



NEXUS OF TECHNOLOGY AND DIGITALISATION THROUGH TRAINING TO ENHANCE INNOVATION AND CREATIVITY IN BUSINESS EDUCATION IN COLLEGES OF EDUCATION IN DELTA STATE

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Abstract

The study examines how nexus of technology and digitalisation through training to enhance innovation and creativity, in business education in colleges of education in delta state. to achieve the purpose of this study, the researchers formulated two (2) specific objectives, research questions and null hypotheses respectively which guided the study. The population of the study was 90 Business Educators in all the Colleges of Education in Delta State. The census method of sampling was used so the entire population was used as sample . A well-structured questionnaire was used as an instrument for data collection. 90 copies of the questionnaire were distributed while 78 copies were retrieved. The research questions were analyzed using mean (\bar{x}) and standard deviation (SD) while the hypotheses were tested using t-test statistical tool at 0.05 level of significance. Based on the data analysed, the findings of the study revealed that male and female business educators and experienced and inexperienced business educators enhance creativity by using digital technologies(digitalization) and digital social innovation in digitalization respectively through training in Business Education programmes. Also male and female business educators influence innovation using digital space innovation in digitalisation through training in Business Education programme. However, the study recommends that: government should organize workshops for male and female business educators on creativity using digital technologies in digitalisation and that government and non-governmental organization should create awareness and enlightenment for business educators on innovation using digital space innovation in digitalisation.

Keywords: Business Education, Creativity, Digitalisation, Innovation and Technology.

Introduction

Delta State is witnessing a significant shift in the way Business Education is being approached within its colleges of education in Delta State. Recognizing the immense potential of creativity, innovation, technology and digitalization, educational institutions in the region are striving to create a robust nexus between these elements and Business Education programme. This strategic integration aims to equip future business educators and Business Education students with the necessary skills and knowledge to excel in an increasingly dynamic and digital world. In today's rapidly evolving business landscape, creativity has emerged as a critical attribute for individuals seeking success. It enables entrepreneurs and business professionals to think outside the box, generate novel ideas, and find innovative solutions to complex challenges. Understanding the importance of nurturing creativity, Colleges of Education in Delta States are placing a strong emphasis on fostering a creative mindset among Business Education students

Innovation, closely linked to creativity, plays a pivotal role in driving economic growth and sustainable development. (Qureshi, Pan, & Zheng, 2021). Business Education programmes recognize this and have unified innovation-focused modules and courses to cultivate students' ability to recognize opportunities and develop ground-breaking solutions; by encouraging critical thinking and promoting an entrepreneurial mindset, Colleges of Education in Delta State are preparing students to become catalysts of change in their future endeavors (Shalini,2021), opined that, the process of digitalization, which involves the integration of digital technologies in the teaching and learning processes is reshaping industries worldwide. Business Education programme in Delta State is keen on ensuring their students are well-versed in digital transformation, and trends such as automation, artificial intelligence, and big data analytics. By incorporating these topics into the curriculum, students gain insights into the potential of digitalization



and learn how to leverage these technologies to streamline operations, enhance productivity, and gain competitive edge in the business world.

In summary, the nexus of creativity, innovation, technology, and digitalization is a fundamental aspect of Business Education programme in the Colleges of Education in Delta State. By embracing these elements, educational institutions are equipping students with the necessary skills, knowledge, and attitude to thrive in an increasingly digital and innovative business landscape through a combination of curriculum enhancement, practical training opportunities, industry partnerships, and research and development initiatives, these colleges are paving the way for a new generation of business educators and Business Education Students who can drive economic growth, foster innovation, and pilot the intricacies of the modern digital world.

Digitalization through teaching in Business Education: Business Education should be treated as one of the important Treasury Sectors of the Economy. Nigerian Economy has entered the Globalization Era since the use of manual typewriter. Furthermore, the pandemic year 2020 of covid 19 Crisis has become a turning point for the overall World, a radical change which brought about a paradigm shift in education all over the World. The educational sector has still not been digitalised according to Qureshi, Pan, and Zheng (2021). Higher Education and particularly in Business Education Sector, a tremendous number of changes in the structure, delivery, outcome, and employability of youth as well as for the teaching fraternity are expected soon.

Teaching using Digital Technologies: Digital technologies are a powerful instrument that can help improve education in various ways, such as making it easier for instructors to generate instructional materials and providing methods for students to learn and collaborate. A new era has arrived with the Internet's worldwide reach and many intelligent devices connected to it. Thus, it will be up to instructional designers and educationists to use advanced potential digital technologies to revolutionise education such that effective and efficient education is available to everyone and at everywhere.

Technology has continued to play an essential role in delivering education to learners outside the classroom. Shalini (2021), is of the opinion that, digital technology fosters creativity and gives students a sense of success, encouraging additional learning by thinking outside traditional techniques. All nations were able to adopt remote learning technologies utilising a combination of TV, radio, online, and mobile platforms, which is commendable. These provide easy access to information, easy retention of information, increased storage of information, and improved presentation of information; education became more interactive, easier sharing of knowledge and increased enthusiasm in learning, discusses the significant applications of digital technologies in education.

Social innovation has become an economic buzzword, to Ozman and Gossart (2017), digital social innovation is the process of improving civilization with the latest scientific research. Its goal could be anything associated with positive meanings, like openness, collaboration or inclusion. (DSI) involves the use of digital technologies in the development and implementation of innovative products, services, processes and business models that seek to improve the well-being and agency of socially disadvantaged groups or address social problems related to marginality, inequality and social exclusion (Shalini, 2021).

Ainslee (2018), saw that, digitisation is the trending term, describing the 21st century in the most precise manner possible, that we are in the era where unprecedented ideas are unfolding in our educational industry and creating advancement that cannot be matched by lagging in terms of technology. Digitization in education is the integration of different types of technologies in the educational sector that help promote better and wider knowledge, in a fast and easy way and most importantly, accessible by everyone.

Innovation refers to any hypothetical, technological, cultural, commercial, or social relationship that has not existed before under the subjective drive of the individual. According to Marin-Garcia (2016), innovation is the process of coming up with implementing and using new ideas. Therefore, innovation emphasizes new things. It is guided by the existing thinking mode to put forward opinions different from conventional ideas. Innovation uses the existing knowledge and materials to change the whole or some parts of things so that they can be updated and developed. Taylor (2017) defines innovation in his study of definitions as creation of new combinations of existing resources, Implementation of a new or significantly improved product (good/service) or process (method/practice/relationship). Innovation is the creation and



implementation of new processes, products, services, and methods of delivery which result in significant improvements in outcomes, efficiency, effectiveness, or quality.

Using the new technology is just a tiny part of today's innovation in education. As small as it is, it has its role, and it helps Business Educators and Business Education students to provide education from anywhere to everywhere in the world. The globalised world we live in needs technology, and education needs to embrace it and use it in its interest as much as possible. Technology in education means making things more accessible, attainable, and flexible. It can be done through different training system that schools used to engage students and teachers (Taylor 2017). Some of them are:

1. online learning systems – there are many offered by Google and Microsoft
2. virtual studies desks
3. virtual assemblies
4. social media gatherings – tools or platforms

Technological innovations have their benefits and challenges. This is why implementing them into the education system needs to be done with care to transform them into successful teaching practices.

Innovative learners are the learners of tomorrow and the learners ready to embrace the future. They are prepared for living the life of tomorrow and contributing to the development of society. Creative learners embrace change and believe that we can only grow through innovation. Scientific knowledge about effective learning as identified in *“The Nature Learning: Using Research to Inspire Practice”* (OECD, 2010), calls for substantial innovation and change in current educational practice, that learning must become more social, authentic, adapted to individual motivations and abilities, reflective, and strategic - to name just a few challenges.

Innovation in the classroom will improve the quality of learning and understanding discovering that, innovation also involves a higher degree of freedom and trust will change teachers' perspectives on the learning style. This is to make sure teachers are prepared for an innovative education program which is also essential. Thus, enhancing their professional development, helping them understand the changes that are made from the technological perspective, preparing them to develop their competencies, skills and teaching ways which are critical.

The most important factor in innovative teaching is the student and the learning process. Innovative teaching is not about instruction. It is more about being a facilitator and helping the student develop, supporting them in the learning process and encouraging them to be creative, coming up with ways for the student to learn, which will not cause extra stress (Taylor, 2017).

Spacey (2018), outlined 6 Innovation Principles, that, innovative teaching can be through:

- ❖ A combination between pedagogy and technology,
- ❖ An environment where students can feel free to think and interact,
- ❖ A degree of personal involvement in the learning process,
- ❖ Replacing the “failure” way of thinking with “mistakes”,
- ❖ Giving students the opportunities to be part of the real-life and take on challenges,
- ❖ Allow creative thinking.

“The way that the design is going, the way schools are being built and used, has to reflect the fact that there are certain times you do need to sit learners down and teach them in a very didactic, very explicit learning approach, and there are also other times you have to allow them to work by themselves, or work in small groups, or work in collaboration with large groups of kids... it's how we use the space that makes it an innovative learning environment” since education is the primary driver of the economy, educator's must embrace and even strive to adopt innovation as much as possible. Education can respond to today's needs through innovative learning, teaching, guiding, creative courses, and adopting each of term. The sooner education adopts innovative practices, the more significant its growth because the education system nowadays needs to be effective and efficient Niță & Gutu (2023).

Digitalization through teaching in Business Education: Krunal (2020), saw that, the education industry has undergone a significant transformation over the past decade. With digitization taking over the traditional education system, there has been a major shift in the conventional classroom learning approach. From online classes and virtual tutoring to interactive learning platforms - in countless ways, digital tools are being incorporated into the educational process. Therefore, digitilisation through teaching in Business Education refers to the use of technology to transform traditional educational materials and methods into digital formats.



This includes everything from online classes and virtual tutoring to interactive learning platforms and educational apps. The goal of digital teaching in Business Education is to enhance the learning experience and improve student outcomes (Novak, 2018).

In the view of Niță & Gutu (2023), the process of educational digital transformation implies the entire learning process, in accordance with the specificities of each generation, thus resulting in knowledge communication. Starting from a deep and complete understanding of Business Education competencies within the digitalization concept, the managerial process of higher educational institutions needs to adopt and implement preparation strategies and specific follow-up milestones, thus reaching a better understanding of how to address learning quality to meet society, industry and labor market requirements. Business Education teaching and learning habits must change in the context of the use of digital technologies. Due to digitalisation through training in Business Education, a new learner and teacher design arises, since their ability to access information simultaneously at any point in time and from different locations around the Globe by generating knowledge is of interest. Higher institutions need to address the issue of creating, for both Business Educators and learners, on-site and online interaction platforms that may function in an alternative or separate mode.

Teaching using Digital Technologies in Business Education can enrich the learning experience for all Business Education recipients. We know from consultation activity that our learners already have strong exposures to digital technology and that they would support its increased use as part of their own education. In line with enriching the learning experience, digital technology can also enhance teaching. This potential lies not in the technology itself but in our business educators. If used appropriately, digital technology can act as a powerful, flexible and engaging tool for Business educators that can enhance what they already do so well. Russell (2016), saw that, many of the things that are already considered central to excellent learning and teaching can be enhanced using digital technology.

In more recent years there has been a subtle shift of emphasis on how to improve learning. Clark-Wilson, Robutti and Thomas (2020), observed that, the range of digital technology has expanded considerably and their facilities and power have also greatly increased. In the light of these changes, the focus of many has moved from how computers can help with learning to how teachers can make practical use of different types of digital technology to provide students with activities that will enhance learning.

Qureshi, Pan and Zheng (2021), digital social innovation (DSI) involves the use of digital technologies in the development and implementation of innovative products, services, processes and business models that seek to improve the well-being and agency of socially disadvantaged groups or address social problems related to marginality, inequality and social exclusion. Ozman and Gossart (2018) strive to disentangle the conceptual definition of digital social innovation, as digital social innovation lies at the intersection of three spheres: innovation, social and environmental problems, and digital technologies. The first sphere is innovation. It refers to the development and diffusion of a novelty that is not used yet in the market or sector or country where it is being introduced. The second sphere concerns the solutions put in place to address social and environmental problems, for example through public policies, research projects, new practices, civil society actions, business activities, or by decentralising the distribution of power and resources through social movements.

For example, social inclusion measures, facilitates, enables and open up channels for people to participate in social life, regardless of their age, sex, disability, race, ethnicity, origin, religion or socioeconomic status (e.g., the positive discrimination measures that enable minority students to enter universities). Finally, the third sphere relates to digital technologies, which concern hardware and software technologies used to collect, process, and diffuse information. In the area where the three spheres intersect lie digital social innovations. They include a broad group of digital platforms which facilitate peer-to-peer interactions and the mobilisation of people to solve social and/or environmental problems. Neighbourhood information systems, civic engagement platforms, volunteered geographic information systems, crowd funding platforms for sustainability or social issues, are some of the cases of the DSI area (Ozman & Gossart, 2018).

Novak (2018) saw that, 'Digital social innovations (DSI) are often associated with positive meanings, like *openness*, *collaboration* or *inclusion*, as opposed to more commercially oriented innovations. 'DSI can thus be defined as novelties that use, develop, or rely on digital technologies to address social and/or environmental problems. They include a broad group of digital platforms which facilitate peer-to-peer interactions and the mobilisation of people to solve social and/or environmental problems. Neighbourhood information systems, civic engagement platforms, volunteered geographic information systems, crowd



funding platforms for sustainability or social issues, are some of the cases of the DSI area' (Ozman & Gossart, 2018).

Statement of the Problem

21st century education should be able to train its recipient who are creators, innovators, inventors and originator of novel things to be able to proffer solutions to crucial world problems. These recipients so produced should be people who will develop and create applications and software that can be and also provide solutions to how teachers can teach and learners can learn effectively and efficiently.

Acquisition of requisite skills, aptitudes, values and competencies by the recipients are the objectives of Business Education Programme. Overtime principles, procedures and methods have been used to instill the training needs. To be able to be creative and perform creditably well in the world of work, recipients must be acquainted with the various and ever -changing technologies. These innovative digital technologies are not readily and adequately available due to dearth of finance. Technology is an integral tool for the training in Business Education programmes.

This is the dilemma. However the introduction of innovative digital technologies in the areas of space innovation, cloud computing coupled with the knowledge of information and communication technologies for the training of the recipients of business education programmes will enhance creativity and bring about innovations in the ways duties are performed,

Aim and Objectives

The main aim of this study ascertained whether nexus of creativity innovation and technology can enhance digitalization through training, in Business Education in Colleges of Education, Delta State. The specific objective of the study includes the following:

- 1 Ascertain the extent to which male and female business educators can enhance creativity by digitalisation using digital technologies in the training of business education programme in Colleges of Education, Delta State.
- 2 Ascertain the extent to which male and female business educators can influence innovation by digitalisation using digital space innovation in training of Business Education program in Colleges of Education, Delta State.

Research Questions

The following research questions were formulated to guide this study.

1. to what extent do male and female business educators enhance creativity by digitalisation using digital technologies in the training of Business Education program in Colleges of Education, Delta State.
2. to what extent do male and female business educators influence innovation by digitalisation using digital space innovation in training of Business Education program in Colleges of Education, Delta State.

Hypotheses

The following null hypotheses were tested at 0. 0 5 level of significance

Ho₁: There is no significant difference in the mean ratings of male and female educators on the influence innovation and creativity of using digital technologies in training of Business Education programme in Colleges of Education, Delta State.

Ho₂: There is no significant difference in the mean ratings of male and female educators on the influence of innovation and creativity by digitalisation using digital space innovation in training of Business Education programme in Colleges of Education, in Delta State.

Methodology

A research design is a blueprint or a plan that a researcher follows to study the relationships that may exist between a few different variables. Considering these considerations, a descriptive survey research design was used for the study. The population of the study is made up of all the observable characteristics, subjects, elements, persons, and institutions from whom the researcher hopes to get replies. For this reason, the research focused on Business Education lecturers working in Colleges of Education in Delta State with a population size of 90 Business Educators. The population of the study is drawn from Delta State Colleges of Education, Mosogar 10, College of Education, Warri, 15, Federal College of Education, Technical, Asaba 58 and Michael and Cecelia Ibru College of Education, Agbara-Otor 7. The sampling technique used was a census method of sampling. According to Wimmer and Dominick (2011), a census method is that process of sampling or statistical list where all members of a



population are analyzed or used. Hence, the entire population size of 90 Business Educators were used for the study. The major instrument for data collection was a structured questionnaire titled: "Nexus of Creativity, Innovation, Technology and Digitalisation Questionnaire. (NCITDQ). 90 copies of questionnaire were distributed while 78 copies were retrieved. Mean and Standard Deviation was used to answer the univariate variables whereas t-test was used to test the bivariate variables at 0.05 level.

Results

Research Question 1: To what extent do male and female business educators enhance creativity by digitalisation using digital technologies in the training of Business Education program in Colleges of Education, Delta State.

Table 1: Mean and Standard Deviation Analysis on the extent male and female business educators enhance creativity by digitalisation using digital technologies in training of Business Education program in Colleges of Education, Delta State

S/No	Questionnaire	Male = 28			Female = 50		
		Means	SD	Remarks	Means	SD	Remarks
1.	Creative thinking enhances the use of digital technologies	2.55	0.80	High Extent	3.10	0.88	High Extent
2.	Creativity enhances digitalisation and the use of AI tools.	2.60	0.81	High Extent	2.90	0.85	High Extent
3.	Creativity can enhance motivation through teaching using digital curricula.	2.80	0.84	High Extent	3.05	0.87	High Extent
4.	Creative thinking enhances content Knowledge of the 21 st century skills teaching.	2.55	0.80	High Extent	2.90	0.85	High Extent
5.	Creativity aligned skilled based curriculum enhances exponential thinking and technological transformation	2.60	0.81	High Extent	2.90	0.85	High Extent
Grand Total		2.58	0.80		2.87	0.85	

Source: Field Survey, 2023

The data presented in Table 1 revealed that the respondents accepted the view that learners experience is enriched using google classroom which enhance creativity. The table still indicted that the respondents agreed on the point that digital technology enhances effective communication between the educators and students. It was also observed from the analysis that the respondents accepted the fact that digital technology involves the use of tools, materials and systems to improve or enhance learners' experience. The analysis also showed that the respondents agreed on the view that application of scientific knowledge to the practical aims of human life enhanced learners' experience. The analysis also showed that the respondents agreed on the view that digital technology is the product of transferring scientific knowledge to practical use which enhanced learning experience.

Research Question 2: To what extent do male and female business educators influence innovation by digitalisation using digital space innovation in training of Business Education program in Colleges of Education, Delta State.



Table 2: Mean and Standard Deviation Analysis on the extent male and female business educators influence innovation by digitalisation using digital space innovation in training of Business Education programme in Colleges of Education, Delta State

S/No	Questionnaire	Male = 28			Female = 50		
		Means	SD	Remarks	Means	SD	Remarks
6.	Innovative curriculum for teaching and learning enhances knowledge of data analysis	2.55	0.80	High Extent	2.90	0.85	High Extent
7.	Online collaboration through skills teaching enhances application of digital technologies.	2.70	0.82	High Extent	2.95	0.86	High Extent
8.	Innovative online collaboration through skills teaching enhances diffusion and use of digital technologies	2.65	0.81	High Extent	2.80	0.84	High Extent
9.	Innovative Curriculum for teaching and learning enhances digitalization in education	2.55	0.80	High Extent	2.90	0.85	High Extent
10.	Digitalization is the process of educational digital transformation which enhances entire learning process.	2.70	0.82	High Extent	2.95	0.86	High Extent
Grand Total		2.60	0.81		2.81	0.84	

Source: Field Survey, 2023

The data analysis in Table 2 showed that the respondents accepted the view that digitalisation enhances transformation over the past decade which enhances learners' experience. The analysis also revealed that digitalisation brings a major shift in the conventional classroom learning approach which enhances learners' experience. It was still noticed in the analysis that the respondents accepted the fact that online classes and virtual tutoring to interactive learning platforms enhanced learners' experience. The analysis also revealed that digitalization involves the use of technology to transform traditional educational materials and methods which enhance learners' experience. The analysis also indicated that the respondents accepted the point that digitalisation is the process of educational digital transformation which enhanced entire learning process.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the mean ratings of male and female educators on the influence of creativity by digitalisation using digital technologies in training of Business Education programme in Colleges of Education, Delta State.

Table 3: T-test Analysis of significant difference in the mean ratings of male and female business educators on the influence of creativity by digitalisation using digital technologies in training of Business Education programme in Colleges of Education, Delta State.

Perception	N	Mean \bar{X}	Standard Deviation	df	t-val	p-value	Decision
Male	28	2.58	0.80	76	1.71	0.091	Accepted
Female	50	2.87	0.85				

The analysis on Table 3 reveals that the t-val of 1.71 at 76 degree of freedom with a P-value of 0.091 is greater than the alpha value of 0.05. Therefore, it is not statistically significant enough to reject the null hypothesis. So, the hypothesis 1 is thus accepted and the conclusion is that there is no significant difference in the mean ratings of male and female educators on the influence of creativity using digital technologies in digitalisation through training in Business Education program in Colleges of Education in Delta State.



Hypothesis 2: There is no significant difference in the mean ratings of male and female educators on the influence of innovation by digitalisation using digital space innovation in training of Business Education programme in Colleges of Education, Delta State.

Table 4: T-test Analysis of significant difference in the mean ratings of male and female educators on the influence of innovation by digitalisation using digital space innovation in the training of Business Education programme in Colleges of Education, Delta State

Perception	N	Mean \bar{X}	Standard Deviation	df.	t-valu	P-value	Decision
Male	28	2.60	0.81	76	1.24	0.218	Accepted
Female	50	2.81	0.84				

The analysis on Table 4 shows that the t-value of 1.24 at a degree of freedom of 76 with a p-value of 0.218 is greater than the alpha value of 0.05. It is not statistically significant at a 0.05 level of significance to reject the null hypothesis. Therefore, the hypothesis is thus accepted and the conclusion is that there is no significant difference in the mean ratings of male and female business educators on the influence of innovation by digitalization using digital space innovation in the training Business Education programme in Colleges of Education, Delta State,

Discussion of Findings

The extent male and female business educators enhance creativity by digitalisation using digital technologies in training of Business Education programme

The findings of the study in research question one revealed that male and female business educators enhance creativity using digital technologies in digitalisation through training in Business Education program. This finding is in collaboration with Taylor (2017), who observed that learners experience is enriched using google classroom which enhances creativity. The study still indicated that the respondents agreed on the point that digital technology enhances effective communication between the educators and students. It was also observed from the analysis that the respondents accepted the fact that digital technology involves the use of tools, materials and systems to improve or enhance learners' experience. The analysis also showed that the respondents agreed on the view that application of scientific knowledge to the practical aims of human life which enhance learners' experience. The analysis also showed that the respondents agreed on the view that digital technology is the product of transferring scientific knowledge to practical use which enhances learning experience.

The extent male and female business educators influence innovation by digitalisation using digital space innovation in training of Business Education programme

The findings of the study in research question two revealed that male and female business educators influence innovation using digital space innovation in training of Business Education programme. This finding is in collaboration with Novak (2018), who observed that digitalization enhances transformation over the past decade which enhance learners' experience. The analysis also revealed that digitalization brings major shift in the conventional classroom learning approached which enhances learners' experience. It was still noticed in the analysis that the respondents accepted the fact that online classes and virtual tutoring to interactive learning platforms which enhance learners' experience. The analysis also revealed that digitalization involves the use of technology to transform traditional educational materials and method which enhance learners' experience. The analysis also indicated that the respondents accepted the point that digitalization is the process of educational digital transformation which enhance entire learning process.

Conclusion

The issue of how Nexus of creativity innovation and technology enhance digitalization through training, in Business Education programme in Colleges of Education cannot be overemphasis. The study concluded that, male and female business educators enhance creativity by digitalisation using digital technologies in training of Business Education programme, experience and inexperienced business educators enhance creativity by digitalisation using digital social innovation in training of Business Education programme and male and female business educators influence innovation using digital space innovation by digitalisation in training of Business Education programme.



Recommendations

Based on the findings of the study, the following recommendations are made

1. Government should sponsor professional bodies like the Association of Business Educators of Nigeria (ABEN), Association of Vocational and Technical Education of Nigeria (AVTEN) and others to organize workshop programme for male and female business educators on creativity using digital technologies.
2. Government and non-governmental organization should create awareness and enlightenment for business educators on innovation using digital space innovation in digitalisation.
3. Adequate technological gadgets and facilities should be provided for hands-on learning by the students
4. Lecturers should be made to undergo training on study leave with pay or by shuttling to quickly train in digital technologies for teaching learning processes.

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