

**The 6th International Conference on Economics and Social Sciences
Geopolitical Perspectives and Technological Challenges
for Sustainable Growth in the 21st Century
June 15-16, 2023
Bucharest University of Economic Studies, Romania**

**Students' Perceptions of the Changes Specific
to the VUCA World: Online and Traditional Teaching System**

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DOI: 10.24789788367405546-002

Abstract

The business environment in which organisations conduct their activities is constantly changing, so today there is an increasing focus on preparing students for a volatile, uncertain, complex, and ambiguous (VUCA) world. The epidemic caused by the SARS-CoV-2 virus was an extreme situation, specific to the VUCA world, in which both teachers and students had to develop new skills to be able to continue their activity, adapting almost every day to a new situation. In such contexts, characterised by challenging situations, it remains the responsibility of higher education institutions to prepare students to manage uncertain and insecure events so that they have the necessary skills and abilities to integrate into the labour market after graduation. Therefore, this article aims to present the preparedness of students for the VUCA environment, an environment marked by rapid change. In this sense, a quantitative research was carried out among students of the psychopedagogical module, second year, Teacher Training Department, Bucharest University of Economic Studies, investigating the main factors that determine the appearance of changes in teaching activities, the connection between teaching style and the way of adapting to unexpected situations, as well as the way of combining theoretical information with practical situations. The results obtained reveal that promoting a participatory teaching style during class time, where students are involved in the teaching-learning process, especially in working teams, helps them to accumulate new information more quickly, as they adapt more easily to unexpected events caused by various factors (schedule/programme changes, force majeure situations, etc.). Additionally, research indicates that the presence and active participation of students in courses and seminars has a significant influence on the ability to adapt to new contexts, allowing them to develop certain skills that will help them in their future professional activity.

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Keywords: VUCA, teaching, education, pandemic, COVID-19.

JEL Classification: A22, D81, I21.

1. Introduction

In a volatile, uncertain, complex, and ambiguous working environment (VUCA), there is increasing emphasis on how higher education institutions promote active learning among students. The OECD and UNESCO have highlighted the importance of preparing students for the VUCA world (Hadar et al., 2020), thus the role of universities is to develop the competences and skills needed by future employees, even in a turbulent and competitive world.

Although the concept of the "VUCA world" was originally used only to characterise post-Cold War US military strategies, it can also be used successfully for the contemporary context in which we all face many overlapping "difficult problems"(Van Berkel, Manickam, 2020; Stein, 2021). For a company to be successful, it must first and foremost be made up of employees who have the ability to understand and monitor changes in order to quickly support internal and external customers (Nowacka, Rzemieniak, 2022). Since orientation can be cultivated from an early age, educational institutions have a particularly important role to play (Canzittu, 2020), because the experiences they face have a significant impact on their future choices (Guichard, 2012). In a volatile, uncertain, complex and ambiguous environment (VUCA), educational institutions as well as training providers need to explore different pedagogical approaches in the delivery of courses (Juera, 2022). At the same time, the VUCA world can represent a great opportunity for both teachers and students, as it calls for innovative processes, so students can learn how to develop agile, efficient methods, and flexible strategies (Fernandes, Afonso, 2021). In conditions of volatility and complexity, information and knowledge accumulated in the past as well as rational behaviours prove to be ineffective, thus higher education institutions must focus on cultivating among its students multidisciplinary qualities, from critical thinking to the full development of an educated personality (Mielkov, et al., 2021).

The VUCA environment reflects a world of change, of innovation, where data frequently changes at high speed, so future employees – today's students – need to be prepared, from university, to manage and solve problems that may arise in their area of work quickly. Thus, this article aims to investigate how students perceive the educational changes they have faced (sudden transition from physical to online system and vice-versa), as well as the influence of teaching style in students' adaptation to the new context. Therefore, in the first part we will present information on the VUCA world and its connection with the educational environment and implicitly with higher education institutions, and in the next part we will detail and analyse the results obtained from the research conducted among students of the psycho-pedagogical module of the second year (Bachelor) of the Teacher Training Department, Bucharest University of Economic Studies.

2. Problem Statement

The VUCA world characterises a world of dilemmas, where organisations need to act quickly on changes coming from inside and outside to be effective. Each of the four components of the VUCA world describes specific challenges: volatility (unstable situations that change rapidly), uncertainty (lack of control over what will happen next), complexity (difficulty in understanding the interdependent, often chaotic relationships between the components of a system), ambiguity (approaching situations from multiple perspectives because the cause-effect relationship is not well defined) (Nowacka, Rzemieniak, 2022). It is not surprising, therefore, that thinking about the VUCA environment and understanding the situations people face today under conditions of volatility, uncertainty, complexity, and ambiguity is a great challenge for higher education, particularly for understanding and interpreting its own mission (Mielkov et al., 2021).

The coronavirus outbreak has also had an impact on the education sector, which has been badly affected but not brought to its knees due to the online education and internet revolution (Qadir, Al-Fuqaha, 2020). Many sociologists and political scientists have been of the opinion that at the end of this pandemic the world will not be the same, so higher education is no exception, and the ways and possibilities of online learning and the economic consequences for higher education institutions have been analysed (Dennis, 2020; Marinoni et al., 2020; Mielkov et al., 2021). Online courses, like physical courses, must provide relevant education even in an uncertain context, training students to learn from past experiences, analyse the present and navigate an uncertain future (Gous, 2019). Although universities face many uncertainties and chaotic situations, teachers must update and remodel the courses they are responsible for to make them as interesting and captivating as possible for students (Fernandes, Afonso, 2021).

Sensitive situations, specific to the VUCA environment, in addition to health issues such as the coronavirus pandemic, include many other challenges, which require special attention: social (water and food shortages, involuntary migration) ecological (extreme weather, climate change, loss of biodiversity), economic (unemployment, crisis), political (crises of state authority/legitimacy, inter-state conflicts) (Earth, 2020; Stein, 2021).

Therefore, Bauman (2011) suggested that the purpose of education is to "prepare for life", meaning to train learners to respond to global challenges and learn to perform in the VUCA world. In this sense, Wrigley and Straker (2017) consider that new learning approaches are needed to meet the need for adaptation required by the VUCA world in order to prepare future employees. In a VUCA society, labour market organisations expect employees to be capable, to respond to complexity, and to find quality solutions that act on continuous changes that may represent a threat to organisational activity (Hasgal, Ahituv, 2017; Canzittu, 2020). In this context, higher education institutions have a responsibility to teach learners valuable and equitable knowledge, instilling in them a lifelong desire to learn, including from the experiences of others, so that they can apply what they learn to their future careers and continuously improve the quality of their work (Puncreobutr, 2021).

3. Research Questions / Aims of the Research

During the coronavirus pandemic, students were faced with a series of constantly changing situations (the rapid transfer from physical to online learning) which led them to fundamentally change their learning to continue their studies. The teaching style also suffered significant changes, considering that for certain periods of time, in Romania, in the university environment, the teaching process was strictly online, and a series of support platforms were developed. Bucharest University of Economic Studies has its own moodle which it uses in communicating with students. Thus, the present research aims to reveal which are the main advantages/disadvantages of the online teaching style compared to the traditional one, as well as the students' understanding and adaptation to the new changes. In order to investigate how the students' presence in the courses influences their ability to adapt to the rapid changes coming from the external environment, a unifactorial anova was applied and the following hypotheses were studied:

H₀: Student attendance does not influence the perception of change.

H₁: Students' attendance significantly influences their perception of change, as they understand the importance of continuous training to manage change correctly.

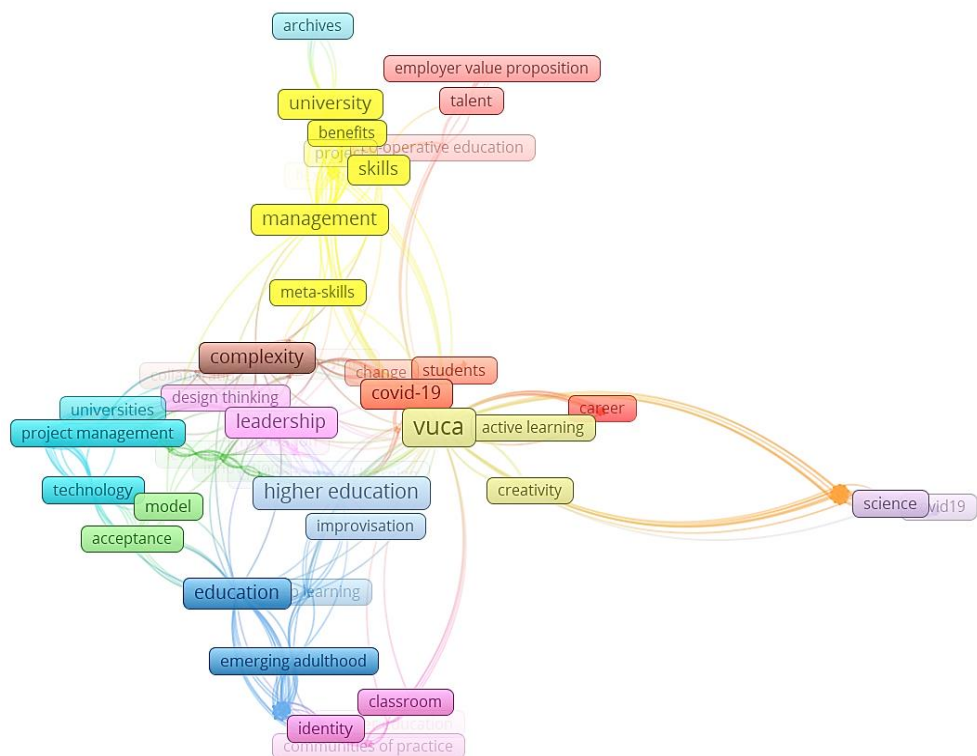
Depending on attendance, students were divided into three categories: low attendance (0-30 %), medium attendance (31-75 %), and high attendance (76-100 %). Students' degree of preparedness for managing changes specific to the VUCA world was scored on a Likert scale from 1 to 5 (1, meaning that students do not need additional instruction, and 5 representing that the students need additional preparation to a very great extent).

At the same time, the effects of using interactive methods during courses/seminars (role-play, simulation, thinking hats method, etc.) and the promotion of a participatory teaching style in delivering information during the lessons were also studied.

4. Research Methods

In order to study how students are prepared for the VUCA world, respectively, their ability to adapt to constantly changing contexts, a research was carried out among students of the psycho-pedagogical module, second year, Bachelor, Bucharest University of Economic Studies. Thus, the first part consisted in studying articles from the Web of Science database that were written on topics such as: the influence of the VUCA world on the educational system, the link between the VUCA world and students' preparedness for the labour market, education during the coronavirus epidemic, the impact of the SARS-CoV-2 virus on the teaching/learning process. We chose the web of science database, as it contains the most current and relevant articles for the researched topics. After processing the resulting articles (97 articles) using the VOSviewer software, as can be seen, according to the intensity of the colours, in the figure below (Figure 1), the most used concepts with the terms "VUCA" AND "EDUCATION" are: skills, COVID-19, complexity, employer value proposition, project management, science, creativity, leadership.

Figure 1. Most used terms with "VUCA" and "EDUCATION"



Source: Authors' own contribution.

Thus, starting from the theoretical information, the second part consisted in carrying out a quantitative research, the statistical population being represented by all the second year students of the psycho-pedagogical module of the Bucharest University of Economic Studies, respectively, 433 students. To highlight their opinion as clearly as possible about the specific effects of the VUCA world and the teaching system (online and traditional), a questionnaire consisting of 15 closed questions was distributed. The questionnaire was distributed online and emailed to all students who attended the courses. Approximately 300 emails were sent, resulting in a total of 137 responses (a response rate of approximately 46 %). Therefore, the final sample was represented by 137 students, whose responses were analysed and interpreted.

The period during which the questionnaire was distributed was the second semester of the academic year 2022-2023, i.e., February-March. We opted for second-year Bachelor students, because they experienced a number of changes last year, quickly transitioning to the online teaching system, even though they were first year: they started their studies physically, on campus, then after a week the courses moved online and suddenly returned physically after the second semester had already started (3 weeks after the beginning of semester 2). They are also preparing

themselves to become future teachers, so they should especially be prepared to handle any exceptional situations that may arise. At the same time, the manner in which the courses/seminars are conducted during the online university will help them in their future teaching career, as they are already aware of the benefits of online teaching and the difficulties that may appear. Thus, this article is a starting point for future research regarding the impact of the VUCA world on the education system.

5. Findings

After interpreting the results obtained, most students considered that the main advantages of the online system compared to the classic, traditional system are: activities are easier to conduct, commuting time to university is eliminated, the activities are more accessible, students can use different materials or interactive platforms (adapted to the online system) to solve exercises (Table 1). Students had to choose from a predefined list of one or more advantages and could also add other benefits if they were not among those listed.

Table 1. Advantages of online teaching

Response variants	Number of responses	Percent (%)
activities are easy to carry out and no time is wasted travelling to university	118	86.13
activities are more accessible, students can access different interactive materials or personalised worksheets adapted for the online system	94	68.61
while I am learning I can also do other activities without losing my attention from what is being taught;	58	42.34
learning activities are more flexible this way;	57	41.61
the grades obtained in the online system were higher than those obtained in the traditional teaching system	53	38.69
the pleasure of using educational platforms (ase.online, zoom, google meet) while learning;	40	29.20
the number of hours allocated to study in the online system is less.	38	27.74
improved relationships between students because activities can be carried out even in teams	18	13.14

Source: Authors' own contribution.

Regarding the disadvantages of online teaching, the students questioned were able to choose from a predefined list, or indicate, the main difficulties / deficits of the online teaching system. As can be deduced from Table 2, among the main disadvantages revealed by the students are: lack of interaction between students, loss of attention and concentration, loss of signal.

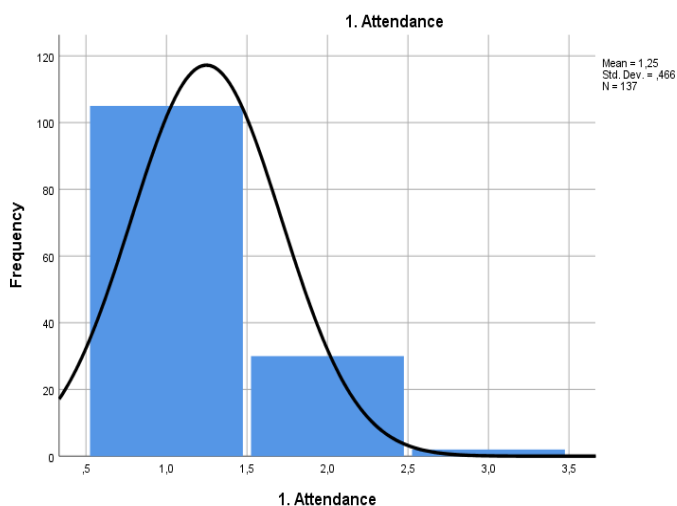
Table 2. Disadvantages of online teaching

Response variants	Number of responses	Percent (%)
the communication relationship between students is almost non-existent, students interact very little and usually only online	100	72.99
students lose patience, concentration and attention much faster when being taught online	91	66.42
activities are difficult to carry out because some students or teachers frequently lose internet signal or do not have access to devices	88	64.23
the communication process between teacher and students is inefficient, with students often not being connected and video	80	58.39
the grades obtained in the online system were lower than those obtained in the traditional teaching system	21	15.33
the number of hours allocated to study in the traditional system is higher	21	15.33
Other: examples and exercises are very slow	1	0.73

Source: Authors' own contribution.

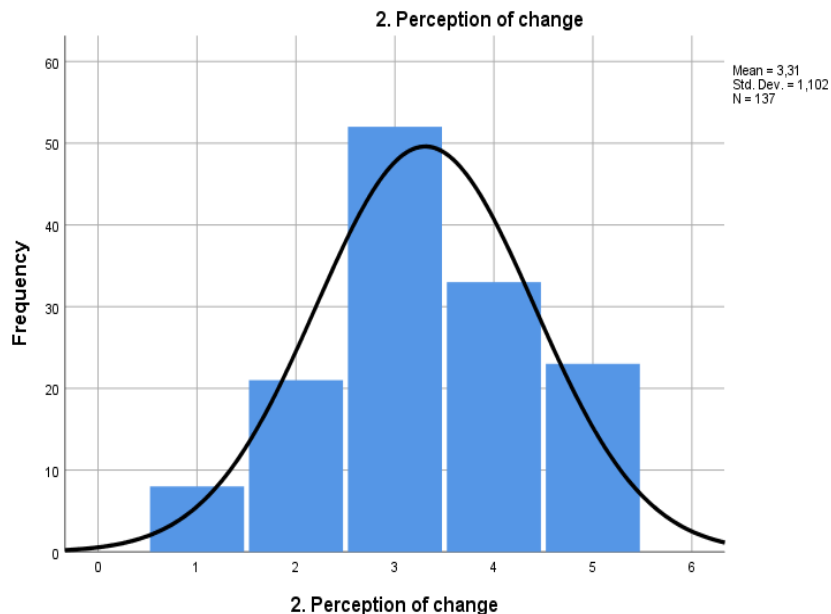
In order to study the influence of attendance on students' perceptions of life-long learning in order to correctly manage the changes they are facing, the following variables were established: independent variable (student attendance), dependent variable (perception of change). The data distribution as can be seen in the figures below (figure 2 and figure 3) is not normally distributed. Moreover, the Kolmogorov-Smirnov test also reveals this, with a significance level <0.05 (Table 3).

Figure 2. Data distribution: Attendance



Source: Authors' own contribution.

Figure 3. Data distribution: Perception of change



Source: Authors' own contribution.

Table 3. Data distribution: Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test			
		1. Attendance	2. Perception of change
N		137	137
Normal Parameters ^{a,b}	Mean	1.25	3.31
	Std. Deviation	0.466	1.102
Most Extreme Differences	Absolute	0.469	0.201
	Positive	0.469	0.201
	Negative	-0.297	-0.179
Test Statistic		0.469	0.201
Asymp. Sig. (2-tailed)		.000 ^c	.000 ^c

Source: Authors' own contribution.

Regarding the homogeneity of the data, the Levene test revealed a significance level >0.05 , which means that the dispersions within the three groups are homogeneous (Table 4).

Table 4. Data homogeneity

Levene Statistic				
		df1	df2	Sig.
Based on Mean	1.669	2	134	.192
Based on Median	1.216	2	134	.300
Based on Median and with adjusted df	1.216	2	130.703	.300
Based on trimmed mean	1.760	2	134	.176

Source: Authors' own contribution.

Taking into account the results obtained, the next step was the application of one-way ANOVA using SPSS software. The results showed that there was a significant influence between the two variables (Table 5).

Table 5. Influence of course attendance on perceptions of change

Anova: Single Factor				
SUMMARY				
Groups	Count	Sum	Average	Variance
high attendance	105	331	3.15	1.20
medium attendance	30	116	3.86	0.94
low attendance	2	6	3	0

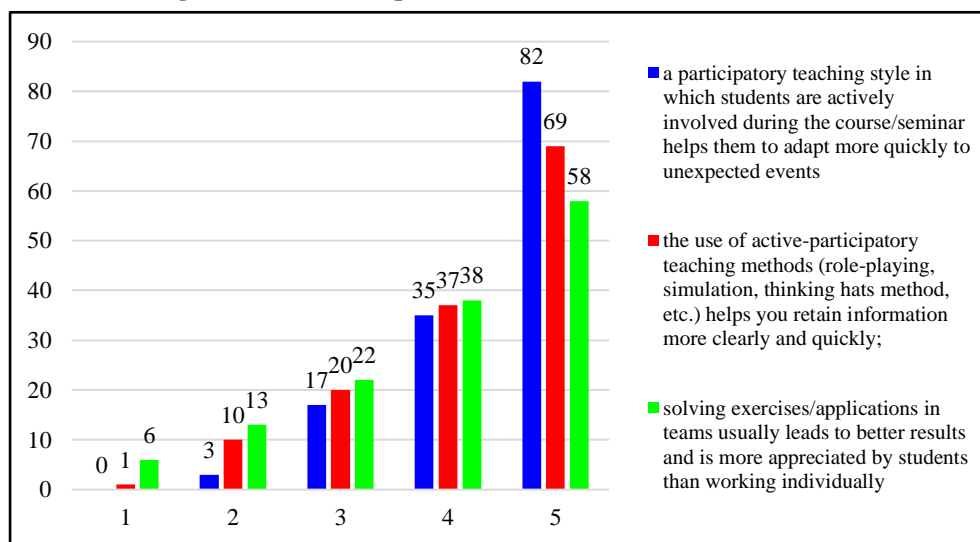
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	12.09	2	6.04	5.29	0.0061	3.0637
Within Groups	153.02	134	1.14			
Total	165.11	136				

Source: Authors' own contribution.

Based on the analysis of the results obtained, it can be concluded that $F > F_{crit}$ ($5.29 > 3.06$), thus the null hypothesis (H_0) will be rejected and the alternative hypothesis (H_1) will be accepted. This means that the presence of the students in the courses has a significant influence on the students' perception of the characteristic changes in the VUCA world; in other words, the more active the students are in the courses/seminars by participating in solving different case studies/critical situations in practice, the more they are aware of the importance of additional preparation to a large and very large extent in order to successfully manage all the changes that occur. In terms of changes occurring in the educational system, among the most common factors listed by the students who took part in the research were: changes in the timetable/programme/structure of the discipline (36.49 %), force majeure situations (pandemics, floods, etc.) (23.36 %), poor communication between students (21.17 %), and the existence of an insufficiently detailed management plan for handling critical situations at university level (18.98 %).

In order to adapt rapidly to different unexpected events specific to the VUCA world, which may occur during the studies, the interpretation of the students' responses showed that a participative teaching style, which involves the use of interactive methods and promotes teamwork, plays a significant role in helping the students to retain the information much better and faster. In order to identify possible solutions to respond effectively to the VUCA world, students had to choose between several possible options by expressing their agreement or disagreement on a scale from 1 to 5 (1 – total disagreement, 5 – total agreement) (Figure 4). The most significant responses received are represented by the following modes of action.

Figure 4. Possible responses in education to the VUCA world



Source: Authors' own contribution.

The VUCA world reflects a world of rapid change, often not having the time to prepare as you need to act as quickly as possible, so instructing students on how to correctly and adequately manage critical events is essential (through play, using applications/case studies they may encounter in real life).

6. Conclusions

Considering the increasing demand in the labour market for employees who can adapt quickly to changes in their work and who can manage all situations that could threaten the achievement of organisational goals, there is an increasing emphasis on preparing students for the VUCA world, right from university. Students' attendance at courses significantly influences their perception of change, as they understand the importance of continuous preparation to properly manage all the changes that may occur both in the university environment and in their future career (Table 5). As can be seen in Figure 4, students find that the transition to an interactive teaching system with different participatory teaching methods and games helps them in quickly

understanding theoretical concepts. A participatory teaching style, where all students are encouraged to respond and express their opinion on a given topic, helps them to become more confident and even manage possible unexpected situations that may appear in their work (rapid transition from the traditional teaching system to the online one). Regarding the online teaching system, it has its advantages, but one of the most notable disadvantages is the communication relationship between students, which in the online environment is almost non-existent, because, as the students said, in the online teaching system this is strictly limited to working hours, whereas at university during university breaks they still have time to interact and even ask for help if they do not understand some information (Table 2). Also, during online classes students lose their interest much faster. Promoting active, continuous learning by the university environment, as well as the ability to adapt to new situations, among students is particularly important because they will gain new skills and competences by becoming visionaries, reacting quickly to every problem for which at first sight there is no solution. Considering the changes in the education system which are becoming more and more frequent and more accentuated, this study is a valuable source of information for the effective management of the changes specific to the VUCA world. Also, after the coronavirus pandemic, there has been a lot of research regarding the best way to combine traditional and online teaching styles in order to improve the teaching-learning process, in order to improve the teaching-learning process, thus the advantages and disadvantages of the online teaching system, presented by students are starting points for future analysis.

The limitations of this article are related to the reduced number of responses collected, the short time period in which the research was conducted, and the statistical models used. At the same time, they also represent excellent future research directions, as the survey can be repeated on a much larger sample, bringing together students from several universities to more accurately reflect the impact of the VUCA world in the education sector.

Acknowledgment

The authors would like to express their gratitude to all the second year students of the psycho-pedagogical module from Bucharest University of Economic Studies who participated in this research. Many thanks!

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