Journal of Statistics Applications & Probability
An International Journal

http://dx.doi.org/10.18576/jsap/120318

Post-COVID Education: Factors That Attribute to Effective Online Training

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Received: 25 Feb. 2023, Revised: 4 Mar. 2023, Accepted: 15 Mar. 2023.
Published online: 1 Sep. 2023.

Abstract: The purpose of the current study was to investigate the contributing factors to trainees' satisfaction of online training in post COVID19 era in Saudi Arabia. The study followed the quantitative research method, and the tool of the study was a questionnaire prepared for the purpose of this study, and total of 1936 participants took part in this study. The data of this study was analyzed by using different statistical methods such as Cronbach's alpha test, means, frequencies, percentages, and t-test. The result showed that there are significant differences between online and face-to-face training on overall satisfaction favoring the online training and favoring females' trainers. Generally, the result revealed that the effect of interaction between participants in online training was positive on the outcomes. Perhaps, the results of this study will be an important addition to develop the planning of the online learning process and aiding in the formulation of future educational policies.

Keywords: Post Covid-19, Online Training, Face-to-Face Training, Trainers' Satisfaction, Saudi Arabia.

1 Introduction

The novel COVID-19 pandemic wreaked havoc on people's social and economic lives. In the aftermath of the pandemic, humans have had to reconsider how they socialize and interact with one another. The profound effects of the pandemic are being especially felt in the education sector, which seems to be gradually transitioning model to new models that respond to current social needs through the use of technology and the application of modern pedagogical approaches [3]. It is worth noting that the student experience in traditional face-to-face classes considerably differs from that in online classes. To begin with, the patterns of trainee-trainer engagements seem to differ between the two. Secondly, as noted by Bedaiw et al., (2021), since the beginning of the transition from traditional face-to-face teaching to online teaching, educators have had to do a lot more work. For instance, besides learning how to use online teaching software, they have had to move teaching materials and content online. Similarly, students have had to face individual, technological, institutional, and domestic impediments as they tried to adapt to the abrupt and unplanned shift to online learning [3]. Unlike other transitions, the one caused by the COVID-19 pandemic was not planned or voluntary. Furthermore, it was imposed on some audiences that consider such a method is not completely appropriate, such as pupils [9]. Considering these massive disruptions to the education sector during the COVID-19 era, this paper sought to investigate the contributing factors to trainees' satisfaction with online training comparing of face-to-face training.

Purpose of Study

The COVID-19 outbreak prompted the widespread use of distance learning, which was mainly enforced using digital technologies. Other than due to the COVID-19 outbreak, distance learning seems to be gaining ground against classic face-to-face teaching due to recent advancements in IT, cost considerations, and other social factors. Usually, participant satisfaction is a crucial KPI for measuring the effectiveness of a training program. According to Biles et al., (2022), expectations are crucial when assessing student satisfaction. Gopal et al., (2021) note that when the mode of instruction meets the expectations of students, it leads to higher satisfaction levels. For this reason, the current study sought to look into the factors that influence trainee satisfaction in online training. To achieve its objective, the research focused on determining the impact of diversified factors on trainee satisfaction and highlighting the differences in satisfaction between face-to-face trainees and online trainees. The main motive for continuing such a practice (Online learning) is that COVID-19 has changed people's lives by making many of their practices today related to the Fourth Industrial Revolution and using of modern and different technologies for communication. The important goal now is how to make the process of communication and participation more effective and find appropriate solutions to address some of the shortcomings associated with online learning. After, perhaps the results of this study will be among the important additions in the development of planning the online learning process and aiding in the formulation of future educational policies.

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Study questions

•What are the essential factors that contribute to trainees' satisfaction of online training?

•What are the differences between face-to-face and online training in terms of overall satisfaction, gender satisfaction, and number of attendees?

2 Literature Review

The COVID-19 pandemic has had a major impact on the way people learn and develop. Most educational institutions, businesses, and organizations worldwide have been forced to close their physical locations and transition to online learning. The transformation has seen a massive surge in online training and e-learning solutions as an alternative to traditional face-to-face instruction. Online training has allowed people to continue their studies and professional development from the safety and comfort of their homes without risking their health and that of others. Online training has been especially beneficial for those with health issues or vulnerable family members that require extra protection. Online training has also allowed organizations to continue operations without disruption. Businesses have been able to onboard new employees, provide training to existing staff, and update their human resources on new regulations and changes to their industry. This shift to online learning has allowed organizations to maintain continuity and remain productive during times of uncertainty. The widespread use of online training during the COVID-19 era is likely to continue even after the pandemic ends. Organizations have experienced the benefits of online learning because it can reach a large number of audience and it will continue to use it as an effective training solution. During the following paragraph, some literature related to the subject of the study will be reviewed.

Face-to-face learning is training that is provided in person and may take place in a group or one-on-one setting. Usually, participants, instructors, and facilitators of such training sessions all gather at the same location and time for the sessions. Unlike online trainings, this mode of training is traditional and hardly requires any communication medium [20]. Although online training has become the preferred method of learning in this digital age, face-to-face training still has its positives. First, the face-to-face mode of training promotes collaborative learning and allows trainees to learn not only from the instructor but also from each other [30] Second, the mode of training helps the trainee build their social skills [23]. According to Yu and Yuizonno (2021), it also promotes greater personal involvement, which usually results in a more interactive, individualized, and comprehensive learning experience. Face-to-face training sessions are also easier to modify and can be tailored to the needs of the learners in the session [26]. According to Nandigam et al., (2014), the mode of training also allows trainers to provide individualized attention to each participant. Face-to-face training sessions also allow trainees to learn from the experiences of other participants by providing opportunities for networking [11]. Overall, face-to-face training has a human element that online training cannot recreate.

Online learning provides a comfortable learning environment that differs significantly from traditional face-to-face learning. Kemp and Grieve (2014) note that this model of learning encourages students to be responsible for their own acquisition of knowledge. According to Kemp and Grieve (2014), unlike the traditional teacher-centered model, the online learning model does not involve lecturers transmitting knowledge with little only input from those students. Kemp and Grieve (2014) also point out that, in the online teaching model, the role of the lecturer is to facilitate or manage the students' learning rather than simply transmitting the information. Similar observations were made by Sit et al. (2005), where it was noted that students perceive online learning as promoting higher individual accountability. Furthermore, Gilbert (2015) also concurs with Kemp and Grieve (2014), as well as, Sit et al. (2005), when it was established that in online learning, there is no face-to-face help from instructors. The prevailing discussion, therefore, presents online training as an environment or avenue characterized by student-centered learning. Accordingly, the internet becomes a resource and a delivery tool that shifts away conventional learning environment to an on-demand practice [28]. The development supports Hattie's (1999) 'visible learning' approach. Based on the 'visible learning' model, learners ought to know what to study, how to learn it, and how to appraise progress [29]. Distance learning and technology, among other factors, are therefore considered enablers of the model that influences learning outcomes.

Moreover, online training facilitates autonomous learning among students. As part of independent learning, they are able to develop skills and confidence in finding solutions to challenging tasks [2] [21]. Using study guides, online forums, and learning materials, students can independently seek answers. Consequently, learners are repeatedly exposed to materials unlike in a teacher-centered approach. The observation is particularly spearheaded by the internet resource as part of digital learning. The approach provides high flexibility coupled with comfort in accessing the platform [1] [27]. Reading resources are easily accessible via mobile apps and web-based and it offers learners ownership of the process. Consequently, online learning is more convenient than face-to-face learning and offers opportunities for students to thrive.

Students' experiences in online classes differ from those in traditional face-to-face classes. According to Kemp and Grieve (2014), students who take online classes feel more obligated to be self-directed and feel disconnected from their peers and

lecturers. Furthermore, it makes them believe they are less aided by their lecturers than their lecturers think [21]. Hattie's (2009) in his research indicated that distance education among the least contributing factors to students' achievement (d=.09). Both Aldosari et al. (2022) and Rahmawati and Sujono (2021) are in agreement partly with Kemp and Grieve's (2014) social isolation drawbacks encountered in online learning. Accordingly, eLearning does not have the ability to channel social values such as soft skills, societal social norms, empathy development, and emotional bond between students and teachers. Establishing a social presence is common in face-face learning, unlike digital learning. In spite of the above, studies show that it is possible for learners to represent themselves emotionally and socially where online learning embeds asynchronous features such as text or video-tagged comments [4]. Moreover, Sit et al. (2005) also, observed that eLearning hinders human interaction, which is considered a critical element of peer support and development for group discussion. The above-discussed limitations are however overcome in conventional face-face learning. Nonetheless, it does not outweigh the benefits that are present in digital learning.

Another challenge encountered in online training is unreliable internet and technical issues. Kemp and Grieve (2014) note that online study has technical requirements that can daunt students, especially those that lack technical assistance or expertise. Similarly, Gilbert (2015) observed that unstable internet was considered one of the greatest shortcomings of eLearning. Student respondents observed that it is common to experience network downtime at home compared to school. The above implies that the learners have to seek alternatives including attending public libraries. Common observations on the technical difficulties were also established in Agarwal and Kaushik (2020) and Rahmawati and Sujono's (2021) studies. Nonetheless, Agarwal and Kaushik (2020) also observed that limits on sessions, the number of users, and technical faults during online learning were considered major drawbacks. Besides, Rahmawati and Sujono (2021) noted that technical problems are encountered in online learning in terms of teacher and student readiness and technological infrastructure.

According to Cho and Kim (2021), following the transition from traditional to online classes, students experienced various difficulties, including a lack of communication with instructors, maladaptation to online learning, ineffective time management, and decreased concentration. Likewise, Hettiarachchi et al. (2021) note that online learning during the pandemic was full of plenty of challenges that include limited collaboration opportunities, insufficient IT literacy, and software and hardware issues. This paper sought to determine the impact of some factors on trainee satisfaction and highlighting the differences in satisfaction between face-to-face trainees and online trainees.

3 Methodology

The purpose of the current study was to investigate the contributing factors to trainees' satisfaction of online training in post COVID19 era. It also aimed to determine the differences between face to face and online in overall satisfaction, gender satisfactions, and number of registered attendees. For the first question, overall satisfaction was determined as the criterion variable while items on the evaluation survey which evaluate participants' experience in training sessions were specified as predicting variables. For the second question, a series of t tests for means differences were employed to all analyses. The data was collected over two years' period targeting several training sessions in eastern province's institute in Saudi Arabia. Some sessions were delivered to face while others were deployed online session after the pandemic COVID19 had hit the world and lockdown was implemented.

Total of 1936 trainers participated in this study; they joined 116 training sessions (202 participants attended face to face training, 1734 participants joined online training). The training sessions either delivered face-to-face (n1= 40) or using an online (n2= 76) platform specifically ZOOM. The participants were Saudi and non-Saudi including students, employees, and faculty members, from a higher education academic institute. The participants' statuses were as follow: Students (33.9%), employees (35.2%), and faculty members (30.9%). The majority of participants were females (83.6%) due to the demographic distribution of female in that institute.

Measurements & Procedure

Evaluation scale. A 26-item survey was developed and validated by previous studies [24] [25]. The 26 items are shown in Appendix 1. The main purpose of the evaluation scale was to provide a continuous feedback to improve the quality of learning experience. The survey items focused on assessing four dimensions: (1) C: objectives and content of training (7 items), (2) T: trainer and delivery (11 items), (3) L: training logistics and supporting facilities (6 items), and (4) OS: Overall satisfaction (2 items). C dimension subscale corresponds to what extent training activities were responsive what is being delivered to audience. T dimension subscale is related to how training sessions were delivered to audience. The L dimension is related to trainings' context including logistics and supporting facilities. For the overall satisfaction (OS), two items were developed that assessed the extent of the overall satisfaction level and chances of referring colleagues to similar event, though the composite score of the two items makes the overall satisfaction of training. OS items were on a 10-point like-type scale using stars rating and they were highly correlated ($r=.87$, $p<.0001$) indicating that they are measuring the similar concept. The reliability estimates for each subscale, as indicated by Cronbach's Alpha coefficient, were as follows:

C subscale: objectives and content of training (α=.95), T subscale: trainer and delivery (α=.96), L subscale: logistics and supporting facilities (α=.86), and OS subscale: the overall items(α=.93).

The data were collected over four semesters –from Fall 2019 to Fall 2020. During this period, 117 online training sessions were delivered by various trainers in various modes of training: Lectures, workshops, innovation sessions, problem solving sessions, and discussion forums. Some training sessions were conducted as short workshops 2-3 hours, while others were for a whole day up to 8 hours. Some training sessions were delivered face to face (34.5%), and others were online (65.5%). After each training session, participating received an electronic version of same evaluation survey via email and requesting them voluntarily to provide feedback on their experience of the training session they attended. The email was sent to participants within a week after the training session. The response rate was around 20%.

Data analysis. Since the authors intended to investigate (a) the differential contribution of items on the survey to overall satisfaction in the online training sessions, and (a) the difference between face-to-face and online training on overall satisfaction, several statistical analyses were carried out. In the first analysis set, only online training sessions were selected (n=1734 cases), then a stepwise multiple linear regression model was used to predict the overall satisfaction. In the second, a series of t tests were used to assess the difference in overall satisfaction, gender satisfaction, and number of registered attendees between face to face and online training. In all analyses, alpha was hold at .05 to control for type I error, the power was specified at (1-β) = .80 to control for type II error.

4 Results and Discussion

Factors predict overall satisfaction of online training

H0: β=0, H1: β≠0

To answer the first question which pertaining the essential factors that predict overall satisfaction of online training in post COVID19 era. The authors investigated the predictability of 24-items on the evaluation survey in three dimensions: C, T, and L to the overall satisfaction OS of online training. In other words, the authors attempted to answer the question of what are the essential factors (items in C, T, and L dimensions) that predict the overall satisfaction of online training as perceived by attendees. Thus, authors used a stepwise multiple linear regression model for continuous variables –scores on individual items of the three dimensions used as independent variables, and scores of the overall satisfaction items OS as a dependent variable. Table 1 showed the significant items that contribute to the overall satisfaction. The authors tested the null hypothesis that the slop of the regression line is equal zero.

Table 1: *Multiple Regression Analysis on Constructs' Items of PDP (n=1734)*

	Items	*β*	*F*	*P*	*r*	r_p	r_{pt}
T11	The effect of interaction between participants was positive on the outcomes	0.504	27.871	0.000	0.674	0.557	0.437
C4	The concepts presented were clear and relevant to me.	0.188	5.684	0.000	0.542	0.136	0.089
T3	Trainer accepted and respected participants' opinions.	-0.204	-6.259	0.000	0.292	-0.149	-0.098
C2	The event/program agenda/topics met my expectations and needs.	0.167	5.767	0.000	0.541	0.138	0.090
L2	The announcement was informative and clear.	0.167	6.549	0.000	0.396	0.156	0.103
T4	Trainer delivered information effectively.	0.189	5.176	0.000	0.469	0.124	0.081
T2	Trainer was well-prepared and organized to deliver the event.	-0.111	-3.221	0.001	0.375	-0.077	-0.051
L3	The venue (Lecture room, virtual room i.e. ZOOM) was suitable for the event/program.	-0.07	-2.83	0.005	0.291	-0.06	-0.04

		1	6			8	4
L1	The announcement about the event/program was timely.	-0.063	-2.316	0.021	0.321	-0.056	-0.036
C5	There is a strong relationship between the program topics and my practical reality.	0.064	2.086	0.037	0.491	0.050	0.033

C, T, L: items related to three dimensions: Content & objectives, Trainer, Logistics & supporting facilities.

The result showed that around 57% of the overall satisfaction of online training was predicted by the regression model [$F(10, 1723)=234.022$, $p<.0001$]. Ten predicting items altogether explained around 57% of the total variance in the overall satisfaction (See Table1). The stepwise multiple regression model shows that R2 is significant, [R2Adjusted=.57 at $p<.037$]. The model showed ten items that were significant predictors for the overall satisfaction of online training. The most and highest contributing item though was T11: "the effect of interaction between participants was positive on the outcomes." The results of the partial correlation among the items showed that 44% of the variance was attributed solely to this item. This item showed that online training matters greatly when interaction between participants was allowed and encouraged by trainers/facilitators. The ten significant factors were in following order (Table 2): (T11, C4, T3, C2, L2, T4, T2, L3, L1, C5) which contributed to the model while the rest were not significant, and they were excluded from the model. The partial correlation for these items ranged from .44 to .03.

Based on the study result, the interaction between participants was a significant factor in determining users' satisfaction in training sessions. For that reason, the online training should include interactive elements such as quizzes and activities to keep learners engaged and interested [30]. In addition to that, these activities should be designed to test the understanding of the subject matter while also providing a fun and engaging learning experience [12]. Also, interactive elements should also be tailored to the individual learner's skill level to enable them to progress at their own pace.

The nature and quality of concepts presented in a training session may also influence participants' satisfaction. Wherefore, quality content should be relevant, up-to-date, and engaging. In addition to that, it should help learners understand the subject matter and give them the tools they need to succeed [11] Quality content should also provide learners with an enjoyable learning experience. The content should be organized in a logical and easy-to-understand way, and it should include interactive elements such as quizzes and activities to keep learners engaged and interested [12]. Quality content should also be accessible to all learners, regardless of their physical location or device.

The study results showed that the training events or program should also meet participants' expectations. For online training, the session should be flexible and accessible with readily available technical support. Technical support is an important factor in determining satisfaction levels in online training. Technical support should always be available to learners if they encounter challenges [12].Technical support staff should be knowledgeable and able to assist quickly and efficiently. Having a dedicated technical support team can help ensure that learners can get the help they need promptly and that their needs are met [21].

Flexibility is the other essential factor in determining satisfaction levels in online training based on the study results. The online training should be flexible and allow learners to learn at a reasonable pace and schedule. Moreover, online training should also allow learners to pause, rewind, and review content [5]. Flexible online training can ensure learners have an enjoyable learning experience and meet their expectations. For that reason, the online training should include additional support materials such as videos, tutorials, and references to help learners better understand the content. Also, these materials should be easy to find and use and tailored to the learner's needs [5]. Support materials can help learners better understand the subject matter and give them the tools they need to succeed.

Finally, the study discovered that the accessibility is a critical factor in determining satisfaction levels in online training. Thus, the online training should be accessible to all learners, regardless of their physical location or device. Accessibility also means that learners should be able to access online training on any device, including desktops, laptops, tablets, and smartphones [5]. Accessibility can help ensure that all learners can access the training and that their expectations are met [11].

The Differences between Online and Face-to-Face Training

$H_0: \mu_1 = \mu_2$, $H_1: \mu_1 \neq \mu_2$

To answer the second question, pertaining the differences in overall satisfactions between face-to-face and online training in terms, overall satisfaction for male and female, and number of registered audience and attendees in both formats. A series of t-tests were performed between two types of trainings: face to face and online (independent variable) and the

following variables were dependent variables: (a) overall scores of satisfactions, (b) male and females' satisfactions, and (c) number of registered audience and attendees. A nondirectional null hypothesis was formulated stating that there is no difference in trainers' satisfaction means between the two groups.

The t-tests revealed as shown in (Table 2) significant differences between online and face-to-face training on overall satisfaction favoring the online training on all set of variables. For instance, significant difference was found in overall satisfaction between online and face-to-face training favoring online (Mdiff= 1.47, t1934=6.27, p<.0001). Also, a significant difference was found between overall satisfaction of training favoring females (Mdiff= 1.58, t1616=6.09, p<.0001) but not male (Mdiff= .90, t316=1.632, p=.104). The effect size of both overall satisfaction and female satisfaction was in the medium level as indicated by Cohen's d. Also a significant difference was found in numbers of registered audience of events favoring online training sessions (Mdiff= 83.21, t114=3.95, p<.0001). The result showed over around 65% increase in interested audience on online training versus face to face. Finally, a significant difference was found in numbers of attendees favoring the online training sessions (Mdiff= 44.15, t114=3.48, p<.001). This result also demonstrated over 70% increase in attendance rate of online versus face to face. The effect size of both registered and attended audience was at the higher level as indicated by Cohen's d.

Table 2: *Descriptive data of differences, t-tests, p values, & Cohen's d*

Dimension	Face to Face			Online		*M* diff	*t*	*p*	*Cohen's d*
	N	*M*	*SD*	*M*	*SD*				
Overall Satisfaction	1936	16.45	4.11	17.92	3.03	1.47	6.27	.000	.41
Male	318	17.13	2.87	18.06	2.85	.90	1.63	.104	-
Female	1618	16.32	4.30	17.90	3.04	1.58	6.09	.000	.42
Registration	117	130.90	101.62	216.10	118.43	83.21	3.77	.000	.75
Attendance	117	62.90	55.60	107.05	79.58	44.15	3.48	.001	.64

Increased interest in online training

The research has shown that more people favor online over face-to-face training. Online training provides flexibility and opportunity for more people to learn. The face-to-face training may be limited by physical space and other geographical barriers, which hinder massive attendance. In online training, people can readily join the session and learn, irrespective of their physical location [22]. Although the online training used in this study was live streaming, the convenience of online training is one of its biggest advantages. Learners can access training material from any device, location, or time. The convenience of online training enables learners to stay on top of their training and complete it quickly and efficiently. Additionally, online training allows for much more individualized learning, as learners can take their own time to complete the course and can go back and review any topics they may have missed or not fully understood [13] Therefore, they learn more effectively and efficiently, as they are not limited by time constraints of a physical learning session.

Online training is also much more cost effective than classic face-to-face training. As there is no need for travel or venue costs, organizations can save on expenses such as travel, accommodation, and refreshments [13]. Further, online training materials are often cheaper than physical ones, making training costs much lower. Moreover, online training is often more flexible than traditional sessions. Thus, learners can complete their training at their own pace and in their own time, allowing them to fit it into their schedule. Probably, the online training can be especially beneficial for those with a busy lifestyle who may not have the time to attend a physical training session [13].

Higher female satisfaction with online training

The study result showed that there is a significant difference between overall satisfactions of online training favoring females. This result agreed with the conclusion of the study of González-Gómez et al (2012) which confirmed that female trainers are more satisfied than male students with the e-learning subjects. Furthermore, it found that female students allocate more importance to the teacher while using online learning, as well as they are able to contact the teacher in various ways.

Several reasons explain females' predisposition to online training. First, females may be more comfortable with technology, which is required for online training. Arguably, females have higher technology literacy level, which is significant since online training involves navigating a multimedia environment, such as web pages and videos [8].

Females may be more likely to complete the training at all costs. They tend to be better at multitasking and pay more

attention to detail, which could help them stay focused on the training and understand the material more thoroughly. In addition, females may have a greater intrinsic motivation to complete the training [13]. Women tend to be more goal-oriented and have higher expectations of success, which could lead to a higher sense of satisfaction when they complete the training.

According to the Saudi culture, Saudi women may prefer online training due to the many responsibilities entrusted to them such as raising children and doing housework. In addition to that, there are some restrictions probably related to transportation and vast distances. Moreover, prior preparations for attending face-to-face training may be a bit stressful, such as wearing appropriate costumes, putting cosmetics, and delegating the responsibility of caring for children to another person.

Conclusion

In conclusion, online training is becoming an increasingly popular option for many organizations and individuals due to its convenience, cost savings, and flexibility compared to the traditional face-to-face option. It is more convenient, allowing learners to access their materials from any device and location at any time. It is also more cost-effective, as there is no need for travel or venue costs. Finally, it is often more flexible than traditional training, as it allows learners to complete their training from the comfort of their homes. These advantages prompt participants to favor online over face-to-face training.

Study Limitations

This study has four potential limitations. First, only 57% of the total variance in sample satisfaction was explained by ten items used, while 43 % of satisfaction has not been explained. The unexplained variance may be due to other items absent from the current assessment tool, including, but not limited to, internal and external dimensions including participants' ability, demographic, context, and other forms of education. Second, the education policy in Saudi Arabia practices sex-based segregation; thus, some dimensions in the current study may be influenced by other external factors, such as the quality of teaching of instructors, program settings, and logistics facilities. Third, data were collected voluntarily from diverse heterogenous groups including instructors, employees, and students in university training session. Therefore, the sample might not sufficiently represent the whole population. Thus, the results cannot be generalized to the population. Fourth, the study was based on accessible data of program evaluation pre and during COVID19 not specifically designed to test online training versus face to face. Only one form of online training was included in this study which was live streaming of training sessions.

Acknowledgment

We would like to thank King Abdulaziz & his Companions Foundation for Giftedness & Creativity [Mawhiba] for sponsoring some online training sessions for gifted and talented students who were identified and nurtured by Vice President Office of Innovation & Entrepreneurship at Imam Abdulrahman Bin Faisal University (IAU).

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