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Exploring the Effect of Artificial Intelligence in Enhancing Students' Preparedness for Learning

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Abstract: The integration of AI in education has the potential to revolutionize the way students learn and tutors teach. This study was conducted to evaluate the association between students' interaction with AI and some socio-economic characteristics of the respondents, examine students' benefits of AI to students learning in the study area, and evaluate the perception of students about the use of AI. The study is a survey design based on quantitative approaches. The study population comprised university students from various departments and backgrounds. The study's findings revealed that the majority of the respondents are females, the majority are within the age range of 18-24 years. Most students are from public universities, and over 80% are bachelor's students. The result indicates that students' interaction with AI is independent of the gender of the students, type of institution, and course of study. Similarly, the perception of students about AI use in education was moderate, and the respondents understood that innovative technologies (AI) would enable efficient user satisfaction. The study shows that lack of human interaction, accuracy and reliability, and data privacy are the major risk factors for the usage of AI among students; the result also shows that AI enhances accessibility to information and gives personalized support and guidance.

Keywords: Artificial intelligence, Educational technology, Students' preparedness,

Background

Artificial Intelligence, popularly known as (AI) has transformed virtually all sectors of life, and the educational sector is at the forefront in this regard. Integrating AI into education has transformed how students learn, interact, and engage with educational content (UNESCO, 2019). AI involves a collection of technologies that enable machines to act with a very high level of Intelligence, similar to humans. Verma (2018) defined Artificial Intelligence (AI) as the ability of computers to accomplish assignments and work that are usually connected with human Intelligence, including comprehension, decision-making, problem-solving, and portraying creativity. Artificial Intelligence studies intelligent machines and software that can reason, learn, gather knowledge, communicate, manipulate, and perceive objects (Rai et al., 2019). The increasing availability of Artificial Intelligence, related tools, and technologies has made it possible to use AI in various domains of life. Education is among these various domains of life that witnessed the increased use of AI and tools. However, its scope and related challenges still need to be clarified. For instance, Knewton, (2019) admitted that AI helps students to personalize

their learning. According to him, AI-powered adaptive learning systems adjust the difficulty level of course materials based on individual student's performance and abilities.

Similarly (VanLehn, 2011) opined that AI-based intelligent tutoring systems provide one-on-one support to students, offering real-time feedback, guidance, and assessment. In addition, Baker (2016) outlined that AI-powered automated grading systems help teachers save time and reduce grading errors, allowing them to focus on more critical aspects of teaching. Moreover, UNESCO (2019) showcased that AI-powered tools, such as speech-to-text software and virtual learning environments, enhance accessibility for students with disabilities. These benefits continue because AI has a great influence on academic lines. Plagiarism checkers, such as Turnitin, Quietest, and Grammarly, utilize AI algorithms to detect and prevent plagiarism in academic writing (Pawelczak, 2018; Shah et al., 2021; Bansal & Kumar, 2022).

In contrast, some scholars (Selelo, 2024; Ahmad et al., 2023; Baron, 2023; Browman & Miele, 2019) claimed that the increased use of AI has made students lazy on their academics, which may significantly hinder students critical thinking, getting easy asses to vital security information (cyber security risk) that will increase the level of crime rate. Also, using AI may increase the level of examination malpractice practice for the students; this is because of the availability of its tools on WhatsApp (Meta AI), Browsers (ChatGPT), Instagram, and Twitter, making it simple and accessible in the examination halls.

With robust and available information on hand, different literature provided an overview of these AI and related tools. Muhammad, Farha Deebea, and Mudasir (2024) conducted a review on the use of AI in the education field, its related challenges, and future opportunities. This review shows that AI in education is changing the landscape of education in the domains of course planning, delivery of courses, content creation and distribution. The application of AI in education delivery is customized, and learning content is more flexible, along with the opportunity to interact with the system. His review concluded that AI is revolutionizing the education field and bringing significant changes along with some challenges that must be adequately addressed before real gains can be made. Milicević *et al.* (2024) aimed to discuss two important aspects of AI. First, it was to discuss the application of contemporary AI tools and technologies in education. Secondly, some benefits and drawbacks concerning AI implementations in education are supported by experiences from industry leaders and specific satisfaction measures among existing users. These findings suggest that AI implementation in education aims to an approach that is finely balanced and includes technological innovation combined with human-based pedagogy.

As artificial Intelligence became more dominant in education but many studies were conducted on the use of IA in teaching and learning, there are still some areas that still need to be well investigated. Many studies (Ahmed et al., 2022; Akhtar, 2022; Truong et al., 2023; Qadri et al., 2024) were conducted to investigate the knowledge attitude and practice of students towards the use of AI. However, only some studies were conducted to explore the nexus between students' interaction with AI and some socio-economic variables. This study, therefore, intended to capture the following research objectives.

1. Evaluate the association between students' interaction with AI and some socio-economic characteristics of the respondents
2. Examine the benefits of AI to students learning in the study area
3. To evaluate the perception of students about the use of AI

Methodology

Study Area

The study was conducted across various universities in the United Arab Emirates (UAE), which are renowned for their advanced infrastructure and diverse student body. These institutions offer a vibrant academic environment, attracting students from multiple nationalities, with the majority being UAE nationals. The universities' emphasis on technological innovation provided an ideal setting for studying the integration of artificial intelligence (AI) in education.

Study Design

This study employed a descriptive survey design utilizing a quantitative research methodology. The design was chosen to examine the socio-economic characteristics of students, their interaction with AI tools, and their perceptions of AI's role in enhancing learning preparedness.

Sampling Procedure

The target population included undergraduate and postgraduate students from various disciplines at UAE universities. A random sampling method was used to ensure unbiased representation of the student population across age groups, gender, and academic levels. A total of 303 students participated in the study, providing a statistically significant sample size.

The demographic profile of the respondents revealed that 74.9% were aged 18–23 years, 19.5% were aged 24–29, and 5.7% were 30 years or older. Female students constituted the majority (79.5%), while male students represented 20.5% of the sample. Most respondents (94.7%) were UAE nationals, with the remaining participants coming from countries such as Yemen, Pakistan, Oman, Saudi Arabia, Qatar, Sudan, Afghanistan, and Jordan.

Data Collection

A structured questionnaire, validated for reliability and clarity, was used to collect data. The questionnaire was divided into three sections:

1. **Demographic Information:** Capturing details such as age, gender, nationality, and academic background.
2. **Interaction with AI:** Measuring the frequency, nature, and context of students' engagement with AI tools.
3. **Perceptions of AI:** Evaluating students' views on the benefits and challenges of integrating AI into education.

The survey found that 55.8% of respondents reported interacting with AI in their studies, 25.1% had no interaction, and 19.1% were neutral. The frequency of AI interaction varied, with 38.6% using AI rarely, 28.4% weekly, 20.1% daily, and 12.9% monthly.

Data Analysis

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were employed to summarize demographic and AI interaction data. Inferential analyses, including chi-square and correlation tests, were conducted to explore relationships between socio-economic characteristics and students' use of AI. These analyses provided insights into the patterns and implications of AI usage in enhancing educational preparedness. The use of random sampling ensured that the findings were representative of the broader student population, offering robust and reliable conclusions about the role of AI in education within UAE universities.

Results and Discussion

Socioeconomic Characteristics of the Respondents

The result on the socio-economic characteristics of the respondents revealed that the majority (74.9%) of the respondents are within the age bracket of 18-23 years. Some 19.5% are within the age category of 24-29 years; those 30 years and above are only 5.7%. This result shows that the majority of the students are within the transformative age of adopting new skills and ideas. The result shows that the distribution of the respondents by gender is 20.5 and 79.5 for male and female, respectively. These results confirmed that women are now taking the lead in various spheres of life, including education. The result in Table 1 further shows that most (94.7%) students are from the

United Arab Emirates. The infinitesimal portion is mainly from (Yemen, Pakistan, UAR, Oman, Saudi Arabia, Qatar, Sudan, Oman, Afghanistan, and Jordan). The majority of the students are from public schools (76.95).

Similarly, most of the students interviewed are in their bachelor’s degree 84.2%. Table 1 also shows that 55.8% of the respondents interacted with AI in their studies, 25.1% had no interaction, and 19.1% were neutral. In terms of the frequency of interaction with AI, the result indicates that some 38.6% claimed that they interact with AI rarely, 28.4% weekly, 20.1% daily, while 12.9% on a Monthly basis.

Table 1. Socio-Economic Characteristics of the Respondents (N = 303)

Age	Frequency	Percentage
18-23	227	74.9
24-29	59	19.5
30 years and above	17	5.6
Gender		
male	62	20.5
Female	241	79.5
Country of the respondents		
UAE	287	94.7
Yemen	2	0.7
Pakistan	2	0.7
UAR	1	0.3
Oman	1	0.3
Qatar	1	0.3
Saudi	1	0.3
Sudan	4	1.3
Afghanistan	2	0.7
Jordan	2	0.7
Institution type		
Government	233	76.9
Private	70	23.1
Degree type		
Bachelors	255	84.2
Masters	26	8.6
Doctorial	14	4.6
Post-doc	8	2.6
Respondents’ interaction with AI tools		
Yes	169	55.8
No	76	25.1
Maybe	58	19.1
Frequency of interaction		
Monthly	39	12.9
Weekly	86	28.4
rarely	117	38.6
Daily	61	20.1
Total	303	100

Source: Authors’ computation

Association between Students Interaction with AI and Some Socio-Economic Variables

Table 2 presents the association between the students' interaction with AI tools and some socio-economic variables. The first result shows that the respondents' gender is independent of the student's interaction with AI tools in their studies. This could be interpreted to mean that the gender of the students is independent of their interaction with AI. Similarly, the results show that students' interaction with AI is not associated with the type of school attended (Public or private school). Lastly, the result also shows that students' interaction with AI is independent of the department of the students.

Table 2. Association between Students Interaction with AI and some socio-economic variables

Gender and Students interaction with AI	Value	DF	Significance
Pearson Chi-Square	2.212 ^a	2	.331
Likelihood ratio	2.134	2	.344
Linear by linear association	.017	1	.897
Type of institution and Interaction with AI			
Pearson Chi-Square	1.201 ^a	2	.548
Likelihood ratio	1.171	2	.557
Linear by linear association	.210	1	.646
Department of the students and interaction with AI			
Pearson Chi-Square	6.561 ^a	3	.766
Likelihood ratio	6.631	3	.760
Linear by linear association	.081	1	.776

Source: Authors' computation

Risk Factors to the Use of AI in Learning

Although AI is a good technological breakthrough that enhances learning, there are many concerns about its usage among students. Some of the important concerns in the literature are ethical issues, high cost of implementation, technology addiction, and inadequate preparedness of teachers. The result in Figure 1 outlined five risk factors connected to the use of AI among students. The first risk factor is lack of human interaction; from the result 9.57% of the respondents consider this factor as a serious risk factor to the use of AI in learning, 14.85% claimed that it is a moderate risk factor, 21.45% thought that it is somewhat a risk factor, 45.54% were neutral while 8.58% claimed that this is not a risk factor in AI usage. The result also indicates that there is an issue with the accuracy and reliability of the use of AI. In this regard, 10.23% consider this a serious challenge to use AI in education. Some respondents (19.80%) believe this is a moderate challenge. In addition, 18.15% showcased that accuracy and reliability are somewhat a risk factor, 44.22% are neutral, while the lowest percentage (8.58%) suggested that accuracy is entirely not a risk factor to the use of AI in students learning. Figure 3 also shows that 16.50% of the respondents see language and cultural barriers as a risk factor for using AI in learning. Meanwhile, 18.48% and 16.17% opined that language and cultural barriers are moderate and somewhat risk factors, respectively.

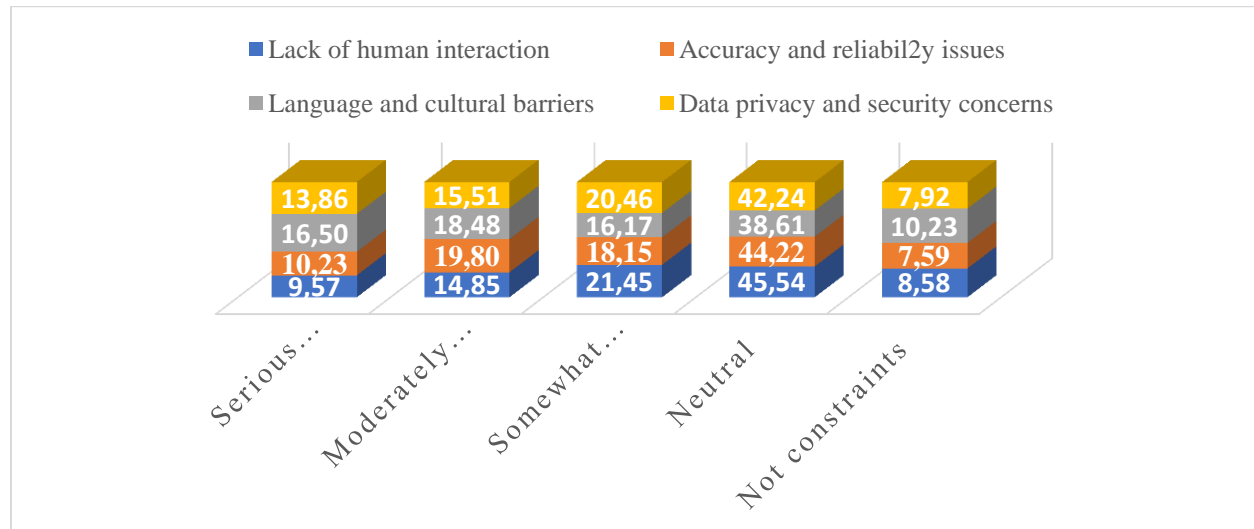


Figure 1. Risk Factors associated to the use of ai in learning

Benefits of Using Artificial Intelligent among Students

The result is presented in Fig 2, which shows the respondents' responses of five variables using a five-point Likert scale. The first statement is that using artificial Intelligence in learning "enhances accessibility to information." The result indicates that 40.92% of the respondents are neutral, 18.48% are of the opinion that it is moderately neutral, and 16.83% are for the somewhat beneficial and highly beneficial responses. Only 6.93% are of the opinion that AI is not beneficial in enhancing accessibility to information. The result in Fig. 2 also indicated that 21.12% of the respondents are of the opinion that AI moderately improved students' engagement, 17.82% suggested that AI somewhat improved students' engagement and 15.51% suggested that AI highly improved students' engagement. More than 50% of the respondents ascertained that AI benefits their learning (highly beneficial, moderately beneficial, and somewhat beneficial).

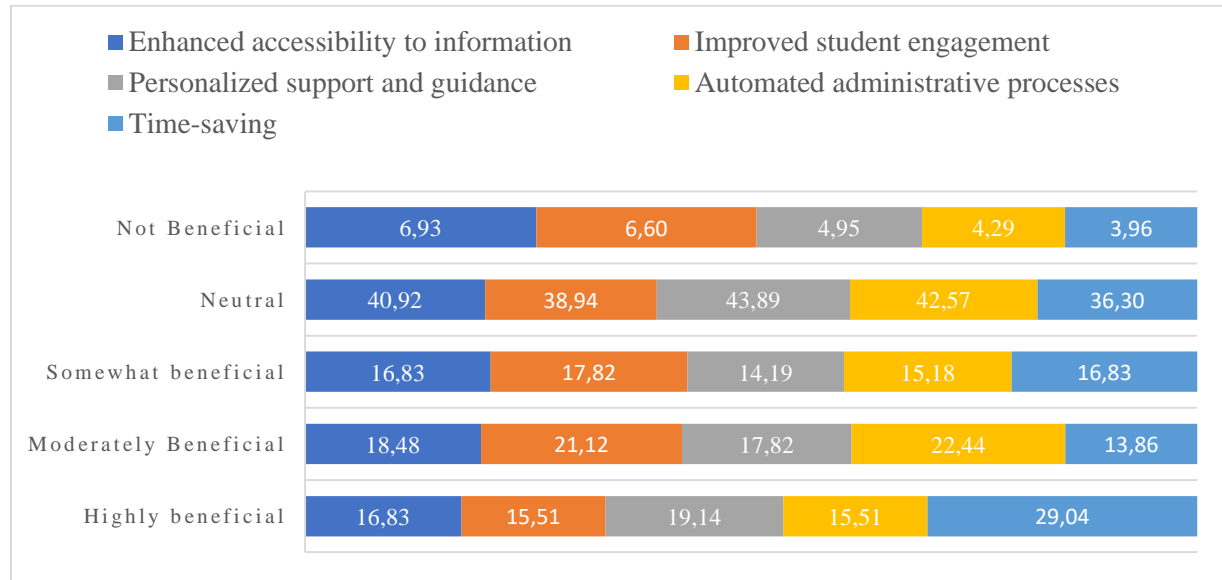


Figure 2. Benefits of using artificial intelligent among students

Perception of Students about the Usage of AI in Learning

The result in Table 3 revealed that the students in the study area positively perceive the use of AI in studies. The students are highly familiar with AI used in education, and they use AI for academic purposes. The students affirm that they benefit tremendously from AI applications in their studies. The students opined that AI enhances their learning experience and gives them instant feedback on their academic work. Additionally, the respondents opined that AI makes learning more engaging and interactive. Moreover, the respondents disagree with the claim that AI may reduce critical thinking skills or lead to a lack of data privacy.

Table 3. Perception of Students about the usage of ai in learning

Perceptions	SA	A	Neutral	D.A	S.D.A	Mean	SD
AI is an easily accessible digital tool	38.24	38.24	20.10	0.98	2.45	4.09	0.92
AI tools greatly assist me in academic writing	31.37	43.63	19.12	4.90	0.98	4.00	0.89
AI tools are effective in improving the quality of academic writing	34.80	41.67	16.67	3.43	3.43	4.01	0.98
AI tools encourage me to write and reduce my writing anxiety.	35.29	39.22	19.61	3.43	2.45	4.01	0.95
Using AI application boosts my confidence towards my writing.	36.27	34.31	18.14	5.39	5.88	3.90	1.13
AI applications help me in my writing skills and in organizing text	34.80	36.27	20.59	3.92	4.41	3.93	1.05
My vocabulary particularly the terms used in academic writing have improved.	32.84	36.27	23.04	3.43	4.41	3.90	1.04
AI tools help me improved my grammar skills	31.86	38.73	23.53	2.94	2.94	3.94	0.97
All AI tools are equally important	32.35	35.78	25.49	4.41	1.96	3.92	0.96
I can write efficiently and my writing gets better results when I use AI application	34.80	39.71	22.06	1.96	1.47	4.04	0.88

Decision Rule: individual Weighted mean > or = to overall weighed mean of 3.97 signifies agreement with the statement, otherwise disagree (D.A)

However, the result shows that the respondents affirmed that AI is a readily accessible digital tool, with a weighted mean of 4.09. From the result, the students also outlined that AI tools help them in academic writing and help them reduce anxiety (4.01). This finding aligns with Ngo's (2023) study on university students' perception of using ChatGPT in education. His findings showed that over half of the students expressed positive attitudes towards using chatbots in education. The respondents also ascertained that AI boosts their confidence (3.91) and improves their vocabulary (3.90). The finding also aligns with that of Magantran and Rahman (2023) in their study on students' perception of AI usage in tertiary institutions. The findings reveal a notable familiarity among students with AI tools and a significant proportion leveraging these technologies for academic improvement.

Conclusion

It is indisputable that AI has brought marvelous changes in teaching and learning, providing the impetus for students to leverage novel tools in carrying out a lot of quality research work. This study was conducted to evaluate the association between students' interaction with AI and some socio-economic characteristics of the respondents, examine students' benefits of AI to students learning in the study area, and evaluate the perception of students about the use of AI. The study is a survey design based on quantitative approaches. A total of 303 university students were used for the study. The data were analyzed using descriptive statistics, weighted mean average, and Chi-square analysis. The result shows that the majority (79.5%) of the respondents are female. The respondents are within the age bracket of 18-24 years. The distribution of the respondents by country shows that 94% of the respondents are from the United Arab Emirates. Similarly, most students are in their bachelor's degree 84.2%. More than 50% of the students have regular contact with AI tools. Most students are from public universities, and over 80% are bachelor's students. The result indicates that students' interaction with AI is independent of the students' gender, type of institution, and course of study. Similarly, the perception of students about AI use in education was moderate, and the respondents understood that innovative technologies (AI) would enable efficient user satisfaction. The study shows that lack of human interaction, accuracy and reliability, and data privacy are the major risk factors for using AI among students; the result also shows that AI enhances accessibility to information and gives personalized support and guidance.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS Journal belongs to the authors.

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References

- Ahmad, S. F., Han, H., Alam, M. M., Rehmat, M., Irshad, M., Arraño-Muñoz, M., & Ariza-Montes, A. (2023). Impact of artificial intelligence on human loss in decision making, laziness and safety in education. *Humanities and Social Sciences Communications*, *10*(1), 1-14.
- Ahmed, Z., Bhinder, K. K., Tariq, A., Tahir, M. J., Mehmood, Q., Tabassum, M. S., ... & Yousaf, Z. (2022). Knowledge, attitude, and practice of artificial intelligence among doctors and medical students in Pakistan: A cross-sectional online survey. *Annals of Medicine and Surgery*, *76*, 103493.

- Akhtar, H., Faheem, S., Qasim, R., Irfan, F., Tanwir, A., Hammad, H., & Hirani, S. (2022). Assessment of knowledge and perceptions of artificial intelligence among dental students of Karachi, Pakistan. A multi-center survey. *Pakistan Oral & Dental Journal*, 42(4), 193-199.
- Baker, F. (2016). Automated grading and feedback: A review of the literature. *Journal of Educational Data Mining*, 8(1), 1-24
- Bansal, R., & Kumar, S. (2022). A review on plagiarism. *World Journal of Pharmaceutical Research*, 11(9), 378-395.
- Baron, N. S. (2023). How ChatGPT robs students of motivation to write and think for themselves. *The conversation*. Gale Opposing Viewpoints Online Collection, Gale.
- Browman, A. S., & Miele, D. (2019). *Americans visualize low-ability students as lazy, unmotivated, and undeserving of support*. PsyArXiv. <https://psyarxiv.com/anq9e>
- Magantran, S., & Abd Rahman, N. S. M. B. (2023). Students' perception towards the usage of artificial intelligence in tertiary education. *Selangor Humaniora Review*, 7(2), 58-70.
- Milicević, V., Lazarova, L. K. & Pavlović, M. J. (2024). The application of artificial intelligence in education – the current state and trends. *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 12(2), 259-272. h
- Pawelczak, D. (2018, April). Benefits and drawbacks of source code plagiarism detection in engineering education. In *2018 IEEE Global Engineering Education Conference (EDUCON)* (pp. 1048-1056). IEEE.
- Qadri, H. M., Bashir, M., Khan, M., Amir, A., Khan, A. Y. Y., Safdar, Z., ... & Bashir, A. (2024). Knowledge, awareness and practice of artificial intelligence and types of realities among healthcare professionals: A nationwide survey from Pakistan. *Cureus*, 16(4).
- Selelo, M. E. (2024). The perpetuation of lazy thinking by exploiting writing artificial intelligence tools: perceptions from students in the University of Limpopo. *JEET, Journal of English Education and Technology*, 4(04), 350-363.
- Shah, J. N., Shah, J., Baral, G., Baral, R., & Shah, J. (2021). Types of plagiarism and how to avoid misconduct: Pros and cons of plagiarism detection tools in research writing and publication. *Nepal Journal of Obstetrics & Gynaecology*, 16(2).
- Tahir, M., Hassan, F. D., & Shagoo, M. R. (2024) Role of artificial intelligence in education: A conceptual review. *World Journal of Advanced Research and Reviews*, 2024, 22(01), 1469–1475.
- Truong, N. M., Vo, T. Q., Tran, H. T. B., & Nguyen, H. T. (2023). Healthcare students' knowledge, attitudes, and perspectives toward artificial intelligence in the southern Vietnam. *Heliyon*, 9(12).
- UNESCO. (2019). *Artificial Intelligence in Education*. <https://www.unesco.org/en/digital-education/artificial-intelligence>
- VanLehn, K. (2011). The relative effectiveness of human tutoring, intelligent tutoring systems, and other tutoring systems. *Educational Psychologist*, 46(4), 197-221.

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