Innovation in Government: Strategies for Effective Public Service Delivery

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Abstract

This study aims to identify and analyze the factors that drive and hinder innovation in the public sector. The goal is to understand how these factors influence the quality of public service delivery and provide practical recommendations for policymakers and practitioners in the public sector. The study focuses on the public sector in North Sumatra Province, Indonesia, to offer context-specific insights. The research adopts a quantitative approach using survey methods. The sample consists of 300 public sector employees from various departments within the North Sumatra Provincial Government, selected through purposive sampling. Data collection involved questionnaires designed to measure factors driving and hindering innovation, as well as interviews with key personnel to gain deeper insights. The data were analyzed using descriptive statistics, regression analysis, and thematic analysis. This study underscores the critical role of management support, technological access, and a supportive organizational culture in promoting innovation in the public sector. It also highlights significant barriers such as resistance to change, resource constraints, and rigid bureaucracy. Addressing these barriers through comprehensive and strategic approaches, including bureaucratic reform and effective communication, can create an environment conducive to innovation. This, in turn, can enhance the quality of public services and meet the increasingly complex needs of society. The findings provide valuable insights for policymakers and public sector managers aiming to foster sustainable innovation and improve public service delivery.

Keywords: *Bureaucracy, Innovation, Public Sector, Resource Management, Technological Access*

Introduction

Innovation in the public sector plays a crucial role in enhancing the efficiency, effectiveness, and quality of services provided to the public. Innovation in this sector encompasses not only the application of new technologies but also the development of improved policies, processes, and work practices. Through innovation, the public sector can respond to societal needs more swiftly and accurately, reduce cumbersome bureaucracy, and optimize existing resources. Additionally, innovation enables governments to address emerging challenges in the era of globalization and digitalization, such as climate change, urbanization, and the increasing demand for transparency. Therefore, identifying and understanding the factors that drive and hinder innovation in the public sector is a vital step towards improving the quality of public services (Danu et al., 2023).

Hartley (2005) demonstrates that innovation in the public sector can bring significant changes in the way services are delivered, thereby enhancing responsiveness and public satisfaction. Innovation in the public sector involves not only the application of new technologies but also the development of better policies, processes, and work practices. For instance, Borins (2014) identifies that the implementation of information and communication technology (ICT) as a form of public service innovation can reduce

operational time and costs while expanding access to services for citizens. With innovation, the public sector can respond to societal needs more quickly and accurately, reduce bureaucratic red tape, and optimize resources (Rocha & Zavale, 2021).

Moreover, innovation enables governments to address new challenges arising in the era of globalization and digitalization, such as climate change, urbanization, and the increasing demand for transparency. According to the OECD report (2017), countries that promote innovation in the public sector have successfully enhanced transparency and accountability, thereby strengthening public trust in government. For example, the implementation of e-government in Estonia has significantly reduced corruption and improved public administration efficiency (Margetts & Dunleavy, 2013). Therefore, identifying and understanding the factors that drive and hinder innovation in the public sector is essential for improving public service quality. Sorensen and Torfing (2011) reveal that innovation is often hindered by resistance to change and a lack of resources, but with the right strategies, these barriers can be overcome, enabling public service transformation.

Various previous studies and empirical data indicate that innovation is not merely an option but a pressing need for the public sector to continue evolving and effectively serve the community. Innovation not only enhances performance but also helps create an adaptive and responsive environment to rapidly changing social and economic dynamics. Therefore, policymakers must promote a culture of innovation by providing the necessary support, including training and capacity development, and adopting relevant new technologies.

Despite the acknowledged importance of innovation in the public sector, many government organizations still face significant challenges in this area. Several studies indicate that one of the main obstacles is the conservative organizational culture and resistance to change. Walker (2014) shows that many government agencies have rigid bureaucratic structures that impede the innovation process. Excessive bureaucracy often leads to slow decision-making processes and a lack of flexibility in adopting new policies or technologies. Additionally, the lack of incentives for innovation in the public sector often results in civil servants feeling less motivated to make significant changes.

In addition to cultural barriers, another common issue is the limitation of resources, both financial and human. Borins (2001) points out that many innovation programs in the public sector are hampered by inadequate budgets for research and development. Trained and experienced human resources also pose a challenge, as the public sector often cannot compete with the private sector in terms of compensation and career opportunities. This leads to limited capacity to design, implement, and manage innovative initiatives. For example, Albury (2005) indicates that without adequate support and training, public sector employees may lack the necessary skills to effectively utilize new technologies.

Regulatory limitations and policies significantly hinder innovation in the public sector. Stringent and inflexible policies often constrain governmental organizations' ability to experiment with new methods. According to a report from the European Commission (2013), rigid regulations and complex licensing processes can obstruct innovative initiatives requiring rapid testing and adjustments. Additionally, regulations that fail to keep pace with technological advancements also pose barriers, as highlighted by Mazzucato and Semieniuk (2017) in their study on innovation policies.

Furthermore, a lack of coordination and collaboration among government agencies frequently impedes the innovation process. Public sector innovation necessitates cross-sectoral cooperation, yet many governmental organizations operate in silos, isolated from one another. Research by Sørensen and Torfing (2011) indicates that weak collaboration among government agencies leads to duplicated efforts and inefficiencies, thereby hindering the dissemination of successful innovative practices. The absence of platforms for sharing knowledge and experiences also serves as a barrier to effective innovation.

Addressing the lack of innovation in the public sector requires a comprehensive strategic approach. This includes fostering an organizational culture that supports innovation, providing adequate resources,

reforming regulations to encourage flexibility, and enhancing inter-agency coordination and collaboration. By overcoming these barriers, the public sector can more effectively adopt necessary innovations to improve service quality. Local governments can learn from the private sector and other countries that have successfully implemented innovative initiatives. Integrating modern technology, improving work processes, and encouraging public participation can help governments become more responsive to societal needs, thereby achieving the primary goal of efficient and effective public service delivery.

The central issue addressed in this paper is why innovation in the public sector is often slow and ineffective. Despite many innovative initiatives being launched, not all can sustain themselves or make a significant impact. Several factors are suspected to contribute to this, including resistance to change, resource limitations, and lack of support from stakeholders. Additionally, rigid bureaucracy and unsupportive organizational culture often serve as primary barriers. Therefore, this paper will delve deeper into the driving and inhibiting factors influencing innovation in the public sector and how these factors can be addressed to enhance public service quality.

The objective of this study is to identify and analyze the factors driving and inhibiting innovation in the public sector. By understanding these factors, effective strategies and policies can be devised to promote innovation within governmental environments. The study also aims to evaluate the impact of innovation on public service quality and provide practical recommendations for policymakers and practitioners in the public sector. Consequently, the findings from this study can serve as a reference for governments in designing and implementing more effective and sustainable innovative programs.

The novelty of this study lies in its comprehensive approach to identifying the driving and inhibiting factors of innovation in the public sector. This study not only relies on secondary data from existing literature but also collects primary data through surveys and interviews with public sector practitioners. Additionally, the study adopts path analysis methods to identify the relationships between various factors and their impact on public service quality. Thus, this study provides a clearer and more in-depth picture of the dynamics of public sector innovation and offers more practical and applicable solutions.

Furthermore, the study also considers the specific local context, namely the public sector in Indonesia, particularly in North Sumatra Province. By focusing on this local context, the study can reveal challenges and opportunities that may differ from those in other countries. This is important because each country or region has unique characteristics and dynamics, so what works as a determining factor or successful strategy in one place may not necessarily be applicable in another. Therefore, the results of this study are not only relevant to Indonesia but can also serve as a learning material for other countries with similar conditions. This study is expected to make a significant contribution to the literature on innovation management in the public sector. By identifying and analyzing the driving and inhibiting factors of innovation and providing practical recommendations for policymakers, this study can help accelerate the adoption of innovation in the public sector.

Literature Review
1. The Concept of Innovation in the Public Sector

Innovation in the public sector is frequently defined as the application of new ideas that result in improvements in the efficiency, effectiveness, and quality of public services. According to Moore and Hartley (2008), public sector innovation encompasses the introduction of new policies, programs, or processes that bring about positive changes in the provision of public services. Unlike innovation in the private sector, which is often driven by financial profit, public sector innovation is more focused on social benefits and improving community welfare. In the private sector, innovation is typically driven by market competition and the need to increase market share, whereas in the public sector, the impetus to innovate arises from the need to meet societal demands and government policies.

Various theories have been developed to understand innovation in the public sector. One pertinent theory is the Diffusion of Innovations Theory proposed by Rogers (2003), which emphasizes how innovations spread within organizations through various stages of adoption. This theory is instrumental in understanding how innovative policies and practices can be effectively implemented in the public sector. Additionally, the Dynamic Capabilities Theory posited by Teece (2007) highlights an organization's ability to integrate, build, and reconfigure internal and external competencies to address changing environments. This theory can be applied to analyze how public sector organizations can develop their capacity for innovation.

2. Factors Driving Innovation

The literature identifies various factors that drive innovation in the public sector. A key factor is visionary leadership and top management's commitment to promoting change (Borins, 2001). Strong leadership can create an environment that supports experimentation and risk-taking, which are necessary for innovation. Additionally, an organizational culture that supports learning and creativity is crucial (Hartley, 2005). Organizations that encourage collaboration, openness to new ideas, and recognition of innovative successes are more likely to successfully adopt innovation.

Other factors driving innovation include appropriate incentives for employees, technological support, and the availability of adequate resources. Walker (2014), asserts that incentives such as recognition and rewards can enhance employees' motivation to innovate. Technology plays a critical role by providing tools and platforms that enable innovation, such as advanced management information systems. Adequate financial and human resources ensure that the organization has the capacity to implement and manage new initiatives.

3. Barriers to Innovation

Barriers to innovation in the public sector are often structural and cultural. Rigid bureaucracy and stringent regulations frequently impede the innovation process (Borins, 2014; Damanpour & Schneider, 2009). Bureaucratic structures tend to suppress individual initiatives and limit the flexibility needed to test and implement new ideas. Additionally, resistance to change among employees is a significant barrier. Employees accustomed to traditional working methods may resist changes brought about by innovation due to discomfort or fear of negative impacts on their positions (Hartley, 2005).

Other barriers include a lack of necessary skills and knowledge to adopt new technologies, as well as shortages of financial and human resources (Mulgan & Albury, 2003). According to Sorensen and Torfing (2011), a lack of coordination between departments and poor communication can also hinder innovation. Organizations operating in isolated silos often struggle to share information and collaborate, impeding innovative efforts.

4. The Impact of Innovation on Public Service Quality

Empirical studies demonstrate that innovation can lead to significant improvements in the quality of public services. For instance, research by Osborne and Brown (2011) shows that the application of information and communication technology (ICT) in public administration has increased operational efficiency and service accessibility for the public. In some countries, the implementation of e-government has reduced the time and cost required to access government services and has increased transparency and accountability (Margetts & Dunleavy, 2013).

Case studies from various countries illustrate how innovation has helped address specific challenges in public service delivery. For example, in Estonia, the implementation of the e-residency system has enabled citizens and non-citizens to easily and securely access digital government services, thereby increasing public participation and engagement in the governance process (Drechsler, 2018). In the Netherlands, innovations in water management through the use of advanced technology have helped reduce flood risks and enhance

environmental safety (Torfing, 2016). These studies underscore the importance of innovation as a tool for enhancing the quality and effectiveness of public services.

Methods

1. Research Design

This study employs a quantitative approach utilizing the survey method. This method was selected due to its capacity to systematically and structurally gather data from a substantial number of respondents, thereby providing a representative overview of the variables being examined. This approach also facilitates the empirical testing of hypotheses through statistical analysis (Creswell, 2014). In the context of this study, surveys are used to explore the factors that drive and hinder innovation in the public sector and how these innovations can enhance the quality of public services.

2. Sample and Sampling Technique

The population for this study comprises public sector employees within the Provincial Government of North Sumatra, covering various departments and work units. The sample was selected using purposive sampling, where respondents were chosen based on specific criteria relevant to the study's objectives. These criteria included employees with a minimum of two years of experience in their current positions and those directly involved in the innovation process or policy implementation. The sample size for this study is 300 employees, which is considered sufficient to yield generalizable findings.

3. Data Collection

Data collection for this study involved several tools and techniques. The primary instrument was a questionnaire specifically designed to measure the variables under investigation, namely the factors driving and hindering innovation, and the quality of public services. The questionnaire comprised closed-ended questions with a Likert scale, allowing respondents to provide measurable responses regarding their perceptions and experiences. In addition to the questionnaire, data were also collected through semi-structured interviews with key employees to gain deeper insights into the issues discussed. Document analysis was also conducted to complement the data obtained from the questionnaires and interviews by reviewing official reports, policies, and other relevant documents.

4. Data Analysis

The collected data were analyzed using both quantitative and qualitative data analysis methods. For quantitative data, descriptive analysis was employed to describe the characteristics of the sample and the distribution of respondents' answers. Additionally, regression analysis was utilized to examine the relationships between the independent variables (factors driving and hindering innovation) and the dependent variable (quality of public services). This regression analysis enabled the identification of significant influences of the independent variables on the dependent variable.

For qualitative data obtained from interviews and document analysis, thematic analysis was employed to identify the main themes emerging from the data. This analysis involved a coding process, where data were categorized based on relevant themes. The results of this thematic analysis were used to provide context and support the quantitative findings. By integrating both methods of analysis, this study aims to offer a comprehensive understanding of the factors driving and hindering innovation in the public sector, and how such innovations can enhance the quality of public services.

Results

1. Classical Assumption Tests

The analysis results indicate several key factors driving innovation in the public sector. Before presenting the regression analysis results, it is essential to note that the classical assumption tests confirm the validity of the model used in this study. The normality test using the Kolmogorov-Smirnov method indicates that the data are normally distributed, with a significance value above 0.05. The multicollinearity test shows that the tolerance values for all variables are greater than 0.10, and the VIF values are less than 10, indicating no multicollinearity issues. The heteroskedasticity test using the Glejser method shows no heteroskedasticity problem, with significance values above 0.05 for all variables.

Table 1. Summary of Classical Assumption Tests

No.	Test Type	Criteria	Result	Conclusion
1.	Normality (Kolmogorov-Smirnov)	Sig. > 0.05	Sig. > 0.05 for all variables	Data is normally distributed
2.	Multicollinearity (Tolerance)	Tolerance > 0.10	Tolerance > 0.10 for all variables	No multicollinearity detected
3.	Multicollinearity (VIF)	VIF < 10	VIF < 10 for all variables	No multicollinearity detected
4.	Heteroskedasticity (Glejser)	Sig. > 0.05	Sig. > 0.05 for all variables	No heteroskedasticity detected

Based on the regression analysis, factors such as management support ($\beta = 0.45$, $p < 0.01$), access to technology ($\beta = 0.37$, $p < 0.01$), and an innovation-supportive organizational culture ($\beta = 0.41$, $p < 0.01$) significantly influence the level of innovation in the public sector. Management support includes leadership commitment to driving change and innovation, while access to technology encompasses the adequate technological infrastructure to support innovation implementation. These findings are consistent with previous research indicating that supportive leadership is crucial for fostering innovation (Isaksen, 2017; Prajogo & Sohal, 2006; Sujana et al., 2020). Top management support provides the moral impetus and resources necessary to implement innovative ideas.

2. Statistical Testing of Variables

The statistical testing results for the factors driving innovation in public sector services in this study are summarized in the following table:

Table 2. Summary of Statistical Testing Results for Innovation-Driving Factors

Variable	β	Sig.	Description
Management Support	0.451	< 0.000	Significant
Access to Technology	0.372	< 0.002	Significant
Organizational Culture	0.414	< 0.001	Significant

Referring to the statistical analysis results related to the driving factors of innovation in the public sector, the statistical testing indicates that management support, access to technology, and an innovation-supportive organizational culture are key factors significantly influencing the level of innovation. Management support

is the most influential factor, with a beta value ($\beta = 0.45$, $p < 0.01$). This factor also includes leadership commitment to promoting change and innovation within the organization.

Access to technology ($\beta = 0.37$, $p < 0.01$) emerges as another important factor driving innovation. Adequate technological infrastructure, such as advanced information systems and modern communication tools, enables the innovation process to be more efficient and effective. Technology plays a crucial role in accelerating the collection, processing, and distribution of information, which is vital in a dynamic work environment.

Organizational culture is the next factor supporting innovation ($\beta = 0.41$, $p < 0.01$). This organizational culture includes openness to new ideas and encouragement for experimentation. An innovation-supportive culture is characterized by policies that promote creativity, tolerance for failure, and recognition of innovative contributions from employees.

Meanwhile, the statistical testing results for the factors hindering innovation in public sector services in this study are summarized in the following table:

Table 3. Summary of Statistical Testing Results for Innovation-Hindering Factors

Variable	β	Sig.	Description
Resistance to Change	0.423	< 0.000	Significant
Lack of Resources	0.397	< 0.001	Significant
Rigid Bureaucratic Structure	0.389	< 0.001	Significant

Referring to the statistical analysis results related to the hindering factors of innovation in the public sector, the statistical testing indicates that resistance to change, lack of resources, and rigid bureaucratic structures are key factors significantly influencing the level of innovation. Resistance to change is the most influential factor, with a beta value ($\beta = 0.42$, $p < 0.01$). This factor includes attitudes and behaviors of employees who are reluctant to accept changes and innovations within the organization.

Lack of resources ($\beta = 0.40$, $p < 0.01$) emerges as another important factor hindering innovation. The lack of resources, such as adequate funding, time, and workforce, hampers the innovation process and its implementation. Without sufficient resources, organizations struggle to develop and implement new ideas, which are crucial in a dynamic work environment.

A rigid bureaucratic structure is the next factor hindering innovation ($\beta = 0.39$, $p < 0.01$). This bureaucratic structure includes complex procedures, layered hierarchies, and a lack of flexibility in decision-making. A rigid bureaucratic structure is characterized by policies that stifle creativity, complicate the implementation of new ideas, and impede swift and effective change.

3. Interview Results

The interviews conducted with several employees within the regional government of North Sumatra Province revealed key insights into the factors driving and hindering innovation in the public sector. Respondents emphasized the critical role of inter-departmental collaboration and continuous training as primary drivers of innovation. Inter-departmental collaboration facilitates the exchange of knowledge and resources, fostering the generation of new ideas and creative solutions. Furthermore, continuous training ensures that employees are equipped with the latest skills and knowledge necessary for driving innovation. These findings highlight the importance of management support, access to technology, an innovation-supportive organizational culture, inter-departmental collaboration, and continuous training as crucial factors promoting innovation in the public sector. Regional governments and relevant agencies should prioritize strengthening these factors to create an environment conducive to innovation, thereby enhancing the quality of public services.

In contrast, the interviews also identified several factors that impede innovation. Respondents noted that resistance to change is often driven by a lack of understanding and fear of risk. Additionally, resource shortages frequently stem from inefficient budget allocation and insufficient support from leadership. The rigidity of bureaucratic structures was also highlighted as a significant barrier to innovation. Addressing these issues requires a comprehensive approach, including bureaucratic reform and the implementation of more flexible policies.

The findings of this study underscore the necessity of overcoming resistance to change, addressing resource constraints, and reforming rigid bureaucratic structures to foster innovation in the public sector. Regional governments and associated agencies need to focus on mitigating these barriers to create a supportive environment for innovation and improve the quality of public services. Essential measures include providing targeted training, ensuring efficient allocation of resources, and implementing bureaucratic reforms to establish a more flexible and adaptive organizational structure. By adopting these strategies, the public sector can better support innovation, ultimately leading to improved service delivery and increased public trust.

Discussions

Referring to the results of the statistical tests and the research findings described earlier, it is evident that management support ($\beta = 0.45$, $p < 0.01$) is the most significant factor driving innovation. This finding aligns with Prajogo and Sohal (2006), who assert that supportive leadership is crucial for fostering innovation. Support from top management provides the necessary moral boost and resources required to implement innovative ideas. In the context of the public sector, leadership commitment to fostering change and innovation is critical, as innovative initiatives often necessitate significant alterations in existing processes and structures (Damanpour & Schneider, 2009; Fu et al., 2020).

The statistical test results indicate that access to technology ($\beta = 0.37$, $p < 0.01$) emerges as a key driver of innovation, suggesting that adequate technological infrastructure, such as advanced information systems and modern communication tools, facilitates a more efficient and effective innovation process. Technology plays a vital role in accelerating the collection, processing, and dissemination of information, which is crucial in dynamic work environments. This finding is supported by Damanpour and Schneider (2009), who demonstrated that the adoption of new technologies enhances an organization's capacity for innovation.

Regarding the statistical results related to an innovation-supportive organizational culture ($\beta = 0.41$, $p < 0.01$), the findings underscore the necessity of openness to new ideas and encouragement for experimentation. An innovation-supportive culture is characterized by policies that promote creativity, tolerance for failure, and recognition of employees' innovative contributions. Martins and Terblanche (2003) highlight that an organizational culture supportive of innovation is a key factor in successful innovation in the public sector. Such a culture encourages individuals to take risks and develop new ideas without fear of negative repercussions in case of failure (Oreg et al., 2011; Windrum & Koch, 2008).

In terms of factors hindering innovation, the study reveals that resistance to change ($\beta = 0.42$, $p < 0.01$) is a primary barrier to innovation in the context of the North Sumatra provincial government. This factor includes the attitudes and behaviors of employees who are reluctant to accept change and innovation within the organization. This finding is consistent with several studies indicating that resistance to change is often driven by a lack of understanding and fear of risk. Effective communication and training to enhance understanding of the benefits of innovation are necessary to overcome this barrier (Martensen & Dahlgaard, 1999).

The statistical test results also highlight the significance of resource shortages ($\beta = 0.40$, $p < 0.01$) as another impediment to innovation. This suggests that elements such as funding, time, and labor, if inadequately supplied, can hinder the innovation process and its implementation. Without sufficient resources, organizations struggle to develop and implement new ideas. This finding aligns with previous

research indicating that inefficient budget allocation and lack of leadership support are major causes of resource shortages.

The rigidity of bureaucratic structures ($\beta = 0.39$, $p < 0.01$) also emerges as a significant barrier to innovation. Complex procedures, layered hierarchies, and a lack of flexibility in decision-making are conditions that must be addressed to prevent obstruction of innovation in the public service sector. Rigid bureaucratic structures are characterized by policies that stifle creativity and complicate the implementation of new ideas. Bureaucratic reform and the adoption of more flexible policies can be solutions to overcome this barrier. This finding is consistent with previous research indicating that rigid and non-adaptive bureaucracies hinder the growth of an innovation culture in many organizational settings (Barczak et al., 2010).

These research findings, reinforced by interview results with several respondents, emphasize the importance of addressing resistance to change, resource shortages, and rigid bureaucratic structures as the main barriers to innovation in the public sector. Regional governments and relevant agencies need to focus on strengthening these factors to create an environment supportive of innovation and improve the quality of public services. Efforts should include providing appropriate training, ensuring efficient resource allocation, and implementing bureaucratic reforms to create a more flexible and adaptive organizational structure. By adopting a more holistic and coordinated approach to overcoming barriers and leveraging driving factors, the public sector can create an environment conducive to innovation. Ultimately, this will enhance the quality of public services and meet the increasingly complex and dynamic needs of society.

Conclusion

This study underscores the critical importance of innovation in the public sector for enhancing efficiency, effectiveness, and the quality of services provided to the community. The research findings indicate that factors such as management support, access to technology, and an organizational culture supportive of innovation significantly influence the level of innovation. Robust management support, characterized by leadership's commitment to fostering change and innovation, provides the necessary moral boost and resources for implementing new ideas. Furthermore, adequate technological infrastructure facilitates a more efficient and effective innovation process. An organizational culture that encourages openness to new ideas and experimentation is also shown to be vital in increasing innovation levels in the public sector.

However, the study also identifies significant barriers that hinder innovation in the public sector. These barriers include resistance to change, resource shortages, and rigid bureaucratic structures. Resistance to change is often due to a lack of understanding and fear of risk, while resource shortages encompass insufficient funds, time, and workforce to develop and implement new ideas. Rigid bureaucratic structures, characterized by complex procedures and layered hierarchies, further impede the innovation process. Overcoming these obstacles requires bureaucratic reforms and more flexible policies, along with effective communication and training that fosters an understanding of the benefits of innovation.

In conclusion, this study demonstrates that achieving effective and sustainable innovation in the public sector necessitates a balance between driving factors and the elimination of existing barriers. Local governments and relevant agencies must focus on strengthening management support, enhancing access to technology, and fostering an organizational culture that supports innovation. These efforts, supported by continuous training and efficient resource allocation, will create an environment conducive to innovation. Consequently, the public sector can better respond to the increasingly complex and dynamic needs of the community, improve the quality of public services, and build public trust in the government.

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