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CHILD LABOUR IN SMALLHOLDER OIL PALM HOUSEHOLDS AND ITS IMPLICATIONS FOR EDUCATIONAL ATTAINMENT: A QUALITATIVE STUDY IN ROKAN HULU, INDONESIA

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Abstract

*The expansion of the oil palm sector supports household livelihoods in Indonesia, but it also draws children into family plantation work. Previous studies have documented child labour in oil palm production, yet little is known about how smallholder households weigh plantation work against schooling, or about the role of non-formal education in keeping working children in education. This study examines children's involvement in oil palm work and its implications for educational attainment among smallholder households in Rokan Hulu Regency, Riau Province. A qualitative design was used, combining semi-structured in-depth interviews with limited field observations. Twenty-four purposively selected informants took part: 16 parents or guardians, six children aged 12–17, and two managers of non-formal education programmes. Data were analysed thematically, and their credibility was checked through source triangulation and member checking. Five themes emerged. Families valued schooling but treated the plantation as their children's economic future. Children collected loose fruitlets (*brondolan*), carried fresh fruit bunches, cleared plantation paths and, in some cases, sprayed pesticides, with involvement rising during harvest periods. This work was associated with lateness, absenteeism, reduced study time due to fatigue and, for some children, leaving school after junior secondary level. Household economic pressure, distance to school and socio-cultural norms shaped these outcomes, while equivalency programmes run by community learning centres (Sanggar Kegiatan Belajar, SKB, and Pusat Kegiatan Belajar Masyarakat, PKBM) offered a route back into education. The study adds a household-level account of how plantation inheritance shapes schooling decisions. It implies that school calendars, equivalency services and child-labour safeguards in certification schemes should be adapted to the harvest cycle of smallholder plantations.*

Keywords: *Child labour; Oil palm; Educational attainment; Smallholder households; Non-formal education*

1. INTRODUCTION

Oil palm is one of Indonesia's most important agricultural commodities and a major source of rural income. Between 2019 and 2023, the area planted with oil palm in Indonesia grew by about 10%, with significant expansion in 2022–2023 (Badan Pusat Statistik, 2024). This growth has been supported by licensing policies that facilitated large-scale land acquisition by national and international investors (Lay et al., 2021), and it is part of a wider regional shift in which rubber and

other land uses in Southeast Asia have been converted to oil palm (Jayathilake et al., 2023). Plantation areas are therefore likely to continue expanding in the coming years.

For smallholder households, oil palm has brought clear economic gains. Oil palm cultivation has been shown to raise living standards and to increase spending on children's education in smallholder farm households (Chrisendo et al., 2022), and the sector provides employment for millions of households (Deli et al., 2023). Other evidence points in the opposite direction. Oil palm expansion changes the demand for agricultural labour (Kubitza et al., 2024), smallholders often rely on unpaid family labour to meet harvest demands (Brandão & Schoneveld, 2021; Vos et al., 2023), and children in plantation households are drawn into work that can compete with schooling (Ghani & Afriansyah, 2023; Wahab & Dollah, 2023a). Where poverty and economic pressure are strong, children's work can become unfree or exploitative labour from which it is hard to exit (Wahab & Dollah, 2023a). Unproductive plantation areas are also associated with poorer access to basic education, measured as longer distances to primary schools (Fosch et al., 2023).

Existing research on child labour in the oil palm sector has concentrated on company estates and on Malaysia, particularly Sabah (Wahab & Dollah, 2023a, 2023b), or on corporate responsibility for children's rights (Pasaribu & Vanclay, 2021). Studies of Indonesian independent smallholders are fewer and mostly describe the dilemma between work and school (Ghani & Afriansyah, 2023) or children's interest in higher education (Tanjung et al., 2025). Two gaps therefore remain. First, little is known about how smallholder households themselves reconcile the plantation, seen as an asset that children will inherit, with formal schooling. Second, few studies examine the role of non-formal equivalency education in keeping working children in education. Rokan Hulu Regency in Riau Province, which has the largest oil palm production in the province (BPS Kabupaten Rokan Hulu, 2026), offers a suitable setting for addressing both gaps.

This study contributes a household-level qualitative account that links the plantation as an intergenerational asset to schooling decisions, distinguishes children's light work from hazardous work using ILO criteria, and adds the perspective of non-formal education providers. It addresses three research questions: (1) How do smallholder households perceive education in relation to their children's future in oil palm farming? (2) What forms does children's involvement in plantation work take, and how does it affect their schooling? (3) What barriers limit children's access to education, and what role does non-formal education play in sustaining it?

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Child Work, Child Labour and Hazardous Work

International standards distinguish between three forms of children's economic activity. *Child work* refers to age-appropriate light tasks that do not harm a child's health or interfere with schooling. *Child labour* is work performed below the minimum age, or work that deprives children of schooling or harms their development (International Labour Organization [ILO], 1973; ILO-UNICEF, 2025). *Hazardous work is a subset of child labour that*, by its nature or the conditions in which it is carried out, is likely to harm children's health, safety or morals, and it is one of the worst forms of child labour (ILO, 1999). Indonesian law follows these standards. Law No. 13/2003 on Manpower (Republik Indonesia, 2003) allows children aged 13–15 to do light work for no more than three hours a day, outside school hours, and the Minister of Manpower and Transmigration Decree No. KEP.235/MEN/2003 (Menteri Tenaga Kerja dan Transmigrasi Republik Indonesia, 2003) lists work involving hazardous chemicals, including pesticides, as hazardous for anyone under 18. This distinction matters for the present study. Collecting loose fruitlets for a short time after school may count as child work, whereas spraying pesticides is hazardous work regardless of the hours involved, and it carries documented health risks (Roggero et al., 2007).

2.2 Theoretical Framework: Household Decisions on Child Labour and Schooling

Human capital theory views education as an investment whose returns are realised through higher future productivity and earnings (Becker, 1964). Households invest in schooling when they

expect these returns to exceed the direct costs and the opportunity cost of children's time. Basu and Van (1998) add a household model of child labour built on two axioms. The *luxury axiom* holds that households send children to work only when adult income is too low to meet subsistence needs. The *substitution axiom* holds that adult and child labour are substitutes. Together they imply that child labour falls as adult income rises. Empirical studies support both mechanisms: higher costs of education increase child labour (Ali & Soharwardi, 2022), and higher parental education reduces it (Abaidoo, 2024). Wider poverty and economic background also shape children's interest in continuing their education (Nursita & Edy P, 2022; Oryza & Listiadi, 2021).

These models assume that households weigh schooling against current income. In smallholder oil palm households, however, the plantation is also an asset that children are expected to inherit. If parents expect that their children's future depends on the plantation rather than on formal qualifications, the expected return to schooling falls, and work on the family plantation becomes a form of on-the-job training. This study uses that extension of human capital theory as its main analytical lens. This lens is complemented by the Sustainable Livelihood Approach, which links children's work to household assets, vulnerability and access to services, and which has been applied to child-labour prevention in rural Indonesia (Idrus et al., 2025).

2.3 Child Labour and Educational Outcomes

Child labour remains common in developing countries, particularly in agriculture and in rural areas. Empirical studies show that greater involvement in work is associated with lower school attendance and lower academic achievement, because time spent working is taken away from studying and from rest (Emezue et al., 2023). The effect is stronger when work is seasonal and coincides with the school calendar, as in harvest periods (Vos et al., 2023). Children engaged in hazardous work also face health consequences that can further reduce school participation (Roggero et al., 2007). Educational policies and programmes, such as cash transfers, school feeding and flexible schooling, have been shown to reduce child labour and increase school participation in low- and middle-income countries (Emezue et al., 2023).

2.4 Socio-economic and Gender Determinants in Smallholder Households

Households' decisions to involve children in work depend on socio-economic factors, including parental education (Abaidoo, 2024), the cost of schooling (Ali & Soharwardi, 2022) and the labour demands of the household's main occupation. Plantation work is labour-intensive and flexible, so all family members, including children, can take part. Limited access to schools and to formal employment makes it easier for children to be absorbed into family work (Idrus et al., 2025). The household division of labour is also gendered. Women in oil palm villages often combine plantation work with full responsibility for domestic work (Guampe & Kayupa, 2022; Putri et al., 2024), and their influence over household decisions, including decisions about children's work, may be limited. This gendered division of labour is relevant to the present study because it may shape which children are assigned which tasks and who decides whether children go to the plantation during harvest.

3. METHODS

3.1 Research Design

This study used a qualitative descriptive design to explore how smallholder households make decisions about children's work and schooling. A qualitative approach was chosen because the research questions concern perceptions, meanings and household processes that are difficult to capture with survey measures.

3.2 Study Site

The study was conducted in Rokan Hulu Regency, Riau Province, which covers about 7,588.13 km² and has a population of 600,196 (BPS Kabupaten Rokan Hulu, 2026). Agriculture is the main source of livelihood. According to the labour force data in the same publication, 52.42% of employed people work in agriculture, 11.49% in industry, 7.14% in trade and 28.95% in other

sectors (BPS Kabupaten Rokan Hulu, 2026). In 2025 the regency had 330,151 hectares of oil palm, and its production of 805,222.02 tonnes of crude palm oil (CPO) was the highest in Riau Province (BPS Kabupaten Rokan Hulu, 2026). The poverty rate fell from 9.72% in 2023 to 8.71% in 2025 (Table 1), but the regency still has one of the largest numbers of poor people in the province. Fieldwork took place in villages where independent smallholder oil palm farming is the main livelihood and where SKB equivalency services operate, so that both household and service-provider perspectives could be captured. Village names are not reported to protect informants' anonymity.

Table 1. Poverty in Rokan Hulu Regency, 2023–2025

Year	Poverty rate (%)	Number of poor people (thousand)
2023	9.72	74.38
2024	9.62	75.89
2025	8.71	70.65

Source: BPS Kabupaten Rokan Hulu (2026). Note: BPS estimates poverty from the National Socio-Economic Survey (Susenas), weighted to population projections. The poverty rate and the number of poor people therefore refer to a different population base from the population count in Section 3.2, and the two cannot be used to derive each other. Because the projected population grew, the number of poor people increased slightly in 2024 even though the poverty rate fell.

3.3 Informants and Selection Procedure

Informants were selected purposively. Households were eligible if they (a) cultivated oil palm as independent smallholders and lived in the study villages, and (b) had at least one child aged 5–17. Children were classified as being in child labour following the operational definition of ILO-UNICEF (2025), which considers the child's age, the number of hours worked per week and whether the work is hazardous. In this qualitative study, the definition was applied as an interpretive guide rather than a measurement tool: parents' and children's accounts of each child's tasks, working time and exposure to hazards were compared with the age-specific thresholds and the list of hazardous work. Information on children aged 5–11 was obtained from their parents or guardians, because only children aged 12–17 were interviewed directly. In total, 24 informants took part: 16 parents or guardians (OT-01 to OT-16), six children aged 12–17 (AN-01 to AN-06), and two managers of non-formal education programmes at the sub-district level (PP-01 and PP-02). The informant codes are based on the Indonesian terms *orang tua* (parent), *anak* (child) and *pengelola program* (programme manager). Recruitment stopped when further interviews no longer produced new codes (data saturation). Table 2 summarises the characteristics of each informant group.

Table 2. Informant Profiles

Informant group	Codes	n	Main characteristics
Parents/guardians	OT-01 to OT-16	16	Mostly male heads of household; independent oil palm smallholders with about 2–5 ha of land; primary to junior secondary education. Quoted informants include OT-04 (father, 41) and OT-11 (mother, 36).
Children	AN-01 to AN-06	6	Aged 12–17; either still in school or at risk of leaving school; involved in family plantation work.
Programme managers	PP-01, PP-02	2	Managers of non-formal education programmes (SKB/PKBM) at the sub-district level.

*Note: OT = parent/guardian (*orang tua*); AN = child (*anak*); PP = programme manager (*pengelola program*).*

3.4 Data Collection

Data were collected in 2026 through semi-structured in-depth interviews guided by an interview guide that covered three areas: (a) family perceptions of the value of education for children's futures; (b) children's involvement in plantation work and its effects on school participation; and (c) barriers to educational access, including economic, geographical and

cultural factors. Interviews were conducted in Indonesian and transcribed for analysis. Limited field observations of children's activities on family plantations were carried out to complement the interviews and were recorded in field notes.

3.5 Data Analysis

The transcripts were analysed using thematic analysis following the six phases of Braun and Clarke (2006): familiarisation with the data, initial coding, searching for themes, reviewing themes, defining and naming themes, and writing the report. Coding was carried out by the research team, and differences in coding were resolved through discussion until agreement was reached. Credibility was strengthened through source triangulation, comparing accounts from parents, children and programme managers with field observations, and through member checking, in which selected informants reviewed a summary of the findings. The researchers are academics at a local university, and several have lived in Rokan Hulu. To limit the influence of their own views on education, they kept reflexive notes during fieldwork and analysis. The coding framework is shown in Table 3.

3.6 Research Ethics

Written informed consent was obtained from all adult informants. For informants aged 12–17, parents or guardians gave written consent and the children gave their own verbal or written assent, after the purpose of the study was explained in age-appropriate language. Informants could decline any question or withdraw at any time. All names were replaced with codes, and village names are not reported to prevent identification.

4. RESULTS

Thematic analysis produced five themes that explain how children's involvement in oil palm work relates to their educational attainment. Table 3 shows the codes, categories and themes. Each theme is presented below with its definition, the supporting evidence and an interpretation. Quotations were translated from Indonesian, and the original wording is given in parentheses.

Table 3. Coding Framework: Codes, Categories and Themes

Theme	Categories	Examples of codes
1. Family perceptions of education	Plantation as children's future; ambivalent value of schooling; gendered decision-making	"the plantation will be theirs"; "no need for high schooling"; father decides during harvest
2. Forms and patterns of children's involvement	Types of tasks; age and gender division; seasonality	collecting *brondolan*; carrying FFB; clearing paths; spraying; harvest peaks
3. Effects on schooling	Attendance; learning time; continuation	lateness; absenteeism; fatigue; leaving school after junior secondary
4. Barriers to educational access	Economic; geographical; socio-cultural	cost of schooling; distance to senior secondary school; norms about work and adulthood
5. Role of non-formal education	Equivalency programmes; institutional constraints	Paket B/C at SKB; shortage of tutors; limited reach; low awareness

4.1 Theme 1: Family Perceptions of Education

This theme covers how parents value formal schooling in relation to the plantation that their children are expected to inherit. Most parents said that education was important, but many also treated the plantation as their children's economic future. For these parents, the plantation reduced the urgency of further schooling, because school was seen as less relevant to the household's long-term livelihood. One parent explained:

> "My children don't need to go very far in school. What matters is that they can help in the plantation; this plantation will be theirs later on." (OT-02, parent/guardian) (*Anak saya tidak perlu sekolah terlalu tinggi. Yang penting bisa bantu di kebun, nanti kebun ini juga untuk mereka.*)

Another parent linked this view to economic security:

> "As long as we have the plantation, we don't worry. So we don't push the children too hard to go far in school." (OT-07, parent/guardian) (*Selama ada kebun, kami tidak khawatir. Jadi tidak terlalu memaksa anak sekolah jauh.*)

Other parents did not reject schooling but saw it as running in parallel with learning on the plantation. A father described this view:

> "School is important, but if the children are the ones who will carry on this plantation, they have to start learning now. School knowledge and experience in the plantation have to go hand in hand." (OT-04, father, 41, independent smallholder) (*Sekolah itu penting, tapi kalau nanti kebun ini yang diteruskan anak, ya dia juga harus belajar dari sekarang. Ilmu sekolah sama pengalaman di kebun harus jalan dua-duanya.*)

Mothers often held higher aspirations for their children's education, but they did not always make the final decision. One mother said:

> "I want my child to go as far as possible in school, but when it's harvest season, my husband decides whether the child goes to the plantation or not." (OT-11, mother, 36) (*Saya ingin anak saya sekolah sampai tinggi, tapi kalau sudah musim panen, suami saya yang menentukan anak ikut ke kebun atau tidak.*)

Taken together, these accounts show that the plantation works as an intergenerational asset that lowers the expected return to schooling. Families did not see education as worthless, but they did not see it as a long-term investment either, so plantation work could easily take priority (Nursita & Edy P, 2022). The accounts also show that decisions about children's work during harvest were mostly made by fathers, even when mothers had other preferences.

4.2 Theme 2: Forms and Patterns of Children's Involvement in Plantation Work

This theme describes the tasks that children carry out, how these tasks are divided by age and gender, and how they change over the agricultural calendar. Parents and children described four main tasks: collecting loose fruitlets (*brondolan*) that fall from fresh fruit bunches (FFB) during harvesting, carrying harvested bunches to collection points, clearing plantation paths and the ground around palm trees, and, in some households, spraying pesticides. Field observations showed a division of tasks by age and gender. Younger boys and girls mainly collected *brondolan*, whereas older boys helped their fathers with heavier work such as carrying bunches. Children's involvement increased during harvest periods, when the household needed extra hands to complete each harvest round.

Read against the framework in Section 2.1, these tasks are not all of the same kind. Collecting *brondolan* for a short time outside school hours can be light work that is compatible with schooling, which is consistent with the distinction between children assisting their parents and child labour drawn by Wahab and Dollah (2023b). The same task becomes child labour when it is done during school hours or for long periods during harvest. Carrying heavy bunches is a risk for younger children. Spraying pesticides is hazardous work for anyone under 18, regardless of the hours involved (Menteri Tenaga Kerja dan Transmigrasi Republik Indonesia, 2003). The gendered allocation of tasks also mirrors the adult division of labour, in which heavier plantation work is assigned to men and boys.

4.3 Theme 3: Effects on Schooling

This theme captures how plantation work affects children's school attendance, learning and continuation. Informants reported three main effects. First, children arrived late or were absent from school, especially during harvest periods. Second, children had less time and energy for study because they were tired after working. Third, some children left school after completing junior secondary school (SMP) and did not continue to senior secondary level.

These effects were concentrated in the harvest season, when the demand for family labour was highest, and they increased with age, as older children took on heavier and longer tasks. The decision to stop after junior secondary school is closely linked to the perceptions described in

Theme 1. When the plantation is expected to provide the child's future livelihood, the additional years of schooling needed for senior secondary education appear to offer little return compared with the value of the child's labour and experience on the plantation.

4.4 Theme 4: Barriers to Educational Access

This theme covers the factors outside the child that limit access to education. Three groups of barriers were identified. Economic barriers included household income pressure and the cost of schooling, such as transport, uniforms and other school needs. Geographical barriers included the distance from plantation settlements to secondary schools, particularly senior secondary schools, and the lack of transport. Socio-cultural barriers included norms that treat plantation work as a normal part of growing up and as preparation for adult life.

The economic barriers are consistent with the luxury axiom of Basu and Van (1998), in which households rely on children's work when adult income is insufficient. The geographical barriers reflect the limited access to services that the Sustainable Livelihood Approach identifies as a source of vulnerability (Idrus et al., 2025), and they echo the finding that plantation areas are associated with longer distances to schools (Fosch et al., 2023). The socio-cultural barriers interact with the perceptions in Theme 1: where working on the plantation is seen as part of becoming an adult, children's absence from school during harvest is not treated as a problem.

4.5 Theme 5: The Role of Non-formal Education

This theme concerns the role of non-formal education, particularly the equivalency programmes (*Paket B* for junior secondary and *Paket C* for senior secondary level) run by community learning centres (*Sanggar Kegiatan Belajar*, SKB) and community learning activity centres (*Pusat Kegiatan Belajar Masyarakat*, PKBM). Informants saw these programmes as a way for children who had left school, or who could not attend regularly because of plantation work, to continue their education. The two programme managers also described several constraints: a shortage of tutors, limited reach to plantation settlements, and low community awareness of non-formal education.

Because equivalency programmes have more flexible schedules than formal schools, they fit the seasonal pattern of plantation work better and can keep children who would otherwise leave education within the system. This is in line with evidence that flexible educational programmes reduce child labour and increase school participation (Emezue et al., 2023). The constraints reported by the programme managers show, however, that this potential depends on more tutors, services located closer to plantation settlements, and outreach to families.

5. DISCUSSION

This study examined how smallholder oil palm households in Rokan Hulu make decisions about children's work and schooling. The findings point to one main mechanism. Households treat the plantation as an asset that their children will inherit, which lowers the expected return to formal schooling and turns plantation work into a form of training for the future. This extends human capital theory (Becker, 1964). In the standard model, households compare the returns to schooling with its costs. In plantation households, the returns are judged against a concrete alternative future, the family plantation, which is visible and secure. This helps explain why parents could say that schooling was important and still accept that their children would stop after junior secondary school.

The findings are consistent with those of Ghani and Afriansyah (2023), who described a dilemma between education and work among Indonesian smallholders, and with Wahab and Dollah (2023a, 2023b), who documented child labour linked to economic pressure in Sabah. They also support the Sustainable Livelihood perspective of Idrus et al. (2025), in which limited access to schools and to formal jobs makes it easier for children to be absorbed into family work. They appear to contrast with those of Chrisendo et al. (2022), who found that oil palm cultivation improves human capital formation in smallholder households. The two sets of findings can be

reconciled. Higher incomes from oil palm can raise educational spending on average, as the luxury axiom of Basu and Van (1998) predicts. Where the plantation itself is seen as the child's future and harvest labour is needed, however, income gains do not translate automatically into longer schooling.

The seasonal pattern of involvement is in line with evidence that harvest frequency drives labour demand in smallholder systems (Vos et al., 2023) and that smallholders rely on family labour when hired labour is scarce or costly (Brandão & Schoneveld, 2021; Deli et al., 2023). The reports of children spraying pesticides are of particular concern. Under Indonesian regulations and ILO standards, this is hazardous work regardless of the hours involved (ILO, 1999), and it carries health risks that can further reduce school participation (Roggero et al., 2007). The finding that fathers decide whether children work during harvest, even when mothers prefer schooling, extends research on women's dual role in oil palm villages (Guampe & Kayupa, 2022; Putri et al., 2024) by showing how gendered decision-making affects children's education. The barriers identified also reflect the importance of parental education (Abaidoo, 2024), the cost of schooling (Ali & Soharwardi, 2022) and household economic background (Oryza & Listiadi, 2021; Tanjung et al., 2025).

The findings have several policy implications. Educational programmes that adapt to children's circumstances can reduce child labour (Emezue et al., 2023). In Rokan Hulu, this could mean aligning school calendars and remedial classes with harvest peaks and bringing equivalency services closer to plantation settlements. It also supports including child-labour safeguards and awareness of hazardous work in smallholder certification schemes such as ISPO and RSPO (Reich & Musshoff, 2025), and greater corporate attention to children's rights in supply chains that source from smallholders (Pasaribu & Vanclay, 2021).

This study has several limitations. It is qualitative and based on 24 informants in one regency, so its findings cannot be generalised to all smallholder households or used to estimate the prevalence of child labour. Only six children were interviewed directly, and information on younger children came from their parents, which may lead to under-reporting of their work. Parents may also have under-reported hazardous tasks because they are socially undesirable. Future studies could combine household surveys with qualitative data to measure the prevalence and intensity of child labour and to compare households with different plantation sizes.

6. CONCLUSION

This study answered three research questions. First, smallholder households valued schooling but saw the plantation as their children's economic future, which reduced the priority given to further education. Decisions about children's work during harvest were mostly made by fathers. Second, children collected loose fruitlets, carried bunches, cleared plantation paths and, in some households, sprayed pesticides. Tasks differed by age and gender, and involvement increased during harvest periods. This involvement was associated with lateness, absenteeism, fatigue and, for some children, leaving school after junior secondary level. Third, economic, geographical and socio-cultural barriers limited children's access to education, and equivalency programmes at SKB and PKBM offered a route back into schooling, although they were constrained by a shortage of tutors, limited reach and low awareness.

Based on these findings, four recommendations are made. (1) The district education office should allow schools in plantation areas to schedule remedial classes and flexible attendance arrangements around harvest peaks, so that absences during harvest do not lead to students falling behind or leaving school. (2) The SKB should open equivalency learning groups (Paket B/C) in or near plantation settlements, with schedules outside harvest hours, and the district government should fund additional tutors for these groups. (3) Village governments, together with the district child-protection agency, should inform plantation households that spraying pesticides is hazardous work prohibited for children under 18, and should monitor such cases. (4) Smallholder associations and certification bodies (ISPO/RSPO) should include child-labour checks and

awareness of hazardous work in smallholder certification and extension programmes. Future research should use mixed methods to estimate the prevalence of child labour and to evaluate the effects of flexible schooling and equivalency programmes in plantation areas.

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