerged roughly a decade ago with first MOOC (massive open online course) platforms of global ambition. MOOCs are mainly used for flexible self-development, but they can be, assuming fit in learning objectives, recognized by HEIs for academic credit (Sandeem, 2013). This study is observing the current state of available MOOCs in the topics of logistics and supply chain from the level of higher education. Logistics is an interdisciplinary area with roots in both engineering sciences as well as business and economics. Logistics mixes quantitative and qualitative perspectives and covers areas such as supply chain operations, technologies and IT, regulations and environmental impact. Logistics industry and its operating environment is rapidly changing and evolving and consequently the set of competencies of logistics workers must be aligned (Bisogni et al., 2021). Specialists in the field require broad functional skills, analytical skills and soft skills (such as time and conflict management and problem solving) (Wagner et al., 2019). Logistics curricula ought to include the subjects of relationship and trust building (Ballou, 2007). In an interconnected world, education should focus on developing especially soft skills (Munkácsi and Kazai-Ónodi, 2018). It has been suggested that logistics managers use business managerial, generic and behavioural competences in practice rather than direct expertise (Derwik et al., 2016). From the view of lifelong learning, sense-of-initiative and entrepreneurship competences have been seen as key factors (Kotzab et al., 2018). It is difficult to imagine a programme meeting all the expectations. As lifelong learning appears a new norm and programmes adjust focus to embrace more general and cross-functional skills, gaps in terms of topical expertise might ensue, which need to be filled later. This is where bite-sized MOOCs might play increasingly important role in the future.

One can speculate that after a decade of substantial MOOC development and rather loud marketing, major MOOC platforms would host enough content to thematically cover the entire spectrum of logistics. This study evaluates the topical availability of MOOCs across areas of logistics expertise. While undoubtedly soft skills play a major role in logistics, the development of such elements in MOOCs are difficult to identify without in-depth analysis falling outside the scope of this paper. The aim of the study is to understand how MOOCs cover the logistics field by matching MOOCs on the principal platforms available on the market with a categorization of the logistics-related disciplines.

In next segment, a few observations on the role of MOOCs in higher education are presented. Then study methodology is described, commenting briefly on the founding model of logistics knowledge areas and its modification, and then on aggregating a list of logistics MOOCs. Then the findings are presented and discussed from the viewpoints of students, logistics industry, MOOC platforms and HEIs, concluding with comments on viability of a full online programme of logistics built only on selection of current MOOCs.

2. Literature review

In the last decade, demand and offer for MOOCs have witnessed a striking upward trend. MOOCs represent an extremely flexible learning tool in line with the changing training needs of HE students. The value-added role of MOOCs both as complementary as well as integrated units go back almost a decade – MOOCs represent an excellent tool for universities to support hybrid or flipped classes but also for students to create a preliminary knowledge base or to deepen specific topics, for the recognition of prior learning, articulation and credit recognition (Sandeem, 2013).

Zhu et al. have analysed MOOC designer perspectives and found that many problems stem from too many students – meaningful grading can suffer, teachers cannot properly engage the audience, personalization and project-work starts to hurt. When volumes rule out meaningful individual grading, peer evaluation is used as alternative, but with mixed views. (Zhu et al., 2018). One clear obstacle appears to be student motivation and attrition – peer grading works only when peers actually sufficiently care. Furthermore, a common theme in MOOC design is being pressured for time – which might not allow to fully include relevant tech elements, not mentioning designing content with better pedagogical coherence. In summary, the paper presents broad criticism how a traditional university course can be superior to MOOC – not because MOOC could not be similar in performance, but because it is often hurried and at times approached almost as “minimum viable product” (Ibid.).

On a positive side, being involved in MOOC development can bring about substantial changes in academia not only in terms of digital capabilities but through engagement of transformative practices, as MOOCs can contribute to the diffusion of digital and transformative cultures within institutions. (León-Urrutia, 2019). However, the transformation assumes that top-down initiatives clearly support the transformation through stable strategic focus and avoiding intermittent and impulsive initiatives (Ibid.) In summary, MOOCs have huge potential, but reality constraints in design and in teaching are posing noteworthy obstacles. As MOOC design can be sometimes approached with an explicit intent to automate the teacher, there is a loss of notable human element. However, many shortcomings can be seen as direct consequence of that – missing to leverage the potential synergy between technology and human touch.

3. Methodology

Four MOOC platforms were included in the study: edX, Coursera, FutureLearn and Udemy. While there are multiple more around, their logistics-themed content appears secondary. Courses fitting various logistics-related keywords were included – *supply chain, operations, inventory, transport, purchasing, supplier, trade, mobility, vehicle, traffic*. Only English-language courses were included with a minimum of 3h content. While the smaller ones

perhaps ought not to be called “a course”, they are still suitable for learner’s self-development as well as additional contributors to blended learning. Data on certification price and access price (as the case of Udemy) was also recorded, but is not analysed in this study.

The resulting database included 198 elements as of January 2022: 67 from edX with average duration approx. 40h, 46 from Coursera (average 15h), 35 from FutureLearn (average 11h) and 50 from Udemy (average 7,5h direct video content). Hypothetically, if one were to undertake all of them, it would require between 4000-4500 hours of effort, which is close in volume to a full undergraduate programme. For this reason, the study does not involve quality evaluation of MOOCs identified. It is the intention of authors to later extend this study to involve quality evaluation through random sampling.

While the logistics content in MOOCs is abundant, if one would trust the search function of platforms, one could be led to believe of even larger content availability. However, when delving into search results one often meets only distantly related elements. Still, compared to 2020 state of logistics MOOCs (Niine et al., 2021), our database has grown significantly, and so content creation is active, with edX logistics-related titles more than doubling. Average course size has declined though, as total assumed learner effort is up approx. by 50%.

The model of logistics knowledge areas used as basis was constructed in 2014 for curricula evaluation purposes (Niine and Koppel, 2014). The original model has 20 sections. For this study, heavy consolidation was needed. Some sections were omitted due to foundational nature / lack of relevance for focal purpose (such as foundations of natural sciences, basics of strategy, human resources) – as in pursuit to be a logistician, one must not only learn matters directly of logistics. Other categories needed consolidating, because many courses were broad to encompass more than two. As a result, it was most meaningful to distinguish 6 categories: operations and supply chain management; purchasing and inventory; transport and warehousing operations; transport technologies; transport economics and mobility; and logistics and supply chain sustainability. Even so, some courses were related to two, as the line between mobility view, technology design view and sustainability is often impossible to draw. This is mainly due the multi-layer and multidimensional nature of sustainability, so no criticism to the MOOC industry in that regard. Similarly, purchasing is just a subset of supply chain management, kept separately to identify more functional-oriented focus.

The analysis of MOOCs against the categories had two phases: categorization and separate analysis of each segment. As limitation, some of the findings might be short-lived due to growth of MOOCs. The data comes from course titles which in some cases might not be fully representative of course content, which has not been studied in depth here. Finally, there is no categorical way of determining if a course is “a logistics course” – inclusion in the sample has been based on keywords, but still includes notable subjective element. Both type I and II errors are possible, while we attempted to be as strict as the six-component model instated.

4. Results

The overview of categorization is presented in Table 1. The authors are gladly willing to share the full database as it did not fit this paper due to formalities.

Table 1. Categorization and characteristics of logistics and supply chain MOOCs

Category	MOOCs	Sum of assumed learner effort	Platform with most titles
Operations and supply chain management	101	2100 h	Similar across all 4 platforms
Purchasing and inventory	28	330 h	Coursera, Udemy
Transport and warehousing operations	10	130 h	Udemy
Transport technologies	26	750 h	edX
Transport economics and mobility	15	270 h	edX
Sustainable logistics and supply chain	26	570 h	edX
Industry / field-specific topics	4	30 h	N / A

Source: Authors' study.

Technological innovation and automation is a theme well-suited for MOOCs both for topical relevance as well as marketability. Material on electric vehicles and self-driving is also abundant. The modern and future technology element is perhaps the most well covered aspect of logistics across the board. This also reflects why such a study is meaningful to run especially on logistics topics – the topical tech innovation also drives teaching innovation. Another rich area is supply chain management with views across functions and companies.

As broader observation, it appears many course names are designed to attract attention. This suggests marketing intent on two levels: both strategic topic choice as well as tactical “buzzwords for popularity”. For example, big data analytics and blockchain are relevant future technologies, but they also tend to be overrepresented in our data. It could be called a double-echo effect, as both content creators and platforms are in most cases rather heavily incentivized to attract large student volumes. Likewise, while sustainability is a critical area of expertise, its presence in the course title appears to be somewhat forced in some cases.

This marketing-focus has also a proposed downside of less desire to develop courses that “appear boring”, regardless of practical relevance. Our data suggests that topics such as mode-specific transport law or detailed physical characteristics of cargo handling are rather notably underrepresented, not to say missing. A broader pattern emerges, as strangely the main area seemingly presenting noteworthy gaps lies in the core of operational and vocational

logistics – transport arrangements and transport service economics. UdeMy is the platform known for material with direct industry practitioner focus and is in this case true to that promise by presenting some titles to provide at least modest attention. While there is some more of such material packaged into broader courses, a remaining issue is that they are not sufficiently visible. When a prospective student needs a quick introduction to, say, maritime insurance, one can be discouraged to undertake a 50-hour “international logistics” course, with still a chance that a course with a general title might struggle to provide sufficiently deep insights. It appears a possible explanation that most of the transport area (not just legal aspects) is just “not hot”. As an anecdote, when one enters keyword “shipping” into Coursera, one of the top results is “A life of happiness and fulfilment” with over 430 000 students. Not aiming to disregard Greek philosophy and Buddhism, the point here is not what is present (the linkage is still a mystery) but what is not. There is a little too much popularity focus across MOOCs in general and relatively less attention on providing optimal value for logistics practitioners. One can speculate that one of the root problems might be that demand-driven industry relevance is sometimes not sufficiently embedded in the MOOC design.

5. Conclusion and discussion

Firstly, for industry the findings are encouraging – the availability of online courses is wide. While such “bite-sized” learning cannot (and are not meant to) replace customized company training sessions, they can be used to complement HR training plans and provide strong support to life-long learning with only some topical gaps. The study did not evaluate the quality of logistics MOOCs, but major content validity risks are not apparent. One ought to note the diverse pedagogical methodology of MOOCs ranging from just a bundle of video clips to more properly simulating conventional course experience with groupwork, case-solving, projects and feedback. Some closer inspection is necessary before making commitments. While MOOCs are sometimes frowned upon due to low completion rates, we would not treat it as a quality issue, but in probably most cases a motivational issue.

Similarly, for students, practitioners or just enthusiasts of logistics the results are promising, given some expectation management. We recommend to treat MOOCs as self-motivational discovery rather than direct contribution to becoming a professional in a systematic manner. While some MOOCs can be recognized by vocational or academic programme-studies, one should not see MOOCs as replacement of a full academic diploma-track. MOOCs on a platform business model are mostly designed one block at a time. There are course bundles with various labels, but even then MOOCs tend to lack the systematic planning of a programme experience one could expect from a professional college or faculty. This is not mainly the question of “face-to-face versus online”, as it might have been perceived pre-pandemic, but a question of fragmentation. The landscape on logistics courses is rich but much more of a cacophony than a symphony. The disorderly growth of MOOCs appears

similar to urban development where the lack of coordinated top-down approach results in high fragmentation which is clearly unoptimal from broader angle. Similarly, one cannot get a strong college programme from just a hastily tied bundle of courses without efforts to design proper sequencing and linkages and account for student body characteristics. A strong programme should aim for a layer of top-down development existing in cooperation with course-level improvements. All in all, it is not that MOOCs cannot in principle serve as Lego-blocks for diploma, as we argue they can. It is mainly the matter of how they are designed and developed and for what particular purpose. The criticism in terms of time pressure seems to be another major obstacle (Zhu et al. 2018).

It is quite viable to build a micro degree of MOOCs, assuming authorship by one school or a small set of academic content creators in concert. Anything substantially larger would require more than linear increase in effort. Logically, the options are either: A) a major project from a small set of universities, B) a “weaving and patching” task across large variety of Lego-blocks, C) dedicated synchronized effort of a central team. While all options are technically and economically feasible, option A can be discouraged by “the middle man question”. Pandemic has shown that universities can operate semi-online also individually with overcoming some of the problems initially feared. While only a minority of programmes would continue online post-pandemic in short-term (whether to launch such is a question of local strategy), we speculate there is now a wide-spread understanding of value proposition for students in online teaching, including quality assurance and thoughtful pedagogical design philosophy. While a platform might well serve as coordinator and catalyst of cooperation, particular value-adding roles of such third-party providers seem debatable.

Option B is what this paper argues against – the Lego-blocks are more than enough heterogeneous that building meaningful linkages for synergized experience assumes a coordination effort perhaps better spent in building an entire programme from scratch. This leads to option C. Somewhat similar to movies produced by Netflix, one could see future MOOC platforms with enough resources building their own packages akin to a curriculum, systematic programme experience and, where applicable, third-party certification. Whether this realizes, remains to be seen, but such widespread adoption appears doubtful.

For traditional universities, this presents new opportunities. Less than a decade ago, online enthusiasts were predicting the downfall of traditional academia with new models proving their superiority. However, the core of the future higher education model might not be outside academia after all. Whether the online-imbued academia becomes “a new paradigm” or just a slight evolutionary side path of teaching, is up to speculation. But it does seem that pandemic has done the academia (along with numerous scars) also a long-term favour by nudging us closer to discovering value in online teaching (as well as its limits).

In developing better future education, one does not need to think only in competitive but in complementary terms. Educational diversity is a value dimension on its own, so the piecemeal philosophy of MOOCs is highly relevant, especially considering self-conscious lifelong learning. MOOCs can and should be integrated where they add value. Good MOOCs deserve more recognition than they have today, especially in terms of “common good”. Building upon interconnectedness is the optimal way forward.

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