

Research Article

Career Expectations and Future Interests: A Bibliometric Analysis of The Scopus Database

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ABSTRACT

This study aims to analyze trends and discuss future career expectations and interests in science education through a bibliometric approach based on Scopus data (2019-2024). Using the PRISMA method, 363 selected articles were analyzed through VOSviewer and Excel to map publication dynamics, citations, collaboration between countries, and research focus. Results showed a significant increase in publications since 2019, with a peak in 2023-2024 due to technology adoption during the transition period since the onset of the pandemic. The United States is one of the countries with the highest number of publications (3 documents). The highest-cited publication was an article by Lent and Brown (2019) in the *Journal of Vocational Behavior*, which received 285 citations. This article discusses the development of *Social Cognitive Career Theory* (SCCT) over the past 25 years and evaluates the empirical status of the theory's interest, choice, and performance models. From 2019 to 2022, the number of documents recorded was relatively stable, with slight fluctuations around 55-57. This indicates that during this period, interest in continuing education or career expectations tended to stagnate without any significant increase. However, there was a drastic spike from 2023 to 2024, where the number of documents increased sharply from around 55 to over 80.

Keywords: Bibliometric Analysis; Career Expectations; Future Interests; Scopus

1. INTRODUCTION

Higher Education refers to Education obtained after completing secondary Education, including universities, polytechnics and other higher education institutions. Higher Education is part of the national education system that aims to improve the quality of human resources. Several studies have shown that individuals with higher Education tend to earn a higher income than those with only secondary Education. Higher Education is also associated with better health awareness (Marshall et al., 2020; Zhang et al., 2023). According to research conducted by WHO, highly educated individuals tend to be more aware of nutrition and access to health services. Higher Education provides a better understanding of social norms and values (Lent & Brown, 2019; Pugh et al., 2021). This leads to more intense involvement in social and cultural activities, improving overall quality of life. According to research conducted by the Central Bureau of Statistics (BPS), the unemployment rate for higher education graduates is lower than that of secondary education graduates. This indicates that higher Education provides better opportunities to get a job. Workers with a higher education background have more opportunities for promotion and advancement; their study stated that many companies prefer to recruit individuals with higher education qualifications for managerial positions, as they have a better understanding and higher critical thinking skills (Lambert et al., 2020). Higher Education can also support entrepreneurship development, stating that higher Education provides the knowledge and skills needed to start businesses and create new jobs. The relevance of career expectations among students is very high and plays an important role in influencing their educational decision-making. With clear career expectations, students are more motivated to continue their Education and choose a path that matches their aspirations, which in turn can have a positive impact on future personal and professional development (Spangenberg & Freytag, 2020)

The significance of the issue this study focuses on the role of future career expectations as a key factor influencing students' interest in continuing their Education to Higher Education, which is a crucial aspect in shaping the future of individuals and society. With the increasing complexity of the world of work and global competition, higher Education has become increasingly vital in preparing young people to face new challenges. Clear and realistic career expectations can be a key driver for students to make strategic educational decisions, identify appropriate academic pathways, and achieve the necessary milestones to enter the competitive job market (Dozier et al., 2020). When students have strong career aspirations, they are more likely to commit to higher Education, which in turn can improve the quality of human resources

and contribute to a country's economic and social development. However, students do not have clear career expectations. In that case, they risk experiencing confusion in determining their next steps in Education, which can result in low higher education participation rates and hinder individual progress and the progress of society as a whole (Yazıcı et al., 2023). Therefore, understanding the relationship between career expectations and the decision to pursue higher Education is critical to informing education policy and development strategies that can support students in achieving their dreams. (Huang et al., 2024)

Given the importance of higher Education in shaping the future of individuals and societies, an in-depth understanding of the factors influencing students' interest in pursuing higher Education is crucial (Dobson & Douglas, 2020). Career expectations are one of the key variables influencing such decisions, where clear career aspirations can motivate students to pursue relevant Education. In today's increasingly competitive and skilled world, college graduates have better job opportunities and higher earning potential. However, research shows that not all students clearly understand how higher education can open doors to the careers they envision. By exploring this relationship, this study can provide valuable insights into how career expectations influence educational decisions and how factors such as social support, knowledge of career opportunities, and required skills contribute to students' interest. (Ravindranathan et al., 2024). In addition, the results of this study can serve as a basis for developing more effective educational policies and career guidance programs geared towards motivating students, especially among adolescents who are still in the stage of self-discovery. Thus, this study has both academic relevance and significant practical implications in shaping educational policies and career development strategies at the high school and college levels.

The research gap refers to the lack of in-depth understanding or research on the relationship between career expectations and students' decision to pursue higher Education. Although several studies have analyzed the relationship between social, economic, and environmental factors and interest in continuing their studies, many fail to integrate the dimensions of career expectations comprehensively (Ong & Ling, 2020). Most studies are still general and do not explore how specific career expectations- such as aspiring to a particular profession, income expectations, or aspirations to contribute to society- can directly influence students' educational choices. Moreover, disciplines often focus on separate aspects, such as psychological or economic factors, without considering the interaction between career expectations and academic motivation. Without a clear understanding of how career expectations held by students can serve as a driver in choosing an educational pathway, educational policies and intervention programs designed to increase higher education participation rates may not be effective (Nelson, 2019). Therefore, this study aims to fill that gap by providing a more detailed and contextualized analysis of how future career expectations can significantly determine students' interest in pursuing higher Education.

Novelty is worth discussing. First, this study fills a gap in the current literature regarding the relationship between career expectations and further education decisions. While many studies address other factors that influence students' interest in continuing Education, such as economic conditions, family support, and education quality, few studies specifically explore the impact of concrete career expectations on interest in continuing education to college. By highlighting career expectations as a central factor, this study offers a new perspective showing that people's future aspirations play a crucial role in determining their educational goals (Leung et al., 2021) (Ichsan et al., 2021).

This research contributes to Raising Awareness about Career Opportunities, many students may not be fully aware of the career opportunities available after completing higher Education. By providing precise and detailed information regarding various career paths, possible salaries, and future employment prospects, students can be more motivated to continue their education than the link between Education and skills Needed in the Job Market. Clearly describing how a higher education degree relates to the skills employers seek can encourage students to continue their education (Nariman, 2021). For example, explaining how specific study programs can provide practical skills needed in certain professions can help students understand the value of their Education in the job market. Support from Family and Neighborhood greatly influences students' decision to continue their Education. Involving parents, teachers and community leaders in activities promoting higher Education's importance can create a favorable climate. Mentoring or outreach programs involving alums or professionals who are successful in their careers can also provide additional motivation for students to see the relevance of higher education in achieving their career aspirations. Career Expectations and Interest in Continuing Education refer to an individual's expectations of the professional path they want to pursue. These expectations are often a key driver in educational decision-making, including the decision to go to university (Larson & Seipel, 2020). Research shows that students with clear career expectations are more motivated to pursue higher education to achieve their professional goals. Factors Influencing Career Expectations Some factors influencing career expectations include family environment, academic achievement, and career information.

Researchers try to collect research data related to Careers and Interests using a bibliometric approach based on data obtained from Scopus. In this context, this article aims to present a comprehensive bibliometric analysis of Career and Interest Research in Education, which includes trends in the number of publications, Trends in Research Collaboration between Countries, Research Focus, and Novelty. By analyzing journals, conferences, and other related scientific publications. We will identify the key trends and the most dominant research topics in this scientific literature. Thus, the

results of this study are expected to provide a more systematic overview of research trends related to careers and Interests and provide recommendations for future research agendas.

2. RESEARCH METHOD

This research uses a descriptive bibliometric analysis method consisting of four important stages: *identification*, *screening*, *eligibility*, and *inclusion*. At the *identification* stage, researchers searched keywords that match the research theme, namely "Career Expectations and Future Interests" in the Scopus database. Through this step, 23,816 relevant articles were identified. The next stage is screening. At this stage, researchers screened 233 articles obtained in the previous stage using the criteria that the keyword "Career and Interest" must be contained in the article title. Based on these criteria, 958 articles did not meet these criteria and will not be processed further. Meanwhile, there are 368 articles based on 2019-2024 that meet the criteria and will continue at the next stage, namely eligibility; at this stage, the researcher evaluates whether the 368 articles that have passed the previous stage are suitable for inclusion in the final stage of the research. Researchers decided only to include publications published in English so that the remaining 363 articles met these criteria. Three hundred sixty-three articles that meet these criteria can proceed to the inclusion stage.

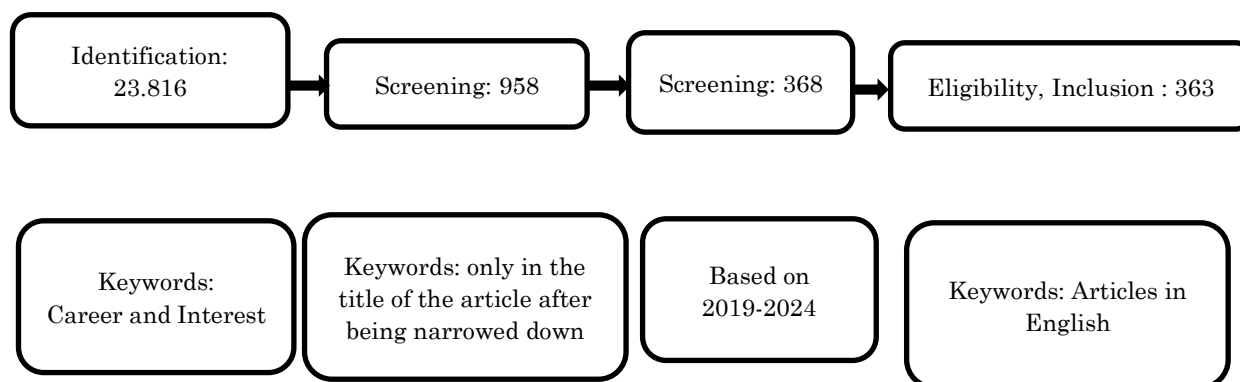


Figure 1. Stages in Data refinement

The researcher used various applications to help process the research data. Microsoft Excel application was used to display tables such as publication trends and citation trends. The VOSviewer application is used to display images of relationships between countries and research focuses related to the field under study. PoP application is used to calculate citation trends such as NCP, C/CP, h-index, g-index and others.

3. RESULTS AND DISCUSSION

In this section, trends in the number of publications, trends in the number of citations, trends in research collaboration between countries, and research focus related to Career and Interest in Education will be discussed. The trend in the number of publications reflects the development of the number of scientific publications published in this field during the 2019 to 2024 time period. This trend provides an overview of the research development conducted by scientists and academics in discussing Career and Interest in Education. Furthermore, the trend in the number of citations illustrates how the research has influenced subsequent studies and become a reference for other researchers. The increase in the number of citations indicates that the level of recognition and acceptance is comprehensive in the scientific community towards research on Careers and Interest in Education. International collaborations can lead to higher quality and more impactful research because they involve diverse perspectives and expertise. Finally, focus trends refer to research areas that receive special attention in the study of Careers and Interest in Education from 2019 to 2024.

3.1 Trends in the number of publications

Trends in the number of publications are displayed by grouping the number of publications based on the year of publication. Publication trends from 2019 to 2024 related to Career and Interest in Education research can be seen in Figure 2.

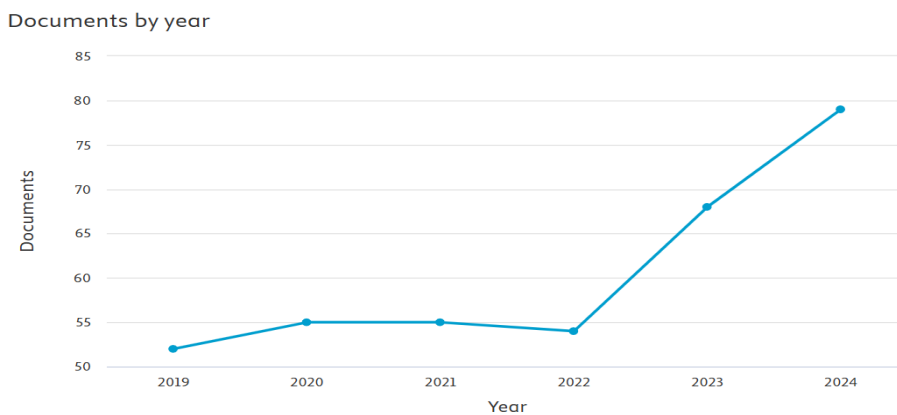


Figure 2. Publication Trends

The graph shows the publication trend of documents related to careers and interests based on data from Scopus in the period 2019 to 2024. The graph shows the number of documents by year, which can be interpreted as representing individuals' interest in continuing their education to higher education and developing their career expectations. From 2019 to 2022, the number of documents recorded is relatively stable, with slight fluctuations around 55-57 documents. This indicates that during this period, interest in continuing education or career expectations tended to stagnate without any significant increase. However, there was a drastic spike from 2023 to 2024, where the number of documents increased sharply from around 55 to over 80. This trend indicates a significant increase in interest in pursuing higher education, possibly influenced by external factors such as changes in education policy, increased career opportunities, or greater awareness of the importance of higher education in achieving career aspirations. Overall, this graph illustrates that higher career expectations can increase individual interest in pursuing higher education.

Table 1. Citation Trends

Year	TP	TC	NCP	H	G
2024	62	12	31	1	1
2023	68	271	47	10	13
2022	54	370	54	11	16
2021	55	652	52	14	24
2020	55	681	54	13	24
2019	52	940	54	14	30

TP : Total Publication ; TC : Total Citation ; NCP : Number of Citation Paper; H: h-index; G: g-indeks

Table 1, represents the citation trend of Career and Interest-related research based on several bibliometric matrices, namely number of publications (TP), total citations (TC), number of unique citations (NCP), H index, and G index. Table 1 shows the publication citation trend from 2019 to 2024, which reflects the significant development in the research world. The total number of publications (TP) varied, with the peak occurring in 2023 with 68 publications. Although there was a drop in 2024 to 62 publications, researchers continued to show effort in producing new works. This creates a positive career expectation for young researchers who want to enter academia and contribute to the field of science. Apart from the number of publications, Total Citations (TC) also provides an important picture of the impact and acceptance of scientific work among the academic community. It can be seen that TC reached its highest number in 2019 with 940 citations, then experienced a significant decline in the following years, especially in 2024 with only 12 citations. While this decline may indicate the challenges of getting attention to recent publications, the stable NCP (Number of Citations Per Publication) figure shows that the quality of research remains paramount, providing hope for researchers to remain relevant and recognized in their field. On the other hand, the variations seen in other performance indicators such as H-Index (H) and G-Index (G) reflect the consistency and productivity of researchers. Although the H-Index and G-Index fluctuate, the figures suggest that there are ongoing contributions from researchers in the field. With these conditions, researchers are expected to continue developing their skills and expanding their collaboration networks, so as to optimize career opportunities and increase future interest in more innovative research. The quality and relevance of publications are key in meeting the challenges and creating greater impact in the development of science.

Table 2. Publications with the most citations

Author	Title	Journal Name	Excerpt
(Lent, R.W., Brown, S.D 2019)	Social cognitive career theory at 25: Emprical status of the interest, choice, and performance models	Journal of Vocational Behavior	285
Makransky, G., Petersen, G.B., Klingenberg, S. 2020)	Interest and career aspiration in science	Britist Journal of Educational Technology	107
(Huang, X., Zhang, 2019)	Impact of math self-efficacy, math anxiety, and growth mindset on math and science career interest for middle school students	Eouropean Journal of Psychology of Education	96

Table 2 presents the three publications with the most citations related to the social cognitive theory of career and factors influencing career interests and educational aspirations. The publication with the highest citations is an article written by Lent and Brown (2019) in the *Journal of Vocational Behavior*, which received 285 citations. This article discusses the development of *Social Cognitive Career Theory* (SCCT) over the past 25 years and evaluates the empirical status of interest, choice, and performance models within the theory. SCCT is a widely used theory to understand how individuals develop their career interests, make work-related decisions, and succeed in their chosen fields. The high number of citations indicates that this research significantly impacts the field of career and educational psychology. The second most cited publication was a study by Makransky, Petersen, and Klingenberg (2020) in the *British Journal of Educational Technology*, which received 107 citations.

The article focused on the relationship between interest in science and career aspirations. Using an educational technology-based approach, it explores how immersive learning experiences can increase students' interest in science and influence their future career choices. The significant number of citations in a relatively short period suggests that this study provides important insights into developing innovative learning methods to increase students' interest in STEM (Science, Technology, Engineering, and Mathematics). The third publication is a study by Huang and Zhang (2019) in the *European Journal of Psychology of Education*, with 96 citations. This study examines the influence of *math self-efficacy, anxiety, and growth mindset* on high school students' interest in choosing a career in math and science. The results show that high levels of self-efficacy and a growth mindset contribute positively to career interest in STEM fields, while math anxiety acts as a barrier to the development of such interest. The article is widely cited for its relevance in educational psychology and its impact on understanding how psychological factors can influence students' career decisions from an early age. Figure 3 illustrates the research collaboration between countries related to Career and Interest publications. In the figure, circles represent countries contributing to scientific publications related to the topic.

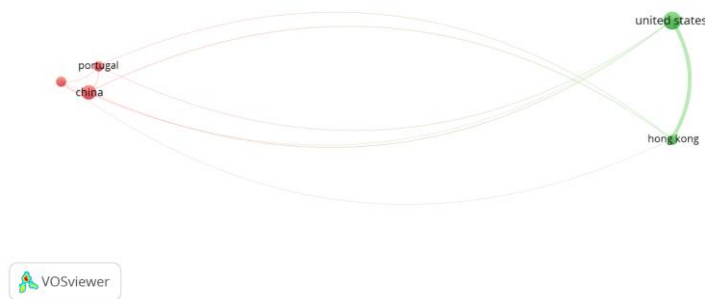


Figure 3. Relationship between countries

Figure 3 shows the cooperation between countries as evidenced by the relationship between the country circles shown in the figure. Figure 3 shows four clusters that can be distinguished by the color of the circles. More detailed information about research collaboration between countries in the context of Career and Interest in education can be seen in **Figure 4**.

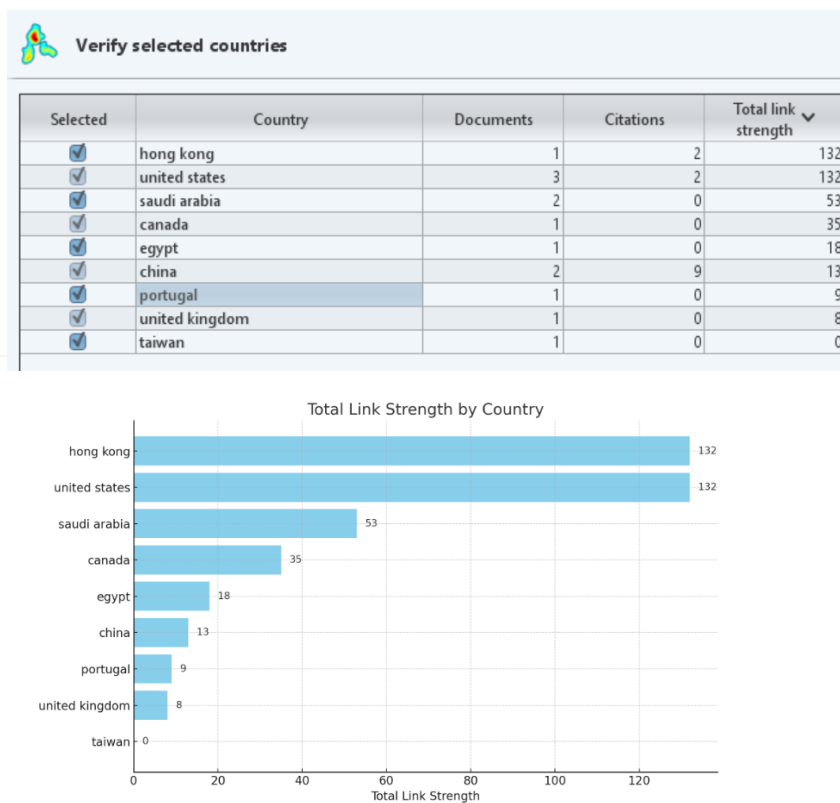


Figure 4. Bibliographic Coupling Country

Figure 4 The table above displays the list of countries that have been selected in the analysis of scientific *documents* based on the number of publications (*Documents*), the number of *citations* (*Citations*), and the *total link strength*. Each country listed has the number of documents that contributed to a particular study, as well as the number of citations received from other studies. In addition, the *Total link strength* column shows how strong the country's collaborative relationship is with other countries in the analyzed research network. From this table, the *United States* and *Hong Kong* have the highest link strength, 132, despite the different number of published documents (3 for the *United States* and 1 for *Hong Kong*). *China* has the highest number of citations (9) with two documents, which is the same as *Egypt* which also has two documents and the same number of citations. Meanwhile, countries such as *Portugal*, *United Kingdom*, *Taiwan*, *Saudi Arabia*, and *Canada* have published documents but no citations (*Citations* = 0), suggesting that publications from these countries may not have received significant attention or impact in the reviewed literature. *Saudi Arabia* has a value of 53, which is higher than countries such as *China* (13) and *Egypt* (9), despite having fewer documents. This suggests that even if a country's publication contribution is smaller in number of documents, its collaborative relationships in research may be stronger. These factors may reflect each country's pattern of academic cooperation and research influence in the analyzed field.

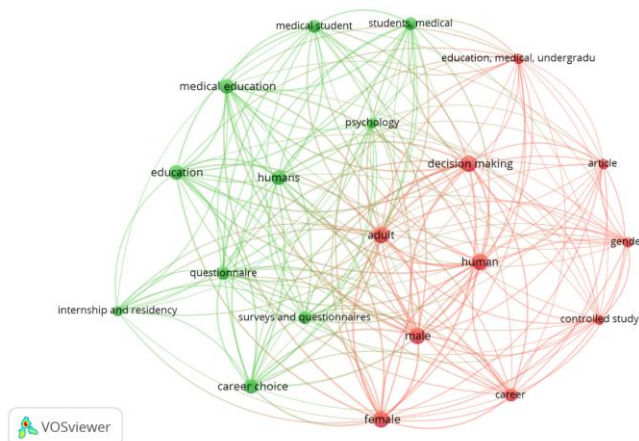


Figure 5. Research Novelty

Figure 5, is a visualization of the network of interrelationships between keywords in the research using *VOSviewer*, focusing on the relationship between *career*, *decision making*, and *interest*. The *novelty* of this analysis lies in how these three concepts interact with each other in the context of education and psychology. The figure shows that *career* is closely related to gender, suggesting that career choice is often influenced by gender differences and social roles. Meanwhile, *decision making* is connected to the concepts of *psychology* and *human*, which confirms that the career-related decision-making process involves individual psychological aspects and social factors. In addition, *interest*, which is not explicitly visible in the figure, is likely represented by related keywords such as *career choice* and *education*, which indicate that interest in a field is closely related to academic experience and external factors such as education. The close relationship between interest, decision-making and career suggests that the selection of educational and professional paths is not only based on rational factors, but also driven by affective and social factors. By understanding this pattern of relationships, future research can explore more deeply how individual interests can be facilitated to support more informed career decisions. Overall, the novelty of this analysis is in uncovering the complexity of the relationship between interests, decision-making, and career choice through a keyword mapping approach. This visualization helps in identifying the key factors that influence each aspect, as well as providing new insights into the importance of educational interventions that can lead individuals to make more informed career decisions.

4. CONCLUSION

The close relationship between interests, decision-making, and career suggests that the selection of educational and professional paths is based on rational factors and affective and social factors. By understanding this pattern of relationships, future research can explore more deeply how individual interests can be facilitated to support more informed career decisions. Overall, the novelty of this analysis is in uncovering the complexity of the relationship between interests, decision-making, and career choice through a keyword mapping approach. This visualization helps identify the key factors that influence each aspect and provides new insights into the importance of educational interventions that can lead individuals to make more informed career decisions. The results show a significant increase in publications since 2019, with a peak in 2023-2024 due to the adoption of technology during the transition period since the onset of the pandemic. The United States is one of the countries with the highest number of publications (3 dok). The highest-cited publication was an article by Lent and Brown (2019) in the *Journal of Vocational Behavior*, which received 285 citations. This article discusses the development of *Social Cognitive Career Theory* (SCCT) over the past 25 years and evaluates the empirical status of the theory's interest, choice, and performance models. From 2019 to 2022, the number of documents recorded was relatively stable, with slight fluctuations around 55-57. This indicates that during this period, interest in continuing education or career expectations tended to stagnate without any significant increase. However, there was a drastic spike from 2023 to 2024, where the number of documents increased sharply from around 55 to over 80.

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