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GENDER ROLES AND LIVELIHOODS OF COOPERATIVE FARMERS USING NEW TROPICAL MANIHOT SELECTION CASSAVA VARIETIES

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ABSTRACT
This study dealt with Gender roles and livelihoods of cooperative farmers regarding improvement of their socio-economic status by the adoption and use of new cassava varieties. Three research questions and one research hypothesis guided the study. Three states, one from each geopolitical zone in Southern Nigeria was purposively sampled and from them, 360 accessible cooperative farmers (males and females) were randomly sampled for the study. The study was a survey and a 91-item structured questionnaire (from which 14 items relating to the research work) validated by 13 experts in different areas of cassava development was used for data collection. The internal consistency was established using Cronbach Alpha. Three hundred and sixty copies of the instrument were administered on the respondents out of which 331 were completed and returned. Data were analysed using percentage, mean and t-test. The findings revealed that farmers now have a good knowledge on Tropical Manihot Selection (TMS), they agreed on diversifying their livelihoods with the adoption of TMS which have significantly increased their level of income and market access. Based on the findings, recommendations made include the need for regular radio and television programmes in local dialects to disseminate information on TMS, creating enabling environment for farmers to have easy access to production inputs among others.

Key words: Gender, livelihoods, Cooperatives, adoption, diversification, Tropical Manihot Selections.

INTRODUCTION

The rural farmers engage in the raising of livestock – sheep, goats, cattle, poultry birds and also in the production of cash crops – oil palm, cocoa, coffee, kolanut and food crops – maize, yam, beans, rice, vegetables, and cassava and so on. Cassava is a major source of dietary energy for low income earners in many parts of tropical Africa, including major urban areas (Cock 1985, Philips 1983, Nweke 1981, Goering 1979). In line with its adaptability and tolerance, the Food and Agriculture Organisation (FAO, 1998) indicated

that Cassava (*Manihot esculenta*) is grown over a harvested area of 16 million hectares with a global production of 161 million tonnes (1995). Cassava is one of the most efficient crops in biomas production. In comparison with many other crops, it excels under sub-optimal conditions and can withstand drought conditions. The five highest producers are Brazil (16%), Nigeria (13%), the Democratic Republic of Congo (11%), Thailand (10%) and Indonesia (10%) of global production.

Since the crop is mostly grown by the rural poor, they should be capable of taking their fate in their own hands, initiate and expand economic investments of their own. However, to trigger such a process, some outside assistance based on the understanding of the nature of poverty prevalent in the area and how to improve their lots may be needed – an awareness of the specific social and economic context of each society where poverty manifests itself. One of the food self sufficiency strategies at the National level aimed at increasing food production is the Cassava Multiplication Programme (CMP) that is funded and sponsored by the International Fund for Agricultural Development (IFAD) for the production of Tropical Manihot Selections (TMS), the new high yielding cassava varieties.

In a broader sense, it targets the "poorest of the poor" and it ensures food security for all. The Cassava Multiplication Programme (CMP) of the International Fund for Agricultural Development (IFAD) is one of the numerous agricultural development programmes aimed at increasing production and is therefore essentially growth – oriented, with the understanding that such growth will eventually induce development on the part of farmers, reduce hunger among the larger populace and increase their economic status. Romanof and Lynam (1992) argue also that cassava plays a famine prevention role; where cassava is widely grown, famine rarely occurs because cassava provides a stable base to the food production system. This is one of the reasons why IFAD focuses on project – type interventions to alleviate human sufferings in food availability through a collective efforts and participatory approach.

Government's intervention and efforts of non-governmental Organizations (NGOs) in the Cassava sub-sector had led to a number of measures that support the production, processing and marketing of cassava dating back to the 1970s. these include government programme such as the National Accelerated Food Production Programme (NAFPP), Operation Feed the Nation (OFN), Agricultural Development Projects (ADPs) the River Basin Development Authorities, Green Revolution, National Agricultural Land Development Authority (NALDA), Better Life Programme (BLP), Family Support Programme (FSP), Directorate of Foods Roads and Rural Infrastructure (DFRRI), the development of the National Agricultural Co-coordinating Unit (FACU), Agricultural Projects Monitoring Evaluation Unit

(AMPEU). Rural Agricultural Industrial Development Scheme (RAIDS) and their close collaboration with the international Institute of Tropical Agriculture and other International Agricultural research centres, and large scale planting materials multiplication and distribution facilitated by the IFAD – assisted CMP and activities of oil companies and church organization (Federal Ministry of Agriculture and National Resources (FMANR) 1998: 11)

According to FMANR 1997,v) "the IFAD-assisted Cassava Multiplication Programme (CMP) was conceived following severe attack on cassava crop by two alien pests, cassava mealy bug (CM) and cassava green spider mite (CGM), in the late 1970s and early 1980s and the resultant decline in production. At the instance of the Federal Government of Nigeria (FGN), the IFAD approved a loan of United States dollars $12.05 million in 1986 for cassava improvement programme in the Southern State of Nigeria.

Cassava is important not just as a food crop but even more as a major source of cash income for the largest number of households in comparison with other staples, contributing positively to poverty alleviation FMANR, 1998). This in the long term will invariably improve the income and socio-economic status of the co-operative farmers regarding good housing, affordable medical services, improved nutritional needs and a general improvement in ways of living. Increased adoption rate of the TMS by farmers will invariably lead to proper utilization of cassava product for various consumers preferences with modern crop processing technologies and systems. A good example of this is the present use of cassava flour in confectioneries industry.

According to IFAD 1994:4), "Cassava is a crop of the poor and occupies mainly agriculturally marginal environments. These and other features endow it with a special capacity to contribute to food security, equity, poverty, alleviation and environmental protection". Improving this crop is a way to direct various benefits toward the poorest of rural populations. Several efforts have been directed towards this by the FGN in contributing to efforts to distribute improved cassava planting materials since the inception of the CMP of IFAD in 1986. Since the development and gradual introduction of the TMS, hectare yield has improved significantly over the use of the old varieties. According to FMANR (1999:3), 'the new varieties have demonstrable high yield potentials of 30 – 35 metric tonnes per hectare well above the indigenous varieties which yield less than 10 tonnes per hectare. The major problem with the breeding programme was the slow pace of development and long delay in the release of new varieties'.

The new TMS varieties are gradually spreading to all the nooks and crannies of the rural areas and the relevance of farmers on fellow farmers is high regarding the spread and acceptance by them. Since the TMS is a new idea, the readiness to accept them and put them into practice varies from farmers to farmer depending on each farmer's previous experience with new

ideas; the personality of the farmer and the amount of land and other resources available at his disposal.

Frequently, when ideas about the TMS are shared with friends, seed materials are exchanged; new products gain recognition usually along trading routes, local markets and farmers' forum meetings. Agricultural ideas relating to the TMS have also enjoyed much dissemination from the extension workers attached to the ADPs in growing areas. According to FMANR (1997:5), "the extension activities of the ADPs led to the rapid adoption of improved cassava varieties and expansion of the area planted to cassava in the major cassava producing states with the result that the new varieties are progressively replacing the traditional ones. The adoption rate ranged from 60% in Anambra and Enugu States to 80 85% in Delta and Ogun States. The total land area under cassava cultivation in the 14 CMP state increased from 758,620 ha in 1987 to 1,821,860 ha in 1996. Nationally, the area planted to cassava increased from about 1.5 million in 1987 to 2.8 million hectares in 1996 there were also significant increases in yield and production over the same period. The yield per ha increased from an average of 7 metric tonnes per ha in 1987 to between 12 and 14 metric tonnes in most State in 1996. Cassava production rose from a low of 10.6 million metric tonnes in 1987 to about 33 million metric tonnes in 1996 with Nigeria now being the leading producer of cassava in the world".

Livelihoods and socio-economic status of cassava co-operative farmers

The rural nature of the cassava farmers makes poverty to be prevalent among them. There is growing recognition that poverty is not only about income, but about social risks such as discrimination, unequal distribution of resources and power in households and limited citizenship (CPRC, 2008). Gender inequality cuts across economic and social risks, influencing how poverty and vulnerability are experienced. "Cassava is a crop of the poor, and occupies mainly agriculturally marginal environments. This and other features endow it with special capacity to contribute to food security, equity, poverty alleviation and environmental protection" (CIAT, 1999:4). Much has been made of cassava's role in guaranteeing food security – especially in subsistence, i.e self sufficient rural household (Hahn, 1983; USDA, 1981). Infact, cassava is also an important source of cash income for poor farmers, as well as prosperous ones.

Apart from its potential as a source of increasing total income from agriculture, cassava may also play a role in achieving a more egalitarian pattern of income distribution. Cassava produces high yields on poor marginal lands and benefits immensely the resource poor farmers. Because of environmental constraints in most of the areas where it is cultivated, farmers have few options for alternative crops. Cassava is a key, sometimes the only key, to economic and social opportunity for these farmers.

Women farmers in Southern Zarie sold 20 – 40% of their cassava (Fresco, 1982). In the more prosperous rural economy of Southwest Nigeria, sales ranged from two-thirds to 90% of women's cassava output (Spiro, 1980). In addition, in Nigeria, Zaire and elsewhere, there are both large – and small-scale farmes on which cassava is grown entirely for sale, by both full and part-time farmers (Okuneye and Igben, 1981; Adam, 1980; Kayser et al, 1981). Literatures in the case of cassava on socio-economic status of farmers are not readily available in concise details. One important fact to note is that cassava like any other food crop suffered neglect for the years proceeding and those succeeding the country's independence to the advantages and development of industrial crops – oil-palm, cocoa, kolanut, coffee, timber etc

Apart from its potential as a source of increasing total income from agriculture, cassava may also play a role in achieving a more egalitarian pattern of income distribution and stability thus;-

a Cassava may be harvested and sold in small amounts at frequent intervals. It can provide a steady flow of cash income over many months

b It is relatively easy to combine with domestic chores and other income-earning activities on a daily or weekly basis. This is an advantage, especially for rural women, who may find it difficult to specialize, even temporarily, in harvesting, processing, and or marketing a single crop, and who lack the working capital or social position to mobilize the labour of others (Guyer, 1980).

c Cassava may be harvested and sold in bulk to take advantage of favourable prices or provide producers with liquidity to finance lumpy consumption of investment outlays. The in-ground, self storing capacity of cassava permits flexibility in harvesting and marketing which can be advantageous to specialized, fully commercialized producers, as well as to smaller, diversified, and/or partially commercialized ones.

Berry (1993) reported that in Nigeria and Congo Democratic Republic, and elsewhere, there are both large and small-scale farms on which cassava is grown entirely for sale, by both full – and part-time farmers. In Nigeria for example, in the mid-80s, rising food crop prices and the oil recession reduced economic opportunities outside of agriculture, and many people (including wage and salary earners, professionals, traders etc) established cassava farms. Such investors used working capital from other sources to hire labour for land preparation, planting and initial weeding; then sold the crop in the ground to buyers who assumed full responsibility for further weeding, harvest and sale. Buyers might, in turn, sell the tubers to processing firms and also a local

processor in rural areas, transport them to urban markets, or undertake to process and markets the final product themselves

Other studies (Spiro, 1980; Freso, 1982; and Tollens, 1992) suggest that more of cassava would be sold than of other crops. Nweke (1993:13) indicated that "Cassava production was more egalitarian, in terms of distribution of cash income, than most of the other food crops". Patterns range from the reported recent upsurge of local self sufficiency in Ghana where economic collapse and virtual bankruptcy of the public sector in the 1970s and early 1980s led to wider spread decentralization and an increasing emphasis on self sufficiency (Ghazan, 1984), to elite investment in food crop production in Nigeria (Lawson, 1977), Ghana (Shephered, 1981), Zaire (Kayser et al 1981), and elsewhere

In more formal economic terms, the opportunity cost of rural women's labour is partly a function of the timing of tasks to be performed. Work which can be performed a few hours at a time on a regular basis is likely to be easier to combine with other domestic, social and income-generating tasks – and is therefore, cheaper in terms of opportunity forgone than work which must displace other tasks (Okali and Berry, 1985). According to Okoji (1995), most farming systems research not directed to the womenfolk have failed to make any significant impact on agricultural production. This is mainly because of the predominant role played by the womenfolk in arable farming, the neglect of which militates against the transformation of traditional agriculture and development of the rural area.

Efforts should be made to involve the women folk in farming systems research for increased and a sustained production. It has been asserted that if women were taught the basis of nutrition, for example 50% to 70% of the nutrition problem would be solved (Issoufou, 1993). Farming system research will effectively transform traditional agriculture only when most of these bottlenecks are removed.

In addition, more households earned cash income from cassava than from any other commodity. Cassava is able to perform his role because the crop, relative to most of the other food crops, has a wide ecological adaptation; it is less expensive to produce as it tolerates poor soil, adverse weather, and pest/disease. Carbohydrate yield from the cassava per unit of resource is higher than that from most of the other major food crops. In addition, cassava is widely accepted as food for humans in various forms in many parts of Africa even outside its major producing areas, hence it has a wide market". COSCA survey report in 1995 in Tanzania indicated that "cash income from cassava was higher in villages where sheep and goats were kept in 85% of the villages surveyed. There is complimentarily between sheep and goats and cassava production; cassava was produced mostly in distant fields and processed more

frequently in areas of residence where sheep and goats grazed often on the by-products of cassava processing…

Cash income from cassava was higher among households which earned non-farm cash incomes than among others which did not earn this income. The availability of non-farm cash income opportunities in a village did not discourage cassava production for sale" (Nweke et al 1998: 118). Also, the cassava production cash income was higher in village which had easy access markets or to production credit. Farmers who had easy access to market earned more crash because they had greater access to market demand for the products. The rapid spread of cassava production in South Western Nigeria was due to market demand resulting from improving access to markets (Agboola (1968). The farmers who had easy access to market centres earned more cash income from cassava production because they also had greater access to the supply of inputs which enabled them to expand production.

Apart from easy accessibility, population dynamics affect cassava production and marketing in various ways as it imposes a proportional increase on food demand and a pressure on the environments where cassava has strong adaptive advantaged. On the other side, urbanization typically reduced demand for cassava and its products for direct food use.

Research methods

The study adopted a descriptive survey design to determine gender roles and livelihoods of cooperative farmers regarding improvement of their socio-economic status by the adoption and use of new cassava varieties in Southern Nigeria. The study presented some rational analyses using sex, income and socio-economic status, cultural background among others as independent variables to ensure equal representation of the samples.

The study covered three states each purposively sampled from the three geo-political zones – Ogun, Delta and Enugu States. A total of 360 accessible cooperative farmers were sampled for the study. A structured questionnaire developed by the researcher and validated by 13 experts in cassava development was used to elicit information from the respondents. A Cronbach alpha reliability co-efficient of 0.92 was got. 331 copies of the questionnaire were completed and returned. Data were analyzed through descriptive statistics techniques of frequencies, percentage and mean scores; and inferential statistics techniques of t-test.

Research question One:

What are the traditional and social statuses of the cassava farmers?

Table 1. Distribution of Respondents by sex

S/n	Sex	Frequemcy (No)	Percentage
1	Male	167	50.5
2	Female	164	49.5
	Total	331	100.0

Table 2. Distribution of Respondents by Traditional and Social Statuses

S/N	Traditional/Social Status	Frequency (No.)	Percentage (%)
1.	Village head	11	3.3
2.	A sectional head	41	12.4
3.	A chief	14	4.2
4.	An ordinary member	195	58.9
5.	A politician	38	11.5
6.	A club member	19	5.7
7.	A religious leader	13	3.9
8.	A musician	0	0
	TOTAL	**331**	**100.0**

Table 2 show that 11 (3.3%) of the cooperative farmers were village heads, 41 (12.4%) were sectional heads, 14 (4.2%) were chiefs and 195 (55.9%) were ordinary members. The table also shows that 38 (11.5%) were party politicians, 19 (5.7%) were members of social clubs while 13 (3.9%) were religious leaders. None of the farmers was a musician

Research question two:
How did the cooperative farmers get information about the Tropical Manihot Selections (TMS)?

Table 3: Sources of farmers' knowledge about TMS

S/N	Source of Knowledge	Frequency (No)	Percentage
1.	Friends	38	11.5
2.	Agricultural bulletins	1	0.3
3.	Newspapers and Magazines	1	0.3
4.	Extension workers of ADP	256	77.3
5.	From Radio	0	0
6.	Market/Trading routes	0	0
7.	Cooperative Societies	6	1.8
8.	From government	0	0
9.	NGOs	4	1.2
10.	OFAR	25	7.6
	Total	**331**	**100.0**

Table 3 shows that 38 (11.5%) of the cooperative farmers got their knowledge about TMS from friends, 1 (0.3%) from agricultural bulletin, while 1 (0.3%) from newspapers and magazines. The table also shows that 256 (77.3%) got their knowledge about TMS from extension workers of ADP, 6 (1.8%) from cooperative societies, 4 (1.2%) from non-governmental organizations and 25 (7.6%) through On-Farm Adaptive Research (OFAR). None got the knowledge from radio programmers, market and trading routes and also from government sources

Research question three:
To what extent has the Tropical Manihot Selections improved the socio-economic statuses of cassava farmers in Southern Nigeria?

Table 4. N=331 Co-op farmers.

Items	Extent of improvement by the TMS on the socio economic status of cooperative farmers	Mean	Remarks
1	The cash income flow since the adoption of TMS by cooperative farmers in my area	2.79	High
2	Easy access to production inputs (fertilizers, herbicides, etc at improving production output	2.59	High
3	The possibility because of increasing technologies to combine other income earning activities with cassava production and processing	2.86	High
4	The staggering planting as well as harvesting times of the TMS is a major attribute of the crop in terms of the TMS is a major attribute of the crop in terms of ready cash flow and support to poor farmers in income distribution all the year round	2.90	High
5	Market access significantly increasing socio-economic conditions of co-operative farmers in production areas	3.03	High
6	The sales from cassava stem cuttings increasing ready cash flow among farmers to buyers	2.40	High
7	The Socio economic status of processing experts and farmers has increased	2.68	High
8	The number of transporters and marketers of cassava products and by products	2.99	High
9	The keeping of livestock-sheep, goats and other maximizing the wastes from cassava	3.15	High
10	The efficient management of wastes having an appreciable effect or positive impact on the socio economic status of farmers.	2.96	High

HO 1- There is no significant difference in the mean responses of the male and female cassava farmers on the extent to which TMS has improved their socio-economic statuses.

Findings And Discussions

The co-op farmers agreed to a high extent of improvement by the TMS on their socio-economic status regarding the

- Increased farm income since the adoption of TMS by co-op farmers in their area.
- Easy access to production inputs (Fertilizers herbicides, etc) at improving production output.
- The possibility because of increasing technologies to combine other income earning activities with cassava production and processing.
- The staggering planting as well as harvesting times of the TMS is a major attribute of the crop in terms of ready cash flow and support to poor farmers in income distribution all the year round
- Market access significantly increasing socio-economic conditions of co-operative farmers in producing areas.

Table 5. **Group Statistics**

SEX		N	Mean	Std. Deviation	Std. Error Mean
X59	1.00	167	2.8084	.8061	6.238E-02
	2.00	164	2.7805	.8440	6.590E-02
X60	1.00	167	2.5329	.8198	6.344E-02
	2.00	164	2.6646	.9738	7.604E-02
X61	1.00	167	2.9222	.6942	5.372E-02
	2.00	164	2.7988	.6663	5.203E-02
X62	1.00	167	3.0120	.5487	4.246E-02
	2.00	164	2.8049	.6817	5.323E-02
X63	1.00	167	3.1198	.6837	5.291E-02
	2.00	164	2.9512	.7578	5.918E-02
X64	1.00	167	2.3413	.7587	5.871E-02
	2.00	164	2.4756	.8824	6.890E-02
X65	1.00	167	2.7964	.7726	5.978E-02
	2.00	164	2.5793	.8791	6.865E-02
X66	1.00	167	3.0359	.7753	6.000E-02
	2.00	164	2.9451	9084	7.093E-02
X67	1.00	167	3.1257	.7129	5.516E-02
	2.00	164	3.1829	.6577	5.136E-02
X68	1.00	167	2.9940	.6898	5.338E-02
	2.00	164	2.9268	.8031	6.271E-02

- The Efficient management of cassava wastes having an appreciable effect or positive impact on the socio-economic status of farmers. The

co-operative farmers however rates the sales from cassava stem cutting as increasing ready cash flow among farmers from buyers as very low.

The finding from this study revealed that the co-op farmers agreed that the cash income flow since the adoption of TMS was very high. Evidence from literature indicated that cassava is an important source of cash income for poor farmers, as well as prosperous ones. Apart from its potential as a source of increasing total income from agriculture, cassava may also play a role in achieving a more egalitarian pattern of income distribution. This agrees with Guyer (1980) that cassava is relatively easy to combine with domestic chores and other income earning activities on a daily or weekly basis. This is an advantage, especially for rural women, who may find it difficult to specialize, even temporarily, in harvesting, processing, and or marketing a single crop, and who lack the working capital or position to mobilize the labour of others.

The co-op farmers agreed that the staggering planting as well as harvesting times of the TMS as a major attribute of the crop in terms of ready cash flow and support to poor farmers in income distribution all the year round. This agrees with evidence from literature that the in-group, self storing capacity of cassava permit flexibility in harvesting and marketing which can be advantageous to specialized, fully commercialized producers, as well as to smaller, diversified, and/or partially commercialized one.

The study also revealed that the co-op farmers agreed that market access significantly increased their socio-economic conditions. This is in line with studies by Agboola (1968) that the rapid spread of cassava production in South Western Nigeria due to market demand resulting from improved access to markets. According to him, the farmers who had easy access to market centres earned more cash income from cassava production because they also had greater access to supply of inputs which enable them to expand production.

The co-op farmers however disagreed that sales from cassava stem cutting increased ready cash flow among them. The findings negate evidence from literature that indicate trade on the stem of improved varieties of cassava as it is now established that most were usually given out to fellow farmers in the form of gift without any cash benefits. This agrees with findings of FMANR (1997, 1998) that the farmer-to-farmer exchange of the new varieties was widely practiced in all the states as new cultivars have progressively replaced the old ones.

Implications of the study/ summary and conclusion

Cassava as a crop has occupied enviable position in all poverty alleviation initiatives of the Government since independence and so much attention is being given to the crop so that the maximum potentials inherent in the crop could be tapped by the farmers. The Presidential intuitive on cassava

development in the country is doing this advocacy and service delivery through various agricultural agencies of MANR, ADP, NALDA, RTEP etc. This is with the hope of a positive impact on the farmers in relation to their socio-economic statuses. The farmers in line with the research agreed that the use of petroleum products improved their socio-economic status, those of the processors, and also increased the number of transporters and marketers of cassava products and by-products. This is in agreement with evidence from literature that the development of appropriate and cost effective farm-level processing technologies is critical for expanding the market for cassava. Since petroleum has aided widespread availability of improved cassava processing technologies in Nigeria, this must have invariably improved the socio-economic status of producers and processor alike. These have as a result of chain reactions on the long run positively affected the number of transporters and marketers of cassava products and by products. Government should ensure equitable distribution of the petroleum products to all nooks and crannies of the country.

The research found out that the co-op farmers agreed to an improvement in their socio-economic status regarding efficient management of wastes from cassava tubers through the keeping of sheep and goats. This is in agreement with previous COSCA survey report in 1995 in Tanzania, which indicated that cash income from cassava was higher in villages where sheep and goats were kept in 85 of the villages surveyed. It is very advantageous for cassava farmers to keep sheep and goats because ordinarily wastes from tubers that would have gone to the dump ground may be efficiently utilized in the livestock keeping and management.

It is noteworthy that the study revealed that the co-op farmers agreed that market access significantly increased their socio-economic conditions. The farmers who had easy access to market centres earned more cash income from cassava production because they also had greater access to supply of inputs which enable them to expand production. In recent times, sales from cassava stem cutting have been found to increase ready cash flow among the farmers in the rural areas. Cassava peels that were regarded as wastes some years back are now sources of cash income to the processors as most are being sold to the livestock farmers.

Recommendations

1 There is the need for advocacy, regular radio and television programmes in local dialects to disseminate information on TMS to local farmers.
2. Production of machines that will ease the production of cassava products by the processors.
3. Government should ensure regular and ready supply of petroleum products to the farmers to make mechanization easier regarding processing on the farms.

4. Regular and functional training programmes for the farmers on how well to preserve the by-products for future uses by the livestock farmers.
5. More cassava farmers should be encouraged to go into integrated farming so as to maximize the wastes from the cassava tubers in feeding livestock.
6. There should be an enabling environment for production inputs, an improvement in market access and the transportation network to ease movement of products.

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