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Enhancing Human Capital Development Methods in Algerian Universities

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Abstract

The study's results concluded with the identification of numerous enhanced aspects of training methods that influence the quality of education in Algerian universities. These aspects include advanced infrastructure, the competence of the teaching staff, comprehensive development programs for students, and an increasing focus on scientific research.
Based on these findings, future action plans can be formulated to enhance the quality of education and elevate the level of training in Algerian universities. These plans may include developing infrastructure, strengthening faculty members' competencies through specialized training programs, providing integrated student development programs that focus on academic and professional skills, and promoting a culture of scientific research through supporting and funding research projects. These efforts aim to build a strong human capital among the graduates of Algerian universities, enabling them to contribute effectively to achieving comprehensive and sustainable development in Algeria.

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Introduction

The quality of education and the development of human capital in universities are among the most important priorities for achieving comprehensive and sustainable development in any society. In the context of Algerian universities, the importance of enhancing human capital development methods emerges as a central focus for strengthening the intellectual capacities and scientific and technical skills of students and faculty members. This requires a comprehensive review of the factors affecting the quality of training in universities and identifying effective ways to improve these factors.

Algerian universities face numerous challenges in this regard, including limited financial resources and incomplete infrastructure, in addition to the need to enhance faculty competence and provide comprehensive development programs for students. This raises the following research question: How can human capital development methods be improved in Algerian universities?

Based on this question, the following sub-questions are proposed:

1. What are the factors that affect the quality of training in Algerian universities?

2. How can students' skills and academic and professional competencies be enhanced in the Algerian university environment?

Significance of the Study:

Enhancing human capital development methods in Algerian universities is of great significance, as it contributes to improving the level of education and the quality of academic and professional training. It also helps develop students' skills and academic competencies, leading to the promotion of economic and social development in Algeria.

Objectives of the Study:

1. To analyze the factors affecting the quality of training in Algerian universities.

2. To propose measures and policies to enhance students' skills and academic and professional competencies in the Algerian university environment.

3. To develop effective strategies to improve training processes and strengthen the role of universities in building human capital in Algeria**.**

Theoretical Framework of the Study:

First: Conceptual Approach

1-1 Training:

Training is a deliberate process aimed at developing individuals' skills and capacities, expanding their knowledge, and improving their performance through continuous learning, with the goal of achieving efficiency and continuity in performance. (بلية ابن محمود، 2018، صفحة 107)

The importance of training and its role in developing individuals' skills and capacities, expanding their knowledge, and improving their performance through continuous learning has been highlighted. Training aims to enhance efficiency and continuity in performance, thereby contributing to achieving personal and professional success.

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Operational Definition:

It is a planned process aimed at developing and enhancing the skills and capacities of students majoring in Food Technology and Quality Control at Abdelhamid Ibn Badis University, Mostaganem, through the use of diverse educational methods and tools, with the goal of improving their performance and raising their level of competence in the field. This, in turn, contributes to improving the quality of education and effectively preparing them for the labor market.

1-2 Human Capital:

Humans are the vital capital of any organization, as they combine intelligence, skills, and expertise that distinguish the organization and make it unique. The human elements within an organization are capable of learning, evolving, and innovating, providing the creative energy that maintains its dynamism.(شيراز، 2022، صفحة 130)

Human capital represents the workforce in any organization, embodying diverse human elements such as intelligence, skills, and expertise that enhance its identity and distinguish it from others. It encompasses the capacity for continuous learning and development, as well as the ability to innovate and adapt to changes, thereby contributing to the provision of creative energy that maintains the organization's dynamism and helps achieve its objectives efficiently and effectively.

Operational Definition:

In the context of Abdelhamid Ibn Badis University in Mostaganem, human capital represents the set of skills, knowledge, and capabilities possessed by members of the university community, including students, faculty members, and administrative staff. The development of this human capital reflects the university's investment in enhancing the skills and abilities of its members, strengthening their capacity for learning and innovation, and consequently improving the quality of education, scientific research, and community service.

1-3 University:

The university plays a vital role in preserving, enhancing, and evaluating knowledge, as well as supporting creative talents(راضية رابح، 2014، صفحة 65) .

The university is an institution that plays a vital role in preserving, developing, and testing knowledge, as it seeks to promote research and education to encourage creative energies and direct them toward development and innovation.

Operational Definition:

Abdelhamid Ibn Badis University in Mostaganem, Faculty of Natural and Life Sciences, assumes a fundamental role in enhancing and developing students' capacities and preparing them in the field of Food Technology and Quality Control. The university aims to strengthen human capital by providing a stimulating educational environment that contributes to the development of students' knowledge and skills, while encouraging innovative thinking and initiative in the fields of food sciences.

1-4 Quality in Education:

Achieving quality in education requires a focus on effective teaching and learning methods that continuously support the

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development of students' skills and capacities, enhance the diversity of their talents for acquiring necessary knowledge and practical skills, and promote applied behaviors derived from an advanced cognitive system aligned with contemporary needs and challenges. (سيد عبد النبي، 2019، صفحة 105)

Achieving quality in education relies on adopting effective teaching and instructional methods that focus on the continuous development of students' skills and capacities. This includes encouraging diversity and leveraging students' talents to maximize the acquisition of the necessary knowledge and practical skills. Furthermore, applied behavior must be promoted, emerging from an advanced cognitive system that aligns with contemporary needs and challenges. This entails motivating students to engage in critical thinking and acquire essential skills such as problem-solving and decision-making, thereby preparing them to face various challenges in their communities and the labor market.

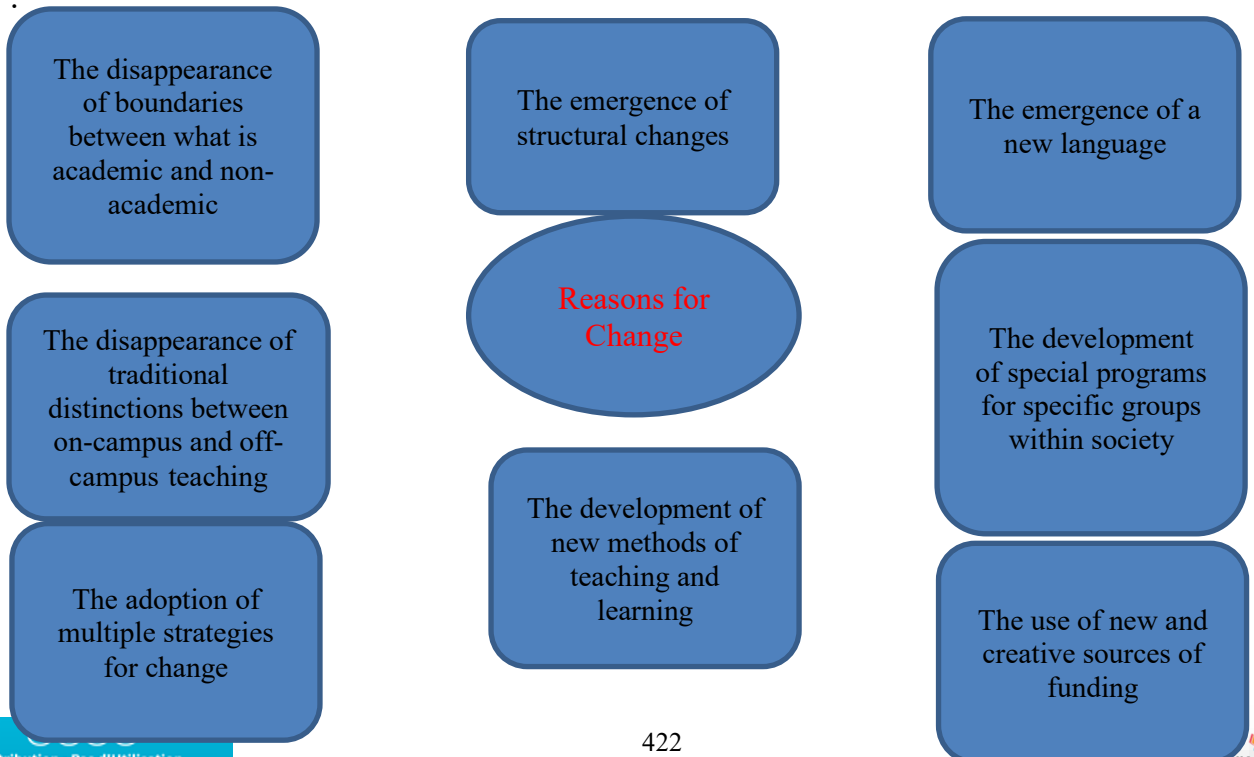
Operational Definition:

The continuous and organized work to improve the educational process, through the development of innovative and appropriate educational plans and programs, the use of effective teaching methods, and comprehensive assessment techniques, for students majoring in Food Technology and Quality Control at Abdelhamid Ibn Badis University, Mostaganem. The aim is to enhance students' achievement and continuously and sustainably develop their skills and knowledge.

Second: Causes of Change in Higher Education Institutions According to "Gerold Epps(عمر محيريق، 2016، صفحة 45) :"

We utilized these reasons to understand the university and the changes occurring within it, and we also referred to them in certain points during the development of the questionnaire

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Prepared by the researchers.

Third: Previous Studies

3-1 Study: Soumia Hadef & Nabil Bouzid, entitled "The Contribution of Improving the Quality of University Training in Preparing Students for the World of Work."

Main Question: To what extent does improving the quality of university training contribute to preparing students for the world of work?

Sub-questions:

To what extent does the theoretical component of university training contribute to preparing students for the world of work?

To what extent does the fieldwork component of university training contribute to preparing students for the world of work?

To what extent do university teachers contribute to preparing students for the world of work?

Study Results:

The results clearly indicate a significant weakness related to the content of training programs—both theoretical and practical—which did not sufficiently contribute to preparing students for the world of work in a way that facilitates professional integration and responds to labor market requirements. The same result applies to the contribution of teaching staff activities in achieving this goal. This is especially due to the absence of involvement from professional-sector personnel in the training of university students and the lack of communication between university professors and economic institutions in the labor market through agreements between the university and the employing sectors.

3-2 Study: Belnoun Salma & Rais Sofiane, entitled "The Strategy of Training the Student-Researcher to Improve the Research Process in Light of Some Modern Trends."

Study Questions:

What is the intellectual basis for training and preparing the student-researcher?

What are the stages of developing a research-oriented mindset in the student-researcher?

What are the essential elements that allow a researcher to assimilate scientific and research knowledge?

What are the most important contemporary trends in training the student-researcher to improve the research process?

Study Results:

The study stresses the necessity of providing an appropriate research environment and an effective research management system in order to equip and prepare student-researchers with skills and capacities that enable them to conduct distinguished research that benefits both the university and society. It also emphasizes the need to prepare scientific and professional competencies across various specializations required by society and by productive and service institutions operating in different fields.

Fieldwork Component:

First: Fields of the Study

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1. Spatial Field:

The study was conducted at Abdelhamid Ibn Badis University, Mostaganem, Faculty of Natural and Life Sciences, Department of Food Sciences, specializing in Food Technology and Quality Control, located at the ITA building in Mostaganem.

2. Temporal Field:

This refers to the period during which the research was carried out. The study began on 15/03/2025 and continued until the writing and submission of the final research report to the journal.

3. Research Population:

The study targeted third-year university students specializing in Food Technology and Quality Control (Group 1 and Group 2) at Abdelhamid Ibn Badis University, Mostaganem, Faculty of Natural and Life Sciences, Department of Food Sciences. The total number of students was 31 female students (a full census).

Second: Research Method

The main determinant in selecting the research method is the nature of the topic and the specificity of the research population. In this study, the researchers relied on the descriptive method, which is considered one of the most widely used and effective methods in the field of social sciences.

Third: Research Tools

The primary tool used for collecting field data was the questionnaire.

The questionnaire used in this study consists of two main axes:

Axis 1: Factors affecting the quality of training in Algerian universities.

Axis 2: Enhancing students' skills and academic and professional competencies.

The questionnaire was constructed using the three-point Likert scale to present response options. Coding was applied as shown in the following format**:**

Table 01: Questionnaire Response Options and Codes.

disagree	Neutral	agree
3	2	1

Source: Prepared by the researchers.

When adopting the questionnaire, we initially presented it to specialized faculty members for the purpose of validation. After that, we revised it in its final form according to the evaluators' comments. The questionnaire was then distributed to a pilot sample consisting of seven individuals from the research population. Subsequently, it was administered to the full research population of 31 respondents, and all questionnaires were retrieved, totaling 31 completed forms.

Fourth: Statistical Methods

In this study, the researchers relied on several statistical methods used to present, analyze, and interpret the quantitative data. Among these methods are:

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1. Frequencies: representing the number of repeated cases.

2. Percentages: calculated by multiplying the frequency by 100 and dividing by the total number of frequencies.

Fifth: Presentation and Analysis of Field Data

Table 02 represents the factors affecting the quality of training in Algerian universities.

Section One: Factors Influencing the Quality of Training in Algerian Universities					
total	**disagree**	**neutral**	**agree**	**f/p**	**statement**
31	**02**	**04**	**25**	frequency	**1/The availability of advanced educational facilities contributes to improving the quality of education at the university.**
100%	**06.45%**	**12.9%**	**80.64%**	**percentage**	
31	**03**	**05**	**23**	**frequency**	**2/The competence of the teaching staff affects the quality of training at the university.**
%100	**09.67 %**	**16.12%**	**74.19%**	**percentage**	
31	**02**	**03**	**26**	**frequency**	**3/The availability of student development programs contributes to raising the level of education at the university.**
%100	**06.45%**	**09.67%**	**83.87 %**	**percentage**	
31	**16**	**10**	**05**	**frequency**	**4/The university infrastructure adequately meets the requirements of modern education.**
%100	**51.61%**	**32.25%**	**16.12%**	**percentage**	
31	**02**	**03**	**26**	**frequency**	**5/Attention to scientific research contributes to improving the quality of education at the university.**
%100	**06.45%**	**09.67%**	**83.87%**	**percentage**	

Source: Prepared by the researchers.

The analysis of the data related to the axis of factors affecting the quality of training in Algerian universities reveals the following:

The data show that 80.64% of participants agree that the presence of advanced educational facilities contributes to improving the quality of education at the university. This indicates the importance of providing a well-developed infrastructure to support the teaching and learning process.

The results also indicate that 74.19% believe that the competence of the teaching staff significantly affects the quality of training, highlighting the importance of developing the skills and capabilities of faculty members to enhance the learning experience.

Moreover, the analysis shows that 83.87% of participants believe that the availability of student development programs contributes to raising the level of education, pointing to the need to provide additional developmental opportunities to strengthen student skills and motivation.

Additionally, 51.61% of participants indicate that the university's infrastructure does not adequately meet the needs of modern education, suggesting the necessity of improving the infrastructure to provide an educational environment that meets the needs of both students and faculty members.

Furthermore, 83.87% of participants indicate that attention to scientific research contributes to improving the quality of

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education, emphasizing the importance of supporting research activities and encouraging scientific inquiry within the university.

Based on the analysis, it is evident that the quality of education in Algerian universities is influenced by several factors. For instance, the presence of a well-developed infrastructure reflects the university's commitment to providing a suitable educational environment, which enhances the learning experience and improves the overall quality of education. In addition, the university's interest in developing its teaching staff and providing developmental programs for students demonstrates its commitment to strengthening students' skills and motivation, thereby improving the quality of training and raising the general level of education. However, the university's infrastructure still does not sufficiently meet the requirements of modern education, indicating the need for sustained efforts to upgrade the infrastructure to meet the needs of both students and teaching staff and to improve the overall quality of education.

Table 02 represents the enhancement of students' skills and academic and professional competencies.

Section Two: Enhancing Students' Skills and Academic and Professional ompetencies					
total	**disagree**	**neutral**	**agree**	**f/p**	**statement**
31	**16**	**07**	**08**	**frequency**	**1. The academic programs meet the requirements of the labor market in Algeria**
%100	**51.61%**	**22.58%**	**25.8%**	**percentage**	
31	**03**	**05**	**23**	**frequency**	**2. Do you believe that training programs and workshops contribute to the development of your practical skills?**
%100	**09.67%**	**16.12%**	**74.19%**	**percentage**	
31	**13**	**06**	**12**	**frequency**	**3. There are sufficient opportunities to develop your personal and social skills at the university.**
%100	**41.93%**	**19.35%**	**38.7%**	**percentage**	
31	**04**	**08**	**19**	**frequency**	**4. The university encourages critical thinking and innovation**
%100	**12.9%**	**25.80%**	**61.29%**	**percentage**	
31	**10**	**08**	**13**	**frequency**	**5. There are sufficient opportunities for interaction with the community within the university.**
%100	**32.25%**	**25.8%**	**41.93%**	**percentage**	

Source: Prepared by the researchers.

The analysis of the axis concerning the enhancement of students' skills and their academic and professional competencies reveals a noticeable variation in the participants' views regarding the university's role in developing their capabilities. The findings indicate that 51.61% of students disagree that the current academic programs meet labor market requirements, suggesting a persistent gap between curriculum content and market demands. This highlights the need to revise academic programs to ensure greater alignment with contemporary economic and professional developments.

Additionally, the results show that 74.19% of students agree that the training programs contribute to developing their practical skills, reflecting a general recognition of the importance of these programs in

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strengthening the applied competencies required in future work environments.

Regarding the development of personal and social skills, the data reveal that 41.93% of students believe that there are sufficient opportunities to develop these skills, whereas 38.7% report an insufficiency of such opportunities. This indicates a need to reinforce extracurricular activities and support programs that enhance students' personal and social development.

The analysis also shows that 61.29% of students feel that the university encourages critical thinking and innovation, which demonstrates the presence of a stimulating academic environment. However, opportunities for community engagement remain contested: 41.93% of students perceive these opportunities as adequate, while 32.25% believe otherwise. This finding underscores the importance of strengthening the university's engagement with its surrounding social environment.

From a sociological perspective, these results reflect the influence of institutional social relations and cultural dynamics within the university on the processes of human capital formation. The divergence in students' assessments of whether academic programs align with labor market needs reveals organizational and epistemic challenges faced by the university in the context of ongoing economic and technological transformations.

Similarly, while the university appears to provide encouraging conditions for innovation and personal skill development, the limited community engagement opportunities highlight the need for more open and interactive institutional policies. Enhancing such engagement is vital to ensuring a comprehensive learning experience and achieving the broader objectives of human capital development within the Algerian university.

Sixth: Discussion of Results in Light of the Study Questions

6-1 Factors Affecting the Quality of Training in Algerian Universities

The results indicate that several factors influence the quality of training in Algerian universities, including:

1. Availability of advanced educational facilities: Contributes to improving the quality of education and enhances the students' learning experience.

2. Competence of the teaching staff: Significantly affects the quality of training and improves the overall learning experience.

3. Availability of student development programs: Contributes to raising the level of education and motivates students.

4. University infrastructure: Needs improvement to adequately meet the requirements of modern education.

5. Attention to scientific research: Contributes to enhancing the quality of education and raising academic standards.

These factors represent multiple dimensions that must be considered to improve the quality of training in Algerian universities and enhance the overall quality of education.

6-2 Enhancing Students' Skills and Academic and Professional Competencies

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The results show that enhancing students' skills and competencies in the Algerian university environment requires several comprehensive measures:

1. Updating curricula: Academic programs should align with labor market needs by integrating educational content and practical skills that match industry and market requirements.

2. Strengthening training programs and workshops: These programs should be reinforced to develop students' practical skills, including providing hands-on and training opportunities in real-world environments that simulate the labor market.

3. Enhancing personal and social skill development: Programs and activities should aim to strengthen students' personal and social skills, such as leadership, problem-solving, and effective communication.

4. Promoting a culture of innovation and entrepreneurship: Universities should foster an environment that encourages creative thinking and entrepreneurial initiatives, through support for student projects, competitions, and relevant workshops.

5. Enhancing community engagement: Communication and interaction between universities, companies, and other societal institutions should be strengthened through partnerships, joint educational and training programs, and experience exchange.

These efforts must be supported by adequate funding and strategic planning from universities and relevant authorities, ensuring the maximum utilization of available opportunities and the effective development of human capital in the Algerian labor market**.**

Seventh: Discussion of Study Results in Light of Previous Research

7-1 In Light of the First Study:

The analysis of the current study highlights several important aspects regarding the quality of education and the development of students' skills in Algerian universities. In comparison with the previous study, which indicated weaknesses in the content of training programs and their misalignment with labor market needs, the current study appears to reflect improvements in the provision of training programs and the development of student skills.

It is noteworthy that the previous study emphasized the need to enhance communication between universities and economic institutions to better prepare students for the labor market. This can be compared with the current study's findings, which show variation in students' perceptions regarding the extent of community engagement within the university. This suggests a need to strengthen such engagement to better integrate education with labor market requirements.

Furthermore, the current study highlights the importance of attention to scientific research and the development of university infrastructure as factors influencing the quality of education. This reflects a positive shift in university policies towards improving the educational environment and enhancing the learning experience for students.

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Overall, there is evidence of positive progress in developing education and preparing students for the labor market in Algerian universities. It is essential that efforts continue to enhance communication between universities and the economic sector and to improve the quality of training programs to ensure they effectively meet labor market needs.

7-2 In Light of the Second Study:

The results of the current study emphasize several factors affecting the quality of education in Algerian universities, such as the availability of advanced educational facilities and the competence of the teaching staff. They also indicate the need to provide infrastructure that meets the requirements of modern education while developing the skills of both students and faculty members.

On the other hand, the findings of the previous study highlight the importance of preparing student researchers and providing a supportive research environment, which enhances their ability to conduct high-quality research beneficial to society.

Based on this comparison, it can be concluded that the current results reaffirm the importance of providing advanced infrastructure and student development programs to improve the quality of education, while the previous study underscores the need to prepare student researchers and ensure an adequate research environment.

Eighth: General Results

The general results of the study highlight several key points:

1. Availability of advanced educational facilities: Significantly contributes to improving the quality of education at the university, reflecting the importance of providing advanced infrastructure to support the educational process.

2. Competence of the teaching staff: Plays a crucial role in enhancing the quality of training, emphasizing the need to develop the skills and competencies of faculty members.

3. Availability of student development programs: Contributes to raising the level of education, highlighting the importance of providing additional development opportunities to enhance students' skills and motivation.

4. University infrastructure: Needs improvement to adequately meet the requirements of modern education, necessitating efforts to provide a conducive learning environment.

5. Attention to scientific research: Contributes to improving the quality of education, underscoring the importance of supporting research projects and encouraging academic activity within the university.

The study demonstrates that the quality of education in Algerian universities is linked to multiple factors such as infrastructure, faculty competence, student development programs, and attention to scientific research. Enhancing these factors can contribute to improving the overall quality of education, strengthening human capital, and optimizing training methods in Algerian universities.

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Conclusion:

Improving human capital training methods in Algerian universities is a shared responsibility that requires collaboration and continuous effort from all stakeholders, including the university itself and institutions involved in education and scientific research. By investing in infrastructure improvement, developing the competencies of teaching staff, and providing diverse development programs, a positive transformation can be achieved in the level of education and the quality of training. This, in turn, contributes to promoting sustainable development and achieving academic excellence at the national, regional, and international levels.

Recommendations:

Enhance investment in the development of educational facilities and university infrastructure.

Develop continuous student development programs to strengthen their skills and encourage lifelong learning.

Provide support and incentives for faculty members to improve their teaching and research skills.

Promote a research-oriented culture and encourage students and faculty to participate actively in scientific research.

Strengthen international collaboration and exchange of expertise with global universities and educational institutions to benefit from best practices and scientific advancements in education and research**.**

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