

SANTRI AS AGENTS OF CHANGE IN THE 21ST CENTURY IN BUSINESS INNOVATION, SCIENCE, AND TECHNOLOGY

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Abstract

The 21st century presents significant challenges and opportunities due to technological advancements, globalization, and social transformation. In this context, santri, traditionally known as students of Islamic sciences in pesantren, are experiencing a redefinition of their role as agents of change. This article aims to conceptually examine the strategic contributions of santri in the realms of business, science, and technology innovation. Through the literature study method, the author analyzes the shift in the paradigm of pesantren education, which is now beginning to open up to modern science and entrepreneurship. Digital-based pesantren, vocational education, and the integration of technology in the learning system are evidence of the active involvement of students in the transformation process. Santri are not only able to uphold Islamic values but also contribute to creating innovative solutions that are relevant to the needs of the times. Therefore, santri need to be positioned as multidimensional actors who can play a key role in building an adaptive, ethical, and competitive society in the global era.

Keywords: santri, agent of change, business innovation, science, technology, 21st century

Abstrak

Abad ke-21 menghadirkan tantangan dan peluang besar akibat perkembangan teknologi, globalisasi, dan transformasi sosial. Dalam konteks ini, santri yang secara tradisional dikenal sebagai pelajar ilmu-ilmu keislaman di pesantren mengalami redefinisi peran sebagai agen perubahan. Artikel ini bertujuan mengkaji secara konseptual kontribusi strategis santri dalam ranah inovasi bisnis, sains, dan teknologi. Melalui metode studi pustaka, penulis menganalisis pergeseran paradigma pendidikan pesantren yang kini mulai membuka diri terhadap ilmu pengetahuan modern dan kewirausahaan. Pesantren berbasis digital, pendidikan vokasional, dan integrasi teknologi dalam sistem pembelajaran menjadi bukti keterlibatan aktif santri dalam proses transformasi. Santri tidak hanya mampu menjaga nilai-nilai keislaman, tetapi juga berkontribusi dalam menciptakan solusi inovatif yang relevan dengan kebutuhan zaman. Oleh karena itu, santri perlu diposisikan sebagai aktor multidimensi yang dapat memainkan peran kunci dalam membangun masyarakat yang adaptif, beretika, dan berdaya saing di era global.

Kata Kunci: santri, agen perubahan, inovasi bisnis, sains, teknologi, abad 21

Introduction

The 21st century was marked by rapid changes in various fields of life due to the industrial revolution 4.0, economic globalization, and the development of information technology (Zh et al., 2025). Technological developments such as artificial intelligence (AI), Internet of Things (IoT), Big Data, and Clouds-Computing allows the collection and processing of large and diverse data from various sources (Saadia, 2021) in (Kamal et al., 2024).

In this case, various elements of society are required to be able to adapt and become agents of change that are not only reactive, but also proactive in facing the challenges of the times that continue to develop. One element that has great potential but often escapes public attention is santri, namely individuals who study in the pesantren environment, on a strong Islamic value base. People who study Islam and explore Islam in a pesantrian (pesantren) which is a place of learning for students (Hidayat, 2016).

Traditionally, students are better known as actors in religious education, focused on the mastery of the classical Islamic sciences. However, along with the development of the times and the opening of the pesantren world of modern science, the position of santri has now undergone transformation, santri not only become a guardian of tradition, but also has a great opportunity to appear as an innovative actor in the business world, science, and technology. This change of orientation is inseparable from the demands of the times that emphasizes the importance of integration between spiritual values, economic skills, and technology mastery (Rosyidin, 2021).

The emergence of entrepreneurship -based pesantren, digital boarding schools, to the involvement of students in technology literacy and entrepreneurship education (Hasim & Ramly, 2021) is a strong indication that santri have high endurance to the adaptation of the dynamics of change. Santri, with social capital, strong religious ethics, and the spirit of independence, has a great potential to play an important role in creating relevant and sustainable innovative solutions for the community. Therefore, it is very important to build a broader understanding of the potential and strategic contributions of students in various lines of modern life today.

This article aims to conceptually examine the strategic contributions of santri in the fields of business innovation, science, and technology, as well as the role of santri as agents of change in the 21st century, particularly in the realms of business innovation, scientific development, and technological utilization. This is very important because through a broader understanding, it is hoped that society can better recognize the potential and positive contributions of santri in creating innovative solutions that can benefit many people. Therefore, the role of santri as agents of change in the 21st century can be increasingly appreciated and can motivate the younger generation to continue developing their creativity and innovation skills in various fields of life. Thus, it is hoped that through the strategic contributions of santri, we can create a more advanced and sustainable society in the future. Through a literature study approach, this article presents a theoretical analysis of various scientific literature and strategic thinking to provide a comprehensive overview of the contribution of santri in nation-building based on values and innovation.

Methods

This research uses a qualitative approach with a systematic literature review method. (systematic literature review). (systematic literature review). This method was chosen because it is relevant for studies of a conceptual nature, where the goal is to build a comprehensive understanding of the role of santri as agents of change in the 21st century based on existing literature. The research process is conducted through several structured stages as follows:

1. Data Collection (Studi Literatur) (Studi Literatur) Data collection is carried out by searching for relevant scientific literature sources. The search process is focused on digital databases such as Google Scholar, websites, and SINTA (Science

and Technology Index) to capture reputable national publications. To ensure a systematic search, the keywords used include "the role of 21st-century students," "santripreneur," "pesantren innovation," "pesantren and technology," and "modernization of pesantren education."

The criteria for selecting literature (study protocol) are as follows:

Accepted Criteria: Scientific journal articles, conference proceedings, and books published within the period of 2009-2024. Its main focus is on literature that specifically discusses the roles, potential, and challenges of santri in the fields of business, science, and technology. Criteria Rejected: Literature that only discusses the history of pesantren without the context of modernization, pure fiqh studies without any connection to innovation, and non-scientific publications such as opinion articles in mass media.

2. Data Analysis All the collected literature was then analyzed using thematic analysis techniques. This process includes the identification, grouping, and synthesis of data to find the main themes or patterns that frequently emerge from various sources. The identified themes are then used to construct the discussion framework in this article, which includes four points: the redefinition of the role of santri, their contribution to business innovation, their involvement in science and technology, and the affirmation of their position as agents of change.

Results

After collecting articles with the criteria for the role of students as agents of change. Based on the results of these reviews, in general, the point of view of research on this matter is grouped based on: Redefinition of 21st Century Santri; Santri and Business Innovation; santri, science, and technology; and santri as agents of change.

Discussion

The word "santri," etymologically, comes from the word "shastra" which originates from India, specifically the Tamil region, meaning a scholar of Hindu religious scriptures. Terminologically, a santri is a student who resides in a dormitory (pondok) under the guidance of a kyai using a specific system model (Dhofier, 2009); a similar sentiment is also expressed by Gufron (2019).

Santri is a term for someone who is studying Islamic religious education in a certain period of time by settling in a boarding school (Huda & Layalif, 2021), The same opinion was also expressed by (Subiantoro & Pangeran, 2022).

Based on this explanation, it can be concluded that santri are someone who studies religious sciences in a certain time span, carried out with a sedentary learning system for a while during the learning process at a boarding school, by studying the books under the guidance of the cleric or kyai.

Santri in the 21st century was no longer only positioned as a traditional religious student who studied the yellow book in pesantren, but had developed into a multidisciplinary learner. This transformation was triggered by social, economic and technological dynamics that demanded the world of pesantren to be more open to general education and vocational (Bali & Hajriyah, 2020). The emergence of various models of modern and integrative pesantren, which combines the national and religious curriculum, becomes a marker that the identity of santri now includes a broader horizon, including mastery of knowledge, skills, and Islamic ethics in one unity.

Therefore the narrow definition of santri is now undergoing broad transformation, namely the students who not only explore religious knowledge, but explore the sciences that are relevant to the development of their times.

Santri and Business Innovation

Business innovation is one of the important sectors that began to be worked on by the students (Adhim & Ta'rif, 2021). This shows that many pesantren are now encouraging economic independence through business units such as cooperatives, micro businesses, agribusiness boarding schools, to digital-based marketplaces. Pesantren values such as honesty, mandate, and collective work are important foundations in forming business models based on Islamic ethics and a high value. Some pesantren even make entrepreneurship as part of the curriculum, training students in terms of production, marketing, and financial management. One of them is in Ciwidey Bandung Regency, Al-Ittifaq Islamic Boarding School which has various businesses, this reflects joint and coordinated efforts to combine education with economic empowerment, including the agricultural sector. AL-ITIFAQ Islamic Boarding School Agriculture Business Supply 134 Vegetable and Fruit Products of Agricultural Products through Kopontren Alif to Restaurants, Hospitals, Hotels, Online Market, Traditional Markets, and Supermarket (Pramudita et al., 2023).

In addition, various training sessions are held to improve product quality and services in the digital era. As done at Pondok Pesantren Jabar Noer in Sidoarjo, East Java, in its activity themed "Youth Entrepreneurship: Mentoring Teenagers in Digital Marketing," it is hoped to provide a broader understanding of the world of entrepreneurship and marketing. With the implementation of these activities, better data and insights regarding the effectiveness of entrepreneurship training in reducing unemployment have been obtained. In addition, this activity can also serve as a model for similar initiatives in pesantren or other educational institutions in Indonesia. (Rido & Chairil, 2024). (Rido & Chairil, 2024).

Then the model and concept of developing the entrepreneurial spirit of students at the Mu'inul Islam Islamic boarding school. Starting from the production process, marketing, to financial management, it is handled by the kyai and students at the pesantren. This pesantren not only focuses on the development of religious knowledge (tafaqquh fiddin), but is also oriented towards economic development. (tafaqquh fitijarah). (tafaqquh fitijarah). Producing graduates who are scholars with an entrepreneurial spirit, and entrepreneurs with a scholarly spirit. (Maulida et al., 2024). (Maulida et al., 2024).

Santri Science and Technology

The term "science" and "technology" is often considered as two sides of a currency that is difficult to separate. According to Baiquni (1995: 58-60) Which is quoted by Fakhri, science is a collection of human knowledge about nature obtained through the context of experts, with rational conclusions the results of critical analysis of measurement data obtained from observations of natural phenomena. Meanwhile, technology is a collection of human knowledge about how to utilize nature obtained from the application of science in productive and economical activities (Fakhri, 2010).

The integration of science and technology in the world of santri is a challenge as well as an opportunity. The integration of science and technology in the world of santri is a challenge as well as an opportunity because the era of society 4.0-5.0 demands pesantren to combine science and science and technology to be able to compete and face the flow of information and technology. Pesantren who succeeded

in integrating technology in their learning system without sacrificing traditional values have shown that technology can be an effective tool to support traditional methods such as sorogan and bandongan. The integration of technology in traditional pesantren methods is one of the challenges as well as relevant opportunities to increase the effectiveness of education without reducing its traditional values (Surya et al., 2024).

Santri who were previously foreign to digital devices are now starting to be introduced to computers, the internet, and even basic programming. Some pesantren have built technology laboratories and digital media to support learning activities. The involvement of pesantren alumni in the field of science and technology also shows that the background of Islamic education does not become a barrier to contributing to the development of knowledge and technology, can actually enrich with moral and ethical values.

As in the Tebuireng Islamic Boarding School in Jombang, the students not only get religious education through the recitation of the Koran and the Koran, but also given the opportunity to be creative. One of the creativity forums is Ireng Coffee, Tebuireng Photography Community, which focuses on developing knowledge in the fields of photography, video and film. They have even learned how to make long films. Tebuireng established the Tebuireng production house which has produced three films, including those who are popular, "Traces of Step 2 Ulama". This certainly makes the da'wah media can reach broader. In addition in Tebuireng, students were also given lessons about writing, journalism, media, and various applications from the development of information and other communication technology (ICT). Not stopping there Tebuireng Islamic Boarding School in collaboration with Telkom Indonesia held Coding Training. In the training, the coaches, students, and students were taught how to manage websites, conduct coding, and even study the basics of cyber security. This is very useful considering that currently many social media accounts are vulnerable to hacking, and we will have difficulty overcoming it if we do not have knowledge in that field (Rosyidin, 2021).

In addition to the Tebuireng Islamic Boarding School there is a Sintesa Islamic Boarding School in Magetan, East Java, which has its own uniqueness because the students are prepared to be ready to work. They are equipped with Information Technology (IT) to support the development of the creative economy or creative industry online. The students teach coding skills, computer mastery, website management, and online business. They practice in creating websites, becoming SEO marketing experts, using Facebook marketing, and Google Adwords. In addition, they are also required to study religious knowledge, attend studies, and there is a tahfidzul quran program to memorize the Koran (Rosyidin, 2021).

Whereas in Bantul, Yogyakarta, there is a pesantren named Pesantren IT that offers education in the field of technology information with various expertise degrees. Some expertise taught at Pondok IT includes Pondok Programmer, Pondok Multimedia, Pondok IMers, Pondok Cyber, and others. Apart from the flow and affiliation of mass organizations, this pesantren is very progressive and independent. Santri just got the fees from their seniors who have earned income from work in the IT field. Thus, students can learn for free, study IT to be able to make money, and then help their class younger siblings to learn for free too (Rosyidin, 2021).

However, in this case, digital literacy skills must also be mastered by the students, considering the rapid changes in digital technology can bring benefits to those who access it. However, this needs to be accompanied by cognitive and emotional intelligence in using modern devices. Improving literacy is the main

capital in utilizing information and communication technology (Ginting, 2020). Without adequate literacy, the risk of misinformation or technology misuse becomes even greater. In the vision of a modern pesantren, the education of students is based on efforts to develop general knowledge, mastery of technology, and enhancement of interpersonal skills, alongside the mastery of religious knowledge as the core of their scholarship. (Ali & Ghozali, 2024). (Ali & Ghozali, 2024).

Santri as agent of change

Santri is seen as an agent of change in the field of business innovation, the underlying is the environment where the santri live and learn, namely Islamic boarding schools. Islamic boarding schools have a good learning climate so that it becomes the right place to shape the character of business people, as follows:

First, the pesantren teaches the values and characters that are in harmony with the spirit of entrepreneurship. In the pesantren environment, students are taught to be independent, disciplined, work hard, and not easily give up. Santri are equipped with noble character, such as honesty, responsibility, and concern for others. These values are very important in the business world, where high integrity and ethics are needed to achieve success.

Second, Islamic boarding schools have a solid and mutually supportive community. Santri daily activities are in the same environment so that they indirectly practice their social interactions. They help each other, share knowledge, and remind each other in terms of goodness. This atmosphere strongly supports the development of entrepreneurial spirit, where a person needs support and motivation from the people around him.

Third, Islamic boarding schools have an extensive and influential alumni network. Many pesantren graduates have become important figures in various fields, including politics, economics and social. This network can be a valuable social capital for students who want to start a business. Through connections with seniors and alumni, they can gain access to resources, information, and business opportunities.

Fourth, pesantren have significant economic potential. With the number of students reaching millions of people, pesantren become a very potential market for various products and services. The students can take advantage of this opportunity by providing daily needs of students, such as food, clothing, books, and others. They can also develop businesses that meet the needs of the community around the pesantren.

Fifth, pesantren has a uniqueness and excellence that can be an added value in the business world. The products and services produced by students have their own characteristics that are differentiated by products and services in general. Like, halal food, shar'i clothing, or educational services based on Islamic values. This uniqueness can be an attraction for consumers who want quality products and services and in accordance with Islamic law (Pesantren Dan Kewirausahaan: Bagaimana Pesantren Mencetak Santri Menjadi Pengusaha Sukses, 2024).

Islamic boarding school as a place to learn students has a huge potential to produce students who have a tough and competitive mentality. The students who graduated from Islamic boarding schools are not only equipped with religious knowledge, but have characters, networks, and opportunities that can support them to start and develop their business.

Based on opportunities that are so open, students have a unique position as agents of change in the 21st century, because they are not only equipped with

knowledge, but also strong moral and spiritual values, which are provisions in the 4.0-5.0 era. In society, santri are often a role model and trusted figure. If mobilized with the right approach, santri can be a significant movement of change both in business innovation, science and technology. This role places students not just a tradition, but also as an innovator, pioneer, and leader of change in the midst of the flow of modernization and globalization.

Conclusion

In the context of the 21st century which is marked by the rapid development of technology, the dynamics of the digital economy, and the demands of innovation, santri as an Islamic education entity is no longer relevant if it is only understood as a traditional actors of religious learning. However, santri have great potential to become a strategic agent of change. Through integrated education, Islamic ethical values, and openness to science and technology, santri can contribute actively in forming ethical business ecosystems, developing value-based innovations, and becoming a motorbike social transformation in various fields.

This article confirms that the redefinition of the role of students is not only possible, but also urgent to be realized. The 21st century students need to be seen as multidimensional actors who are able to move in spiritual, intellectual, and practical space. Although faced with internal challenges such as conservatism and limited facilities, the potential for empowering santri in business, science, and technology is very open with structural support, inclusive policies, and pesantren education transformation.

This article builds a conceptual framework that positions santri as a value - based change agent that is not only able to survive in modernity, but also helped form the direction of change itself. With this perspective, the empowerment of students is not only an internal business of pesantren, but part of the national strategy in building innovative generations that are rooted in the breath of Islamic values and are ready to answer global challenges.

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