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ONLINE LEARNING EXPERIENCES AND PERCEIVED OUTCOMES WITH KEY OPINION LEADERS: A TWO-PHASE STUDY

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Abstract:

Classroom teaching has been undergoing a digital transformation in the last decade and is now being amplified by Educational Key Opinion Leaders (Edu-KOLs). The research aims to investigate the relationship between learners' perceived outcomes, motivation, and the selection preferences of Edu-KOLs. This paper presents insights gained from a two-phase study. The first phase we conducted through an online questionnaire completed by 186 parents in China whose children are studying or have recently studied online. The second phase we interviewed parents to deep dive into their thinking process behind their choices of Edu-KOLs. By utilizing the PLS-SEM method, this research has proposed and verified six hypotheses that e-learning platforms, student engagement scores and perceived outcomes strongly correlate with the perception of Edu-KOLs. However, parents' educational level or occupation have less impact on the choices of Edu-KOLs. There are also positive relationships among Edu-KOLs, customer advocacy and future purchase intention.

Keywords: E-learning, online education, digital learning platforms, Edu-KOL, partial least squares structural equation model (PLS-SEM)

I. INTRODUCTION

The one-way, face-to-face learning in a physical classroom, passing on content and carrying knowledge to the seated students, is widely adopted by the majority of the world population before the COVID-19 pandemic [Chigeza and Halbert, 2014, Adams et al., 2015]. However, in both learning offline and online, two-way interaction has great importance across all types of education [Moore and G. Kearsley, 2012]. According to some research, students who have access to new technology have a positive perception of the technology usage [Farwell and Waters, 2010]. Furthermore, social media can positively influence students' engagement and enjoyment levels [Alalwan, 2022].

This research aimed to investigate the dynamic relationship among learners' perceived outcomes, interactive engagement and the selection preference of Educational Key Opinion Leaders (Edu-KOLs), by utilising the PLS-SEM method on 186 collected and validated parents' survey responses on their children's learning experience, followed by a deep-dive interview with 10 parents. Six proposed hypotheses associated with Edu-KOLs were subsequently examined and discussed.

II. RESEARCH BACKGROUND

An 'Edu-KOL' refers to a brand ambassador or an instructor of an online learning platform or mobile app, who is a domain expert in a knowledge field and has public recognition, followers, and even a celebrity-like status [Zhang et al., 2021]. Examples of Edu-KOLs include Salman Khan, founder of the free online non-profit educational platform Khan Academy, Andrew Ng, the co-founder of Coursera, and Zhaofeng Xue, a Chinese economist and former professor at Peking University, China. Xue's paid course on DeDao App (a popular Chinese learning platform) is the largest economics course in the world with over 200,000 paid subscribers and was celebrated and featured on the billboard-size curve screen at Times Square in New York in 2017.

Among the growing number of Edu-KOLs rising on different online learning platforms, their creativity in curating the most engaging and effective online interaction also gained much attention. A Canadian researcher Stephen Pallen used the gaming live streaming platform Twitch to teach programming in a real-time setting. The viewership in the last six years has accumulated to more than 17,700 and still counting, which demonstrates agility in both programming and teaching format consideration.

One of the key attributes shared by Edu-KOLs is the ability to create new content, either as original creation or remix from past or existing materials resulting in new or even surprising educational material for first-time viewers. Content types are further divided by the corresponding creators. In the social selling context, professionally generated content (PGC) [Song et al., 2019] could be videos that were professionally shot and edited by skilled agencies, which the brand ambassadors or KOLs have started to explore. The creator community includes all types of creators, and they have laid the foundation for the evolved User-generated Content (UGC) and more specialised Occupationally generated Content (OGC) [Zhao et al., 2017] where Edu-KOLs exist (Figure 1). The Edu-KOLs are one type of the significant OGC contributors, who might be highly influential educators in the top universities, such as academic professors or industry experts in different knowledge domains.

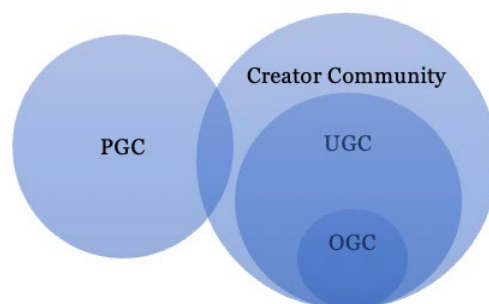


Figure 1: Relationships Among Different Content-Generating Types

Research Purpose and Significance

This paper aims to bridge the research gap between KOLs on the e-commerce platforms and Edu-KOLs on e-learning platforms, so that the research insights and findings can let parents to make informed decision on their choices on Edu-KOLs for their children. It is also important to broaden and deepen the contextual knowledge in Edu-KOLs domains and generate meaningful insights from the survey for future parents to make informed decision.

The significance of the research will lay the foundation for proposing recommendations on pedagogy digitalisation in the long run, provide groundwork on data analysis and insights

generation to help shape the future of the educational transformation for the growing population of the online learners.

In recent work [Zhang et al., 2021], empirical evidence on Edu-KOLs' characters and selection preferences by students has been found in the educational technology space. Table 1 summarised the past findings from the literature review for three different online learning environments, and they were examined from the perspectives of audience type, subjects offered, the format of content [Berger et al., 2015], teaching method and learning mode of students. It has been observed that learners have a strong tendency to choose courses delivered by lecturers with many followers and high recognition among open online communities [Zhao et al., 2018], i.e., Edu-KOLs.

Table 1: Characteristics of Virtual Learning Environment

| | Institutional Platform | MOOC Platform | Paid knowledge Platform |
|-----------------|-------------------------------|---|---|
| Examples | edX, MIT | Coursera, Udemy, Udacity | Zhihu Live, DeDao App, Xueersi App |
| Audience | Students | Paid students | Registered users |
| Subject | Syllabus subjects | K-12, higher education, micro credentials | Formal educational subjects, life hacks, random knowledge |
| Format | PGC | PGC, UGC | OGC |
| Teaching method | One-way | One-way Express | Both-ways Interactive |
| Learning mode | School sessions | Self-paced, mostly individual | Live interaction, peer learning, collective |

Observing the ever-growing popularity of online education platforms [Chan and Misra, 1990], this paper draws attention to the genuinely influential power of the Edu-KOLs and their ability in empowering the impacts to not only engage and provide knowledge to children but also provide new forms of literacy parity penetrating through online classes regardless of parents' background and working experiences.

The structure of the paper is organised as follows. The immediate section layouts the proposed hypotheses, followed by the research methodology and study design. Then a section follows that describes the data analysis, followed by the discussion of findings and future research. The final section concludes this paper.

III. RESEARCH THEORY AND HYPOTHESES

Constructivist Theory

According to Bruner [1996], learners construct new knowledge through an active learning process from their previous knowledge foundation. Instead of one-way knowledge delivered by the instructor, students are provided with freedom and decision-making power to decide how to carry out their study plan. They actively engage in the learning process [Kirschner and Karpinski, 2010]. Therefore, in this study, we decide to measure factors of Engagement Score based on this theory.

Rogers' [1994] experiential learning theory highlighted the importance and tendency of learners to shift to self-direction learning. Rogers noted that self-initiated learning is the most pervasive form and lasts long for learners. Hence through the survey, we evaluated participants' choice of E-

Learning Platform, Perceived Outcome, to understand whether Edu-KOL may influence their Customer Advocacy and course Purchase Decision.

Research Hypotheses

The research adopted a two-phase mixed-methods approach to explore the key factors of Edu-KOL towards children learners and measure impacts from different perspectives to have a comprehensive understanding and analysis. To achieve the research aims, data regarding a range of factors are identified (Figure 2), and hypotheses are linked by those factors.

In the theoretical model of this study, we consider factors that Edu-KOL has influences on education as independent variables (details in Table 4). They include study purpose, study duration, type of platforms, subject areas, channels, Edu-KOL's knowledge level, interaction, and demographic information (gender, age). In turn, they will impact learners' satisfaction and recommendation.

This section first proposed a set of hypotheses to address the research gaps identified through the literature review, where we thoroughly investigated the influence power and characteristics of Edu-KOLs and their perceived effectiveness among parents.

E-learning Platforms

Researchers [Moore, 2014, Swan and Shih, 2019] discovered that by using e-learning platforms, students have a sense of connection with fellow students, instructors and learning materials. It is also suggested that online learning platforms featuring videos from Edu-KOLs positively promoted and influenced the relationship between students and the educator [Southard et al., 2015]. This leads to the hypothesis on the relationship between online platforms and Edu-KOL:

H1. The E-learning platform has a positive perceived usefulness on Edu-KOLs.

Parents' Education Level and Occupation

The focus of this study is on children who are taking or have taken online courses recently. However, given their age limitation, course decisions are often made by their parents. We suggest using observation variables such as education level and occupation of parents to examine whether there are any strong relationships between those attributes and the choices of Edu-KOLs, hence the hypothesis below:

H2. The education level of parents has a relationship to the perception of Edu-KOLs.

Learners' Engagement and Satisfaction

Key drivers for the consumption of paid knowledge products are review scores and interactions between KOLs and live participants, which have been identified as the most significant effects on monetization, among other features like price, duration, material attachments, and so on [Zhang et al., 2020]. Students who study via online courses spend more time engaging with online materials and instructors when compared to peers who study offline in traditional face-to-face classrooms [Abraham et al., 2019, Liu et al., 2011]. Those on-field findings put on practical lens towards how effective the Edu-KOLs are in driving satisfaction and outcome of online courses. This paper will further deep dive into this area and test the following hypotheses for Edu-KOLs:

H3. There is a strong relationship between learners' engagement with Edu-KOLs and their level of satisfaction.

H4. The perceived outcome can positively influence the satisfaction toward Edu-KOLs.

H5. The real learning outcome can positively influence the satisfaction towards Edu-KOLs.

Future Customer Advocacy

Numerous research [Lou and Yuan, 2019, Long and Tefertiller, 2020, Zhang et al., 2019] have been carried out surrounding KOLs' definition, characteristics and business value blooming on

the social selling networks on the frontier of the e-commerce platforms such as Taobao or Pinduoduo. A group of scholars built a feature-based Expertise, Novelty, Influence, and Activity (ENIA) framework with a mixed research method to identify the opinion leaders [Li et al., 2013] in the online learning communities. However, those works failed to consider the posting forwarding data, which, together with 'likes' and rating reviews, served as the basis of recommendation mechanisms for KOLs to be promoted to similar audiences by the users of the platform. Hence the researchers proposed the following hypotheses considering the research gap:

H6a. Edu-KOLs have a positive effect on customer advocacy.

H6b. Edu-KOLs have a positive influence on the future customer purchase decision.

With the above theoretical interpretation of the past literature and scoping potential research gaps, Figure 2 illustrates the proposed hypotheses above to be tested and analysed in the following sections.

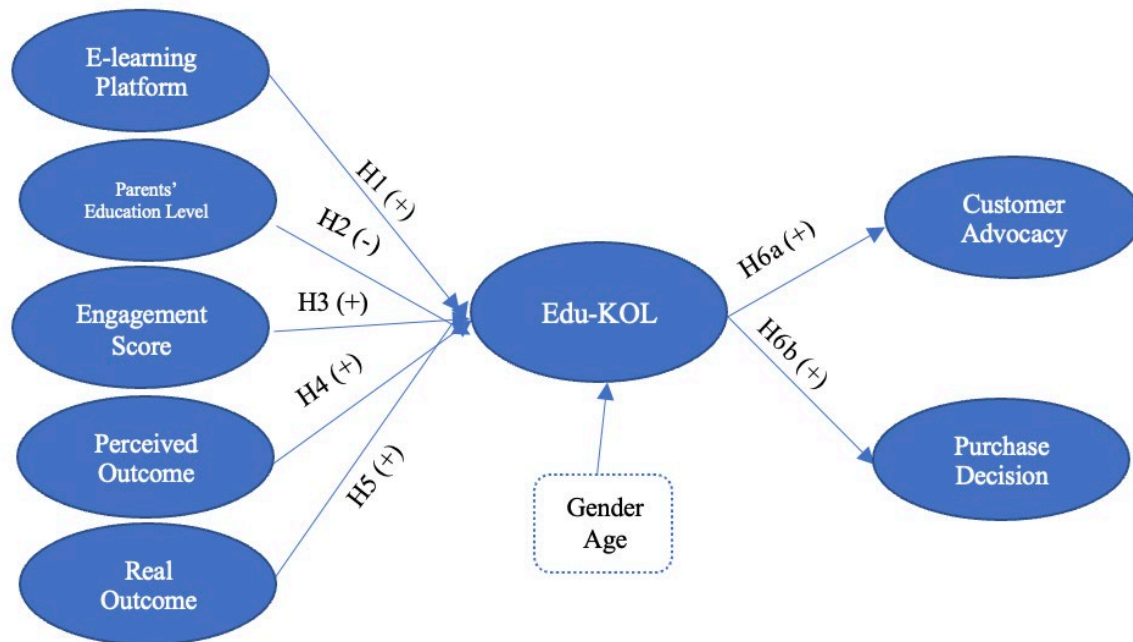


Figure 2: Illustration of the Proposed Research Model

IV. METHODOLOGY AND INSTRUMENTATION

Research methodology

In this study, Partial Least Squares Structural Equation Modeling (PLS-SEM) was adopted to interpret data collected by the online survey. By using SmartPLS (v. 3.3.3) Application [Ringle et al., 2015] we were able to first construct the defined factors according to the hypotheses. Secondly, we conducted validation assessment, construct validity, divergent validity and discrimination validity. By examining the descriptive variables and their correlation results, we finally generated findings serving as the contribution of this study.

A two-phased study was implemented to better capture children's learners' journey (Figure 3), considering providing (1) a more comprehensive analysis of learners with the combination of survey and one-on-one interviews for follow-up questions and (2) opportunities for parents to share context on their choices and discuss more on Edu-KOLs in the open question format.

Phase one – online questionnaires obtained 186 children learners' attitudes, sentiments, interaction feedback and learning outcomes through the survey to their parents. Given the study design, which considers the process of peeling the onion, it is important that we have the quantitative analysis in the first stage to collect a relevantly generous sample pool to have a big picture. Given the small number of parameters considered in this study, the minimum sample size is reasonable above 150, with room for noisy data detection and outlier exclusion at the data analysis stage.

Phase two – one-to-one interviews Interview of 10 selected participants with each allocation of 45 to 60 minutes allows researchers to deep dive into Edu-KOL-related insights, personal journeys, experience, and engagement on all levels. The amount of data retained from this study will provide sufficient follow-up analysis and further research complementary to the online surveys in the previous stage.

By using theoretical and data-driven frameworks, the researchers of this study have considered several data models, including hierarchical linear modelling (HLM), PLS-SEM and mixed methods of qualitative comparative analysis to extract data insights from the two phases.

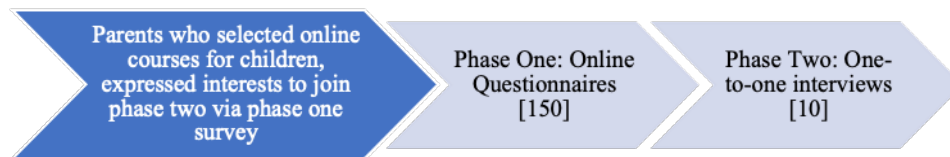


Figure 3: Participants' Journey for the Research Phases

Study Design

As the nature of the study is to examine the effectiveness of Edu-KOLs in the online learning environment, it is important to ensure that the selection of survey participants covers the major audience for online learning. Research by HoloniQ¹ indicates that the spending on online degrees was \$36 billion in 2019, with the forecast to triple the figure by 2025. Differentiated by age, major online students could be divided into two groups, children who are below 18 years old, and adult learners from 19 to 65 years old. Below are the definitions of these two learner groups in this study design.

Adult learners either focus on career progression-related micro-credential courses or chose a course outside their current domain of interest. For instance, a Software Engineer signed up for a photography course, or an accountant signed up for cooking courses over 5 weeks at night.

Children are in the K-12 education progression but take on different curriculums outside the classroom. For example, a Year Five child takes an online 1-to-1 English course via a live streaming English App. In order to examine the perceived and observed learning outcome, this study surveyed their parents given they have played an essential role in the decision-making of a particular course selection, with, or without Edu-KOLs' involvement.

Study Site and Participants' Selection Criteria

This study took a particular interest in selecting China as the study site given the heated trend and hyper-growth of e-commerce platforms boomed in China, where e-learning platforms are

¹ Holoniq.com. 2021. [online] Available at: <<https://www.holoniq.com/markets/higher-education/global-online-degree-and-micro-credential-market-to-reach-117b-by-2025/>> [Accessed 23 December 2021].

growing and adopting those successful ingredients of Edu-KOLs. We believe this is the ideal testing site for this research purpose.

Considering the e-commerce arena, for instance, China overtook America by market size in 2013 [Zhang et al., 2020], with a current market size of \$2 trillion, more than that of America and Europe combined. A new era of Digital China is fuelled by a slack of the most valuable technology titans, like Alibaba and ByteDance, just to name a few. They empowered not only online retailing but also online education among many digitalised categories. Silicon Valley has been known for its venture capital activities, start-ups, and technology companies, whereas China now had inevitably changed over its perception from just 'made in China' to 'created in China. Creator-centric trends not only dominated Chinese Tech Giant's central stage on e-commerce sites such as Taobao and Pinduoduo but also made their debut on paid knowledge and education platforms, including Zhihu Live, Apps like DeDao, Xueersi, Yuanfudao, and dozens more.

From the past research, it is not clear what are roles Edu-KOLs emerged to play within different online learning platforms, and how effective they are in terms of perceived outcome, learning satisfaction and potential issues. To serve the purpose of analysing different virtual learning platforms across different cultures in a wide context, it is critical to consider (1) the popularity of a virtual learning platform in that certain cultural context, (2) the history of how those platforms evolved from the single point of traditional in-class pedagogy to the online format, and (3) the distinctive characteristics of the chosen platforms that ride the waves of pedagogy digitalization with Edu-KOLs. With all these factors considered, we selected China to initiate this study.

A full set of selection criteria (Table 2) have been developed to curate the suitable participants.

Table 2: Participant Selection Guidance for Parents Whose Children Used E-learning Platforms

| | Participants' selection guidance | |
|---------------|--|--|
| | Inclusion criteria | Exclusion criteria |
| Online Survey | Parents who have children under 18 years old and have used (or consider using) e-learning platforms/apps | <p><18 years old even though might have interacted with KOL</p> <p>Not parent</p> <p>Parents but have no or very limited experience or knowledge with online platforms in general</p> |

Data collection

Phase one

Based on our research scope and research model, an online questionnaire was implemented, which was approved by the Human Research Ethics Committee of the University of Wollongong (UOW) before it was made public to Chinese audiences via advertising through WeChat, the most popular and frequently used social media app in China during the 'golden week' period². In total, 203 parents submitted, out of which 159 were valid participants. Respondents who are outside the selection criteria or who submitted incomplete survey results were excluded³.

Phase two

Based on the research design and interview selection criteria, we conducted one-on-one interviews via Zoom with parents who have different levels of educational background or

² The 1st to 7th October 2021 in China, is a 7-day national holidays during which most people are off work to rest or travel.

³ Survey link: https://uow.au1.qualtrics.com/jfe/form/SV_7NYM9bs2PvTRK2G

occupations, each lasting from 45 to 60 minutes, among which ten are valid and subsequently included in this paper (see Table 3 for interviewees summary). The designed open-ended questions in the questionnaire gave parents the opportunity to share more context and decision factors when comes to selecting online courses or Edu-KOLs for their children. It also allowed them to elaborate on their goals settings, issues they encountered through their experiences, and future expectations. We transcribed verbatim on their answers, and pseudonyms were applied to encrypt their identity as per data management requirements.

Table 3: Interviewees Summary

| Parents ID | Degree | Education Location | Profession | Children study online | Online Platforms |
|------------|----------|--------------------|----------------------|-----------------------|------------------------------------|
| 01 | TAFE | China | Officer | 2 | MiqiMiaoMiao App |
| 02 | PhD | UK | Start-up Founder | 2 | Bigbangacademyhk |
| 03 | Master | China | Global Tech Firm | 2 | Number of paid Apps |
| 04 | MBA | Australia | Manager | 1 | English/Programming Meishubao Apps |
| 05 | PhD | USA | Freelancer | 1 | |
| 06 | Master | China | Self-employed | 2 | Mathmatic/Chinese Poem |
| 07 | Master | Scotland | HR manager | 2 | Meishubao App(drawing) |
| 08 | Bachelor | China | Bank manager | 1 | Huohua Siwei |
| 09 | PhD | USA | Tech researcher | 2 | New Oriental English |
| 10 | Master | Australia | Small business owner | 1 | VIP KID |

Model analysis application and model fit

The proposed data analysis method is PLS-SEM [Hair Jr et al., 2019] given that (1) there are more than 100 valid responses to estimate SEM, (2) the structural model is complex and includes many constructs, indicators and model relationships as shown in the research model (Figure 2), and (3) this research requires latent variable scores for follow-up analysis.

To interpret qualitative data from the survey and the follow-up interviews, the study's researchers used a manual coding method to classify data into relevant categories, which were then fed into SmartPLS V3.3 for the detailed data relationship analysis.

According to Hu and Bentler [1998], the Standardized Root Mean Square Residual (SRMR) of the estimated model will be considered a model fit if the value is less than 0.08. We prepared the model and ran fit analysis by using the consistent PLS algorithm within SmartPLS resulted in a returned value of 0.071. The model is good to proceed with for analysis. The section below outlined detailed findings from this model.

V. RESULTS AND DATA ANALYSIS

Demographic Characteristics

Table 4 summarised the demographic profile of the respondents and their weekly usage of e-learning platforms, and the results indicated that a total of 61.54% of respondents are between 26 to 35 years old, followed by 30.13% from 36 to 45 years old. Over half of the participants have a

bachelor's degree or above, which indicates a high educational level among parents. Participants' occupations spread across various career types and categories. Among the most used and popular 17 Chinese and ten overseas platforms, 40.38% of parents used or heard of 1 to 2 Chinese platforms, whereas 88.47% used or heard of 1 to 2 overseas platforms. 44.87% of them are familiar with 3 to 5 Chinese platforms, whereas less than 11% know about more than three overseas platforms.

Table 4: Demographics of the Survey Respondents

| Variable | Attributes | Frequency | Percentage |
|--|-----------------------------------|-----------|------------|
| Gender | Male | 59 | 37.82 |
| | Female | 97 | 62.18 |
| Age | <18 | 0 | 0 |
| | 18-25 | 9 | 5.77 |
| | 26-35 | 96 | 61.54 |
| | 36-45 | 47 | 30.13 |
| | >45 | 4 | 2.56 |
| Education level | below primary school | 2 | 1.28 |
| | secondary/high school | 18 | 11.54 |
| | TAFE/Diploma | 29 | 18.59 |
| | Bachelor's degree | 91 | 58.33 |
| | Master's degree | 15 | 9.62 |
| not reveal | 1 | 0.64 | |
| Occupation | state-own | 19 | 12.18 |
| | employee/manager | 39 | 25 |
| | private-own | 22 | 14.1 |
| | employee/manager | 11 | 7.05 |
| | teacher, engineer, doctor, lawyer | 20 | 12.82 |
| | skilled worker (blue-collar) | 20 | 12.82 |
| | manufacture worker | 16 | 10.26 |
| | business/service industry | 4 | 2.56 |
| | sole trader | 5 | 3.21 |
| | farmer | | |
| others | | | |
| Number of platforms used/heard of in China | 1-2 | 63 | 40.38 |
| | 3-5 | 70 | 44.87 |
| | 6-8 | 17 | 10.90 |
| | >8 | 6 | 3.85 |
| Number of platforms used/heard of overseas | 1 | 103 | 66.03 |
| | 2 | 35 | 22.44 |
| | 3 | 17 | 10.90 |
| | >3 | 1 | 0.64 |

Measurement Constructs

In this section, we present the theoretical consideration and statistical analysis to reveal the validity and reliability of the chosen measurement model. By using PLS-SEM, we aim to determine which factors have a significant relationship to Edu-KOLs. As shown in Figure 4, the research model consists of seven latent variables, which are multifaceted and difficult to capture through a single observed variable. Thus, as shown in Table 5, by identifying and using multiple observed items we can better analyse the proposed research model and validate the results.

Table 5: Measurement Constructs and Reliability by Factor Loading Analysis

| Construct | Description | Factor loading |
|--------------|--|----------------|
| A1 | Parents' willingness to recommend to others | 1 |
| B1 | Participants' gender | 1 |
| B2 | Participants' age | 1 |
| C1** | Participants' education level | dropped |
| C2 | Participants' occupation | 1 |
| ES1** | Average hours weekly spent learning online | dropped |
| CC1 | Edu-KOL's influence on online course choices | 0.849 |
| E1* | Type of platforms – internal learning system | 0.51 |
| E2, E3, E6** | MOOC, Micro credential/certificate | dropped |
| E4 | subject-specific course | 0.733 |
| ES2 | Comfortable interacting with Edu-KOL | 0.751 |
| K1 | Edu-KOL's knowledge level | 0.863 |
| O1 | Satisfaction on the learning outcome | 0.91 |
| O2 | Satisfaction on Edu-KOL's teaching method | 0.892 |
| O3 | Satisfaction on Edu-KOL | 1 |
| O4* | Satisfaction on perceived outcome | 0.625 |
| P | Satisfaction on pricing | 0.843 |
| PD1 | Willing to purchase courses because of Edu-KOL | 0.759 |
| Age | Moderating effect of age | 1.034 |
| Gender | Moderating effect of gender | 0.962 |
| RO1 | Children's final score – real outcome | 0.732 |

**factor loading < 0.708 hence dropped, *factor loading close to 0.708 hence kept for further analysis

According to Hair et al. [2019], significant factor loadings are required to have a value greater than 0.708. Figure 4 visualizes the factor loading results among all constructs we measured in this research, where most of the constructs are significant, whereas only three were dropped as weak relationships in these findings.

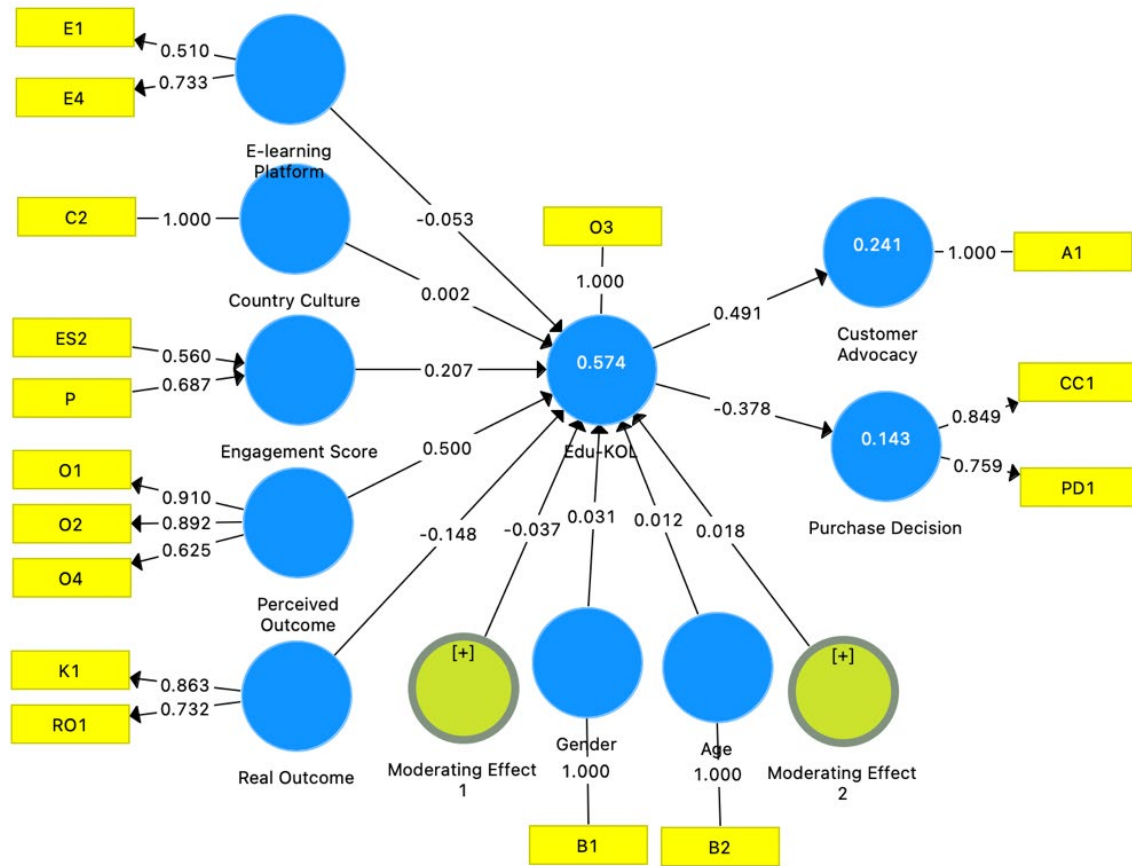


Figure 4: The PLS-SEM model. *p <0.05, **p < 0.01.

Validation Assessment

We examined the indicator loadings of the reflective measurement model. Factor loading lower than 0.708 is dropped from the model, as shown in the table 5. As the factor loading of E1 (0.51) and O4 (0.625) were close to 0.708 (Hair Jr. et al., 2019), they were retained for further analysis. This formed the baseline analysis of acceptable items. We then further evaluated the data divergence validity and reliability and confirmed the model is valid for this research purpose.

Divergent Validity

In order to confirm that all constructs in this research model are independent and have no interrelationship [Khansa et al., 2015], we applied PLS to perform the discriminant validity analysis. Its results are shown in Table VI.

According to [Zhang et al., 2020], Cronbach's Alpha (CA), rho_A⁴ and Composite Reliability (CR) which are >0.7000 are considered reliable, and AVE value >0.5 are considered significant items for convergent analysis (see Table 6). Among all testing results shown, only the E-learning Platform didn't meet the requirement, thus it will be removed from further analysis.

⁴ The rho_A function calculates the rho_A reliability indices for each construct. For formative constructs, the index is set to 1.

We also contested the discriminant validity. According to Fonseca [2013], Table 7 shows the HTMT test result to perform this check. Based on Hair's method, values <0.85 are considered good to keep. Thus all variables listed below are good to process.

Table 6: Construct Validity and Average Score

| Construct | Cronbach's Alpha (CA) | rho_A | Composite Reliability (CR) | Average Variance Extracted (AVE) |
|---------------------|-----------------------|--------|----------------------------|----------------------------------|
| Age | 1 | 1 | 1 | 1 |
| Country Edu level | 1 | 1 | 1 | 1 |
| Customer Advocacy | 1 | 1 | 1 | 1 |
| E-learning Platform | -0.537 | -0.548 | 0.562 | 0.398 |
| Edu-KOL | 1 | 1 | 1 | 1 |
| Engagement Score | 1 | | | |
| Gender | 1 | 1 | 1 | 1 |
| Moderating Effect 1 | 1 | 1 | 1 | 1 |
| Moderating Effect 2 | 1 | 1 | 1 | 1 |
| Perceived Outcome | 0.755 | 0.838 | 0.857 | 0.672 |
| Purchase Decision | 0.463 | 0.475 | 0.786 | 0.649 |
| Real Outcome | 0.445 | 0.469 | 0.779 | 0.64 |

Table 7: Heterotrait-Monotrait Ratio (HTMT)

| | Age | Country Culture | Customer Advocacy | E-learning Platform | Edu-KOL | Gender | Moderating Effect 1 | Moderating Effect 2 | Perceived Outcome |
|---------------------|-------|-----------------|-------------------|---------------------|---------|--------|---------------------|---------------------|-------------------|
| Age | | | | | | | | | |
| Country Culture | 0.086 | | | | | | | | |
| Customer Advocacy | 0.116 | 0.026 | | | | | | | |
| E-learning Platform | 0.092 | 0.366 | 0.152 | | | | | | |
| Edu-KOL | 0.077 | 0.095 | 0.491 | 0.266 | | | | | |
| Gender | 0.121 | 0.13 | 0.055 | 0.159 | 0.065 | | | | |
| Moderating Effect 1 | 0.089 | 0.097 | 0.074 | 0.15 | 0.076 | 0.038 | | | |
| Moderating Effect 2 | 0.08 | 0.025 | 0.096 | 0.07 | 0.009 | 0.083 | 0.041 | | |
| Perceived Outcome | 0.109 | 0.107 | 0.653 | 0.335 | 0.8 | 0.083 | 0.156 | 0.081 | |
| Purchase Decision | 0.052 | 0.206 | 0.255 | 0.255 | 0.551 | 0.098 | 0.232 | 0.132 | 0.573 |
| Real Outcome | 0.198 | 0.118 | 0.482 | 0.36 | 0.712 | 0.126 | 0.058 | 0.028 | 0.734 |

Descriptive Statistics and Variables Correlation

With the establishment of the measurement model, the descriptive statistics can be found in Table 8. Values in the skewness column indicated the correlation among the latent variables in

the research model [Mayadas and Picciano, 2017]. The skewness (Hair Jr. et al., 2019) indicated the correlation among the latent variables in the research model.

Table 8: Descriptive Statistics

| VARIABLES | MEAN | MEDIAN | MIN | MAX | STANDARD DEVIATION | EXCESS KURTOSIS | SKEWNESS |
|-----------|--------|--------|-----|-----|--------------------|-----------------|----------|
| A1 | 1.179 | 1 | 1 | 2 | 0.384 | 0.856 | 1.687 |
| B1 | 1.622 | 2 | 1 | 2 | 0.485 | -1.766 | -0.507 |
| B2 | 3.295 | 3 | 2 | 5 | 0.612 | 0.313 | 0.404 |
| C2 | 3.949 | 3 | 1 | 9 | 2.238 | -0.919 | 0.442 |
| CC1 | 6.814 | 7 | | 10 | 1.957 | 0.516 | -0.69 |
| E1 | 0.487 | | | 1 | 0.5 | -2.023 | 0.052 |
| E4 | 0.34 | | | 1 | 0.474 | -1.553 | 0.683 |
| ES2 | 2.141 | 2 | 1 | 5 | 0.702 | 3.867 | 1.478 |
| K1 | 3.346 | 4 | 2 | 5 | 0.852 | -0.91 | -0.294 |
| O1 | 2.051 | 2 | 1 | 5 | 0.861 | 0.45 | 0.753 |
| O2 | 1.968 | 2 | 1 | 4 | 0.796 | -0.163 | 0.52 |
| O3 | 1.859 | 2 | 1 | 4 | 0.746 | -0.522 | 0.424 |
| O4 | 2.344 | 2.344 | 1 | 4 | 0.47 | 4.256 | 0.492 |
| P | 2.744 | 3 | 1 | 5 | 0.876 | 0.099 | 0.065 |
| PD1 | 7.776 | 8 | | 10 | 1.583 | 3.489 | -1.073 |
| RO1 | 90.587 | 90.587 | 70 | 100 | 4.964 | 2.551 | -0.925 |

VI. DISCUSSIONS

In the questionnaire, a 10-point Likert scale was deployed, where the point '10' represents strong agreement or positive sentiment with the statement, and consequently '1' represents strong disagreement or not even been considered. As detailed in the previous section, we first tested the PLS-SEM model to be valid, robust, and statistically significant to provide insights into Edu-KOLs. Table 9 shows five out of six hypotheses supported in this study. This sets a crucial step forward to understanding the role that the Edu-KOLs play in the online learning environment. We then used the one-on-one interview to further validate the collective results from the online questionnaire, with opportunities given to those parents on elaborate more on how they perceived Edu-KOLs.

Table 9: Hypotheses Testing Summary

| Hypothesis | Std coefficient | Outcome |
|------------------------------------|-----------------|---------------|
| H1: E-learning Platform -> Edu-KOL | 0.90 | Supported |
| H2: Education level ->Edu-KOL | 0.03* | Not supported |
| H3: Engagement scores ->Edu-KOL | 2.42 | Supported |
| H4: Perceived outcome->Edu-KOL | 6.10 | Supported |
| H5: Real outcome ->Edu-KOL | 2.35 | Supported |
| H6a: Edu-KOL->Customer advocacy | 8.26 | Supported |
| H6b: Edu-KOL -> Customer decision | 5.66 | Supported |

Standard error in hypothesis, *p <0.05

The influencing factors when deciding which Edu-KOL to follow or take the course with.

As shown in Figure 4, the e-learning platform played a positive role in the selection of Edu-KOLs. Students' engagement scores from classes also positively correlate with the choice of Edu-KOLs, which means the higher the engagement level, the better they consider learning from the Edu-KOLs of the class. Both perceived outcomes and actual outcomes are in positive correlation with the choice of Edu-KOL. A better-perceived outcome of a certain course, or a higher score of students, is positively fitting in line with the consideration of the Edu-KOL.

Customer advocacy post-purchase is further confirmed through this exercise. From phase two interviews, several parents collectively highlighted that other parents' recommendations on platforms and Edu-KOLs played a significant role in their future decisions.

"My friends highly recommend this, so I decided once my children's current online course is finished, I will switch to this one, and I can get a discount by using my friends' referral link." (O2, start-up founder)

"There are many paid app out there, and I can try them all, both costly and time-consuming, I asked within my friends' circle and apps being recommended multiple times made me feel more confident and comfortable to commit." (O4, manager)

Parents' education level and occupation status have little effect on choosing Edu-KOL.

The education level variable is listed as 'not supported' in the hypothesis. In the survey design, we used parents' education level and occupation in China as the indicator. The initial assumption is that the level of education the parents have achieved and/or the better job they are having will impact how they choose online courses for their children. However, in the PLS analysis, the data interpreted didn't support this argument. Parents' education level (Table 10) or current occupation level, it wouldn't influence how they select what courses and which Edu-KOL for their children. This is particularly interesting and counterintuitive but also shows that all parents, regardless of their occupation (Table 11), are willing to spend the most they can afford to achieve the best possible educational outcome for their children, and they can identify what represents a good Edu-KOL.

Table 10: Participants' Education Level

| Education level | Count | Percentage % |
|-----------------------|-------|--------------|
| Below primary school | 2 | 1.28% |
| Secondary/high school | 18 | 11.54% |
| TAFE/Diploma | 29 | 18.59% |
| Bachelor's degree | 91 | 58.33% |
| Master's degree | 15 | 9.62% |
| Not reveal | 1 | 0.64% |
| Total | 156 | 100.00% |

Table 11: Participants' Occupation Information

| Occupation | Count | Percentage % |
|------------------------------|-------|--------------|
| State-own employee/manager | 19 | 12.18% |
| Private-own employee/manager | 39 | 25.00% |

| | | |
|-----------------------------------|-----|---------|
| Teacher, engineer, doctor, lawyer | 22 | 14.10% |
| Skilled worker (blue-collar) | 11 | 7.05% |
| Manufacture worker | 20 | 12.82% |
| Business/service industry | 20 | 12.82% |
| Sole trader | 16 | 10.26% |
| Farmer | 4 | 2.56% |
| Others | 5 | 3.21% |
| Total | 156 | 100.00% |

This finding has been further confirmed after the phase two interviews. Parents with different levels of educational background didn't have any clear correlation on what type of online courses they would choose for their children (see Table 3). However, their outlook and life experience might be deciding factors for course choices. Parents who have studied or worked overseas do not necessarily let their children study foreign languages (Table 3). Their subjects' choices for children also often have nothing to do with their profession:

"I have selected a Chinese Traditional Poem App for my kids to learn Chinese history and character writing. It might not be a popular choice for my fellow parents or have anything to do with my day-to-day job, but I think it will be good to develop my kids' intellectual and learn to appreciate the beauty in Chinese culture." (06, self-employed)

"I had chosen paid drawing apps for my daughter to foster new interests, given she's not interested in Piano playing, I thought she might like something else, and so far, she's been enjoying it." (07, HR manager)

Several parents have decided to choose any course as long as it keeps their children engaged, which is an interesting trend among those working from home parents under COVID restrictions:

"My son doesn't like English or Mathematics classes, previously I paid for those courses only to find myself having to sit with him throughout the class to re-explain what the instructor has taught, and we often couldn't follow the pace due to the time spent on repeating. My fellow parent friends introduced me to the drawing app, and surprisingly he enjoyed it very much and was able to concentrate and follow the instructor on all the outlining, coloring and frankly speaking, he can just draw anything and not fixed on a defined shape or colour, which is a huge relief for me so that I can concentrate on my freelance job which does require chunk of time and not be distracted." (05, PhD, freelancer)

"I have two kids at home, both myself and my husband working for our own business. It's hard to coordinate even when one of us is not in a meeting or on the phone call. So I signed them up for different online courses. They like their instructors very much and kept talking about them and sharing what they have learned in the class during their lunch or dinner time, which I found is a 'win-win' situation for four of us!" (06, Master, self-employed)

"The online course freed up my time for working from home so that I can concentrate on my own work, and not have to attend to my kids all the time." (10, Master, self-employed)

Knowledgeable Edu-KOL is the crucial decision point for customer advocacy and conversion.

When surveyed on the motivation [Davis et al., 2012] and reason for recommending a course to others, 70% of the respondents attribute it to 'The Edu-KOL is knowledgeable', whereas 25% consider 'Because the course itself is important', and only 5% 'friends also like the Edu-KOL'(Figure 5).

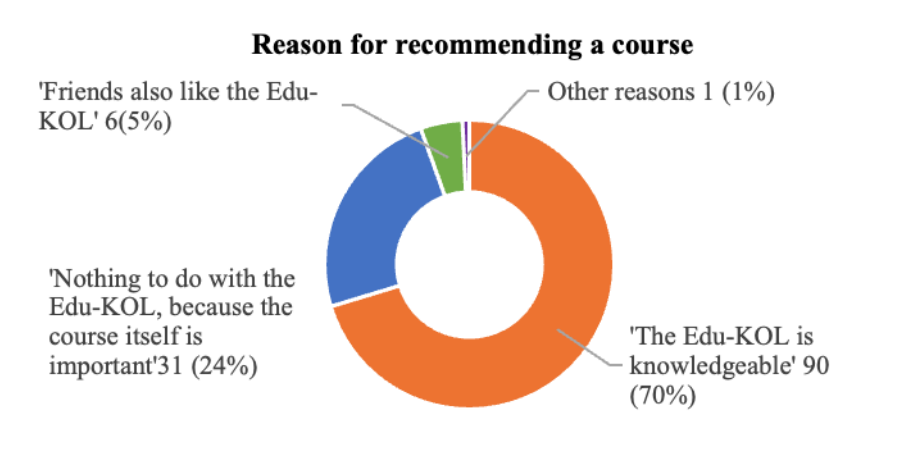


Figure 5: Reason for Recommending the Course to Others

Edu-KOLs’ reputation, content and review are the top priorities for parents’ consideration.

Parents have also been asked, ‘What their top three priorities are when considering online courses?’. Aggregating and categorizing the responses indicate Edu-KOL’s reputation has consistently ranked within the top three consideration priorities (Figure 6).

It is also worth noting that ‘Content’ also ranked within the top three considerations for parents, no.1 priority with 42 votes, and 21 votes as the no.3 priority. ‘Review’ also appeared twice among the ranked top three priorities, with 22 and 27 votes respectively, which demonstrate the importance for parents.

| Rank | Priorities | Votes | Priorities | Votes | Priorities | Votes |
|------|-----------------------------|-------|-----------------------------|-------|-----------------------------|-------|
| 1 | Content | 42 | Format | 34 | Friends/parents recommended | 35 |
| 2 | Edu-KOL reputation | 29 | Review | 27 | Content | 21 |
| 3 | Review | 22 | Edu-KOL reputation | 22 | Edu-KOL reputation | 18 |
| 4 | School recommended | 20 | School recommended | 21 | Format | 16 |
| 5 | Format | 10 | Content | 20 | Chanel | 15 |
| 6 | Friends/parents recommended | 10 | Friends/parents recommended | 16 | Review | 13 |

Figure 6: Top Reasons for Parents to Choose a Course for Their children

Interviewees in the second phase also shared similar sentiments and thinking processes behind their choice of certain Edu-KOL or e-learning platform:

“Lorena (the English Edu-KOL) is amazing on teaching kids English songs and story telling. She has the highest online review rating in the App, and also have amazing content even myself sometimes enjoyed it when I overheard from my kids’ iPad.” (01, TAFE, officer in a state-own company)

“I want my girl to study well in English, even though I work in Tech, I think English is important. Plus the instructor is well-known for teaching the best students and enable them study overseas, which I am planning to do so for my kids in the future. (09, PhD, Tech researcher)

VII. CONCLUSION AND FUTURE RESEARCH

This paper has examined how Edu-KOLs have been perceived to influence parents’ consideration and motivation for children’s online learning journey. By conducting in-depth data analysis from the valid survey responses via the PLS-SEM model, we have verified the six predefined hypotheses as to whether Edu-KOLs positively correlate with a perceived learning

outcome, new customer retention and purchase decision. The key findings of this study are:

- The e-learning platforms have an important influence on Edu-KOL.
- It is recommended to foster a strong learners' engagement with Edu-KOL to improve their level of learning satisfaction.
- Both the perceived outcome and the actual learning outcome can positively influence the satisfaction with Edu-KOL.
- Having Edu-KOL for a course can have a positive influence on the future learners' decision on taking more courses from the Edu-KOL and spread the word to friends and family circles as a word-of-mouth recommendation.

It is a foreseeable future that learning technology and platforms should seriously consider Edu-KOLs' role in motivating and facilitating learners' journey with the influence on engagement, perceived learning outcomes and satisfaction.

Given that this paper is focused on parents, whose children are undertaking or have undertaken online learning, a future survey of adult learners is proposed to collect relevant qualitative and quantitative data to investigate the hypotheses of this research further and set out to explore the adult learners' direct attitude and perception towards Edu-KOLs. That will be very vital for us to understand the new educational technology market for lifelong learning. We also urge future studies to investigate the following areas (but are not limited to) to understand a variety of different aspects:

- Social influence. Why people are attracted to particular courses by Edu-KOLs.
- Education parity. How Edu-KOLs help to improve education parity with the benefit of increasingly accessible internet.
- Career prospects. What is the future outlook for the younger generation when considering becoming a digital worker, in particular, a Edu-KOL.

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