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Livelihood status and vulnerabilities of small scale Fishermen around the Padma River of Rajshahi District

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Abstract

The investigation was conducted on the livelihood status of small scale fishermen around the Padma river in Rajshahi district from July 2016 to February 2017. Hundred fishermen were surveyed randomly with a structured questionnaire. The livelihood status of fishermen was studied in terms of age, family, occupation, education, housing and health condition, credit and income. It was found that most of the fishermen were belonged to the age groups of 20-35 years (50%) represented by 85% Muslims. Majority of them (62%) lived in joint family and average household size was 6-7 people. Educational status revealed that 66% were illiterate. Fishermen houses were found to be of two types namely semi-constructed and unconstructed and among them 77% houses were connected with electricity. About 85% fishermen were landless represented by 95% rearing livestock. Regarding health and sanitation 85% fishermen used sanitary latrines. About 83% fishermen were solely depends on fishing and annual income of 50% fishermen was 50,000 to 60,000 TK. while 76% fishermen received loan. It could be concluded that fishermen around the Padma river were mostly illiterate, lack of training exposure, lack of awareness about fishing method. However, they need more and more institutional, technical and organizational support for the betterment of their socio-economic condition and sustainable livelihood.

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Introduction

From time immemorial fish and fisheries are an integral part of Bangladesh (Kabir *et al.,* 2014). Fish and fishery resources play a vital role for improving livelihood status of the fishermen and related people who are involved with its business. It also plays important role in combating mal-nourishment, earning foreign currency, and creating employment opportunities in Bangladesh. Bangladesh is one of the world's leading fish producing countries with a total production of 38.78lakh MT, whereas inland open water (capture) contributes 27.03 percent (10,48,242lakh MT) and inland closed water (culture) contributes 56.82 percent (22,03,554 lakh MT) and marine water contributes 16.15 percent (6,26,528 MT) of total production. 83.85 percent of total production comes from inland fisheries (DoF, 2016).

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living (Chambers and Conway, 1992). A livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation. It also contributes net benefits to other livelihoods at the local and global levels.

Fisheries, especially in the developing countries, contribute to livelihood of local community in many ways. For example, directly as food as a source of income and through other social benefits, such as reduced vulnerability to poverty. The villages Barakuthi and Panchabati around Padma River are two main villages comprises of most fisherman. Most of the Padma river bank dwellers are mainly dependent on this river for their meaning of living. Commercially successful fish production relies on the proper implementation of required inputs, management techniques, infrastructural development and livelihood status of fish farmers. Socio economic status of fishermen is considered an area of interest for researchers to identify the limitation, constraints, and vulnerabilities of any group of fishermen living around particular water body and to better the current status. For the proper development of the fishing community, it is essential to understand the baseline information to initiate proper developmental steps and improve the livelihood of the fishermen. However, several studies such as seasonal variation of fin fish in Padma River (Mohsin *et al.*, 2013), length weight relationship of fishes of Padma river and other related works has been carried out. But, still no research is available on the livelihood status of fishermen community of the Padma River in Rajshahi district.

Hence the study aimed to reveal the demographic profile, the infrastructure and facilities available for the livelihood maintenance, the critical factors/reasons towards the vulnerability of sustainable livelihood of the fishermen around the Padma river of Rajshahi district.

Materials and methods

Study area and period

The study was conducted in Panchabati and Barakuthi, the nearest village of the Padma River in Rajshshi district (Fig. 1) for eight month from July 2016 to February 2017. Regular field visits were conducted during the study time to collect necessary information from the fishermen.

Fig. 1. Study area of Rajshahi District.

Sample Size and Data Collection

A total of 100 fishermen were randomly selected from the selected two villages, 50 fishermen from each village adjacent to the Padma River in Rajshahi district.

There were about 179 fisherman in Panchabati and 201 fishermen in Barakuthi villages during study period. The study was conducted on the basis of primary and secondary data collection. Firstly, a draft questionnaire was structured which was pre-tested with 20 fishermen (10 from each villages). In this pre-testing, priority was given to any new details or figs. in order to achieve the goals of the study. Then, the final questionnaire was made, readjusted and adapt according to the experience gained in pre-testing.

The final questionnaire included the questions based on Socio-economic status of fishermen such as age, religion, marital status, family structure, education and School dropout children, and facilities available such as housing condition, drinking water source, sanitation practice, power facility, diseases treatment facility, assets, occupation, income, credit/loan. Primary data were collected through personal interview supplemented by methodological Participatory Rural Appraisal tool such as Focus Group Discussion (FGD).

In this research, FGD was used to get an overview of the critical factors towards vulnerability of fisherman's of the Padma River. A total of 8 FGD sessions was conducted where each group size of FGD was 10 to 12 fishermen. FGD session was held in front of school near Barakuthi Village.

Data analysis

All collected data were summarized and scrutinized carefully before the actual tabulation. These data were verified to eliminate all possible errors. Some of the data was collected into local units and then converted into international units. The qualitative data was transferred into quantitative data by appropriate scoring technique. The processed data transferred to a master sheet. Finally relevant tables were prepared in accordance with the objectives of the study. For the processing and analysis purpose, MS Excel has been used. Data presented in tabular and graphical form because it is simple in calculation, widely used and easy to understand.

Results and discussion

Socio-economic status of fishermen

The aim of this study was to determine the livelihood status of the fishermen. Especially, emphasis was given on such variable namely age, religion, education, family size, education of children, annual income, income sources, training exposure, family type and health facilities.

Age

Age structure is considered as a key factor of management, priorities, rights and duties while determining the status and the roles of a fisherman in their community and it also helps to know their behavior. In this study it was found that, 50%, 40%, and 10% of the fishermen were belonged to age group of 20-35, 36-50, and 51-70 years respectively (Fig. 2). Results showed that the highest number of fishermen belong to 20-35 years age group, involved in fishing activities. Rabbani, 2007 recorded age group of 25 to 50 years were highest (46.67%) and more than 50 years were the lowest (25%) of the fishermen in the Karotoa River. However, in another study Hossain *et al.*, 2015 found the highest (40%) was in 36-45 age groups among the fishermen during their study in the Punarvhaba River which is different from the present study. The reason may be due to it belong to different area.

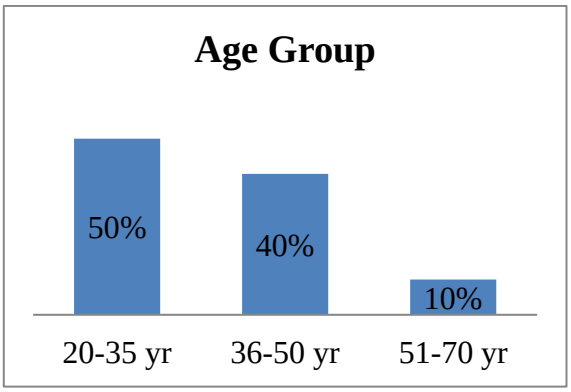

Fig. 2. Age of the fishermen.

Religion

Religion can play a vital role in the socio-cultural and environmental life of people and can act as a significant constraint modifies in social changes. Survey found 85% fishermen were Muslim and only 15% fishermen were Hindu (Table 1).

Hossain *et al.,* 2015 stated that the highest 90% of fishermen were from Muslim community where as only 10% were from Hindu community in the Punarvhaba River. Similarly, in another study, Rahman, 2008, found that 92.5% were Muslim and 7.5% were Hindu among the fishermen of the Jamuna River.

However, an opposite finding was demonstrated by Islam *et al.,* 2003 during their study of livelihood of fisherman in Jessor District. This study revealed that the entire fisherman belongs to the Hindu community indicating that fishing is mainly adopted as a profession by Hindu communities in our country. Noteworthy, Present study oppose the report made by Islam *et al.,* 2003 and suggested that most Muslim communities are involving in fishing profession now-a-days which was believed to be occupied by mainly Hindus previously in Bangladesh.

Table 1. Religious status of the fishermen in the study area adjacent to Padma River.

Religion	Panchabati	Barakuthi	Total	Percentage
Muslim	43	42	85	85%
Hindu	7	8	15	15%

Marital Status

The study revealed that a majority of the fishermen (85%) were married where the unmarried fishermen represented 15% of the total population (Table 2). Divorced and oppressed persons were not found in this study. Early marriage is very common in fishing villages due to illiteracy and poverty.

They think they got some money (dowry) through marriage and by this they can start any kind of business for their livelihood. This study corroborated with previous observations where Ahmed, 1996 in Tangail, Mannu 1999 in Kuakata observed married fishermen were (94%) and (92%) respectively. In addition, Momotaz, 2009 studied on the socio-economic condition of small indigenous species beneficiaries at three areas showed that, (84%) of the fishermen were married and rest 16% were unmarried.

Table 2. Family structure of the fishermen in the study area adjacent to Padma River.

Marital status	Panchabati	Barakuthi	Total	Percentage
Married	41	44	85	85%
Unmarried	9	6	15	15%

Family Structure

In our country families are classified into two group (1) Nuclear family-married couples with children and (2) Joint family- group of people related by blood and by law. Nuclear family consists of the members of two generations (parents and children) and joint family with members of three or more generations. In the study area, it was found that 62% of the people lived in joint families and only 38% lived in nuclear family (Table 3). The average sizes of households were 6-7 people. Hossain *et al.*, 2015 studied on the socio-economic condition of the fishermen in Punarvhaba River found 27% fishermen had 2-4 members, 60% had 5-7 members and 13% fishermen had above 7 members in their families. Ali, 2013 studied on the fisheries and livelihood of the fishermen in the Atrai River and observed 12.5% fishermen had small family, 37.5% had medium family and 50% fishermen had large family. The present study is more or less similar to those findings.

Table 3. Marital status of the fishermen in the study area adjacent to Padma River.

Family structure	Panchabati	Barakuthi	Total	Percentage
Joint	30	32	62	62%
Nuclear	20	18	38	38%

Educational Status

Educational status can strongly regulate individual's manners, choice and has also impact on one's achievement, expertise and social abilities. In the study area, there were 26% illiterate fishermen who cannot sign their name, 40% can sign name only, 15% had passed class one to five (1- 5), 8% had passed classed five to eight (5-8), 5% had passed class eight to ten (8-10), 4% had passed S.S.C, and 2% had H.S.C passed (Fig. 3). Similar report can be observed by Rabbani, 2007 while studying on livelihood of fisherman in Karotoa River and reported that 20% fishermen were illiterate, 71.67% were up to primary

level of education and 8.33% had only secondary level of education. Islam, 2009 also found that 12.5% of the fishermen had literacy up to primary level, 40% were illiterate, 45% can sign only and 2.5% had literacy up to secondary level of the Kali river. It may be due to most of the interviewee fisherman belong to illiterate family who don't understand the value of education. Most of them were also bound to enter into fishing profession during their early ages due to poverty.

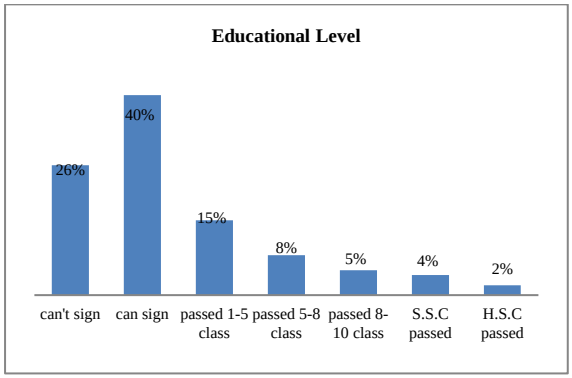

Fig. 3. Educational level of the fishermen.

School going and dropout children of the fishermen

In the study area, it was found that all of fishermen's children start to go to nearer school but can't continue regularly. Most of them dropout after few days. Both girls and boys were going to school in fishermen villages. It was also observed that among school dropout children about 60% were boys and 40% were girls (Table 4).

Table 4. School dropout children of the fishermen in the study area adjacent to Padma River.

School dropout children	Panchabati	Barakuthi	Total	Percentage
Boy	28	32	60	60%
Girl	22	18	40	40%

Housing condition

The housing condition is one kind of indicator of economic status. Attempts were made to find out the condition of house of fishermen (Table 5). In the study area, houses of the fisher community were mainly two types (1) made of brick and tin roof mean semi-construction (94%) and (2) made by bamboo, wood, mud and tin means unconstructed (6%).In contrast, Rabbani, 2007 observed that 76.67% fishermen's houses were unconstructed, 15% fishermen were semi-constructed and 8.33% fishermen's houses were constructed of the Karatoa River. Rahman, 2008 also revealed an opposite result mentioning majority of the fishermen's (57.5%) house were unconstructed during his study on the socio-economic status of fishermen of the Jamuna River.

Table 5. Housing condition of the fishermen in the study area adjacent to Padma River.

Housing condition	Panchabati	Barakuthi	Total	%
Semi-constructed	48	46	94	94%
Unconstructed	2	4	6	6%

Drinking water source

Result of the study showed that, 100% of the fishermen household used tube well water as their drinking water. But most of the fishermen did not have their own tube-well. Only 32% fishermen used own tube-well and rest of 68% fishermen used their neighbor's and public tube-well situated in nearby school, mosque etc. for drinking purpose (Table 6).

Most of them used river water for domestic purpose. Likewise, Islam, 2012 found that 100% fishermen of the Tangon River used tube-well water for drinking purpose. However, Islam, 2009 found that 95% of the fishermen used kua water while studying on Kali River.

Table 6. Drinking water facility of the fishermen in the study area adjacent to Padma River.

Drinking water facility	Panchabati	Barakuthi	Total	Percentage
Neighbor tube-well	35	33	68	68%
Own tube-well	15	17	32	32%

Latrine

The study showed that, most of the fishermen about 85% used sanitary latrines and 15% used kacha latrines (Table 7). Islam, 2012 found that, 40% of the fishermen of the Tangon River had unconstructed latrine, 55% had semi-constructed and only 5% fishermen had constructed latrine.

Table 7. Latrines facility of the fishermen in the study area adjacent to Padma River.

Latrines facility	Panchabati	Barakuthi	Total	Percentage
Sanitary	44	41	85	85%
Kacha	6	9	15	15%

Electricity use

Electricity has great impact in our life. In present it becomes essential for our daily life in order to regulate all activities properly. However, our survey result revealed that about 77% fishermen were connected with electricity and rests of 23% poor fishermen were not connected with electricity (Table 8). The percentages of fishermen who had facilities of electricity were higher than the fishermen with no facility. Most of them are connected with electric line but not able to continue all round of the year (each month) due to poverty. Not connected fishermen used lamp which powered by kerosene. It indicates their poor status in the society. Hossain *et al.,* 2015 noted a similar result that, 36% of the fishermen of Punarvhaba River were far from electricity facilities but 64% fishermen were take electricity for their wellbeing. Momotaz, 2009 studies also showed that, 90% of the fishermen had facility of electricity and rest of 10% fishermen did not get facilities to use electricity. In addition, Hossain, 2009 studies showed that 95% fishermen had electric facility and 5% fishermen did not get facilities to use electricity.

Table 8. Electricity facilities of the fishermen in the study area adjacent to Padma River.

Electricity facilities	Panchabati	Barakuthi	Total	Percentage
Connected	37	40	77	77%
Not connected	13	10	23	23%

Disease treatment

Information was also collected on the nature of disease treatment of the fishermen in order to determine their capability to face adverse disease situation and the facilities available for their treatment. Most of them (65%) go to nearer village doctor for their treatment and some (35%) go to nearer hospital for the betterment of their health (Table 9).

Sometimes they also take services from homeologist and kabiraj for their disease treatment. Hossain *et al.,* 2015 studied in Punarvhaba River observed that about 40% fishermen go to village doctor, 23% got health service from Upazilla health complex and 30% from kobiraj.

Table 9. Medical facility of the fishermen in the study area adjacent to Padma River.

Medical facility	Panchabati	Barakuthi	Total	Percentage
Village doctor	35	30	65	65%
Hospital	15	20	35	35%

Agricultural land

Agricultural land is one of the important natural assets that can determine individuals socioeconomic condition. It was found that the highest numbers of the fishermen near about 85% were landless and reside on demesne 9% had below 50 decimal lands, and 6% fishermen had above 50 decimal land (Fig. 4).

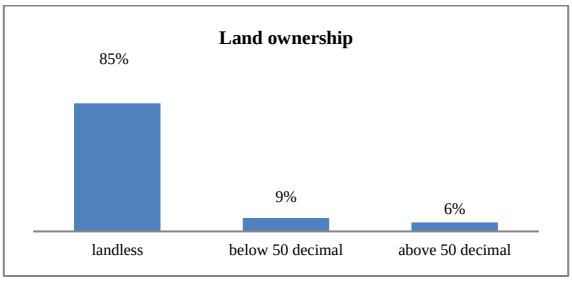

Fig. 4. Land Status of the fishermen.

Poultry and livestock

In this study it was found that among the fishermen community (Fig. 5) there were 50% fishermen who had possessed hen, duck and goat. About 28% fishermen found only goat and 17% fishermen possessed cow and hen. Rest of 5% fishermen had no animal and poultry due to lacking of rearing place and raw material such as buying money.

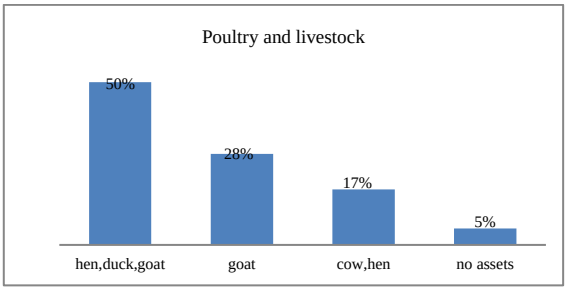

Fig. 5. Livestock asset of the fishermen.

Occupation

Occupation is defined as an activity that the people pursue for earning their living. In the study area as the survey focused on the fishermen, fishing was obviously their main and primary occupation. There were full time fishermen those solely depended on fishing for their livelihood (Fig. 6). In the surveyed area, 83% fishermen were involved solely in fishing, and rest 17% fishermen engaged in other activities as secondary occupation. Among them 5% fishermen were involved in business (hoker, vegetables seller, fishing gear seller such as dohar seller etc.) with fishing and 8% fishermen were involved in day labor, mason etc. and 4% fishermen in rickshaw and van pulling with fishing to increase their family income.

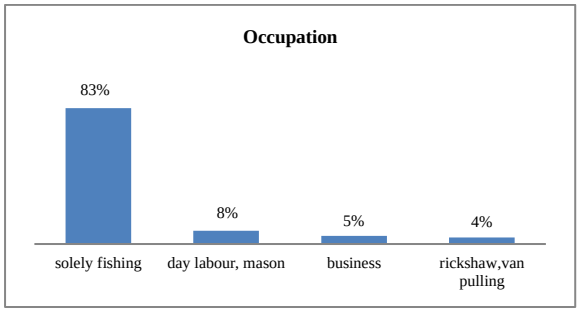

Fig. 6. Occupation of the fishermen.

Annual income

Fishermen are poor by birth. The income condition of the selected fishermen is not good. Selling of fish in the market and other place is the only one source of income of the fishermen. There were very limited options for non-fishery activities such as day labor in agricultural field, pond digging, wall painter, shop keeper, hocker, mason, rickshawa puller etc. The average income of the fishermen was found 200tk/day. From this money they expend all including food, cloth, education, disease treatment, dowry and other social culture. It was found that, the highest income of the fishermen comes from fish selling. Moreover, every year many people are getting involved in fishing as a seasonal or part time occupation. As a result, fishing pressure is continuously increasing on the river. Climate change also affects fish availability. Fishermen of the Padma River were categorized into three groups according to the level of their annual income (Fig. 7). Majority about 50% fishermen had annual income of 50,000-60,000 TK. and 30% fishermen had annual income 60,000-80,000 TK. and rest of 15% fisher had annual income above 80,000 TK. There annual income calculated from all income source including fish, small trade, labor, mason and also domestic source. Islam, 2012 studied on Tangon river and found that, the majority (55%) of the fishermen belonged to the medium income (TK. 36,000-60,000) group followed by 25% of the fishermen in low income (TK. 10,000-35,000) and only 20% of the fishermen had income in the range of (TK. 61,000-90,000). The decreasing trend of annual income of fisherman day by day may be due to of increasing fishing pressure on the river due to population expansion and lack of alternative jobs during other season.

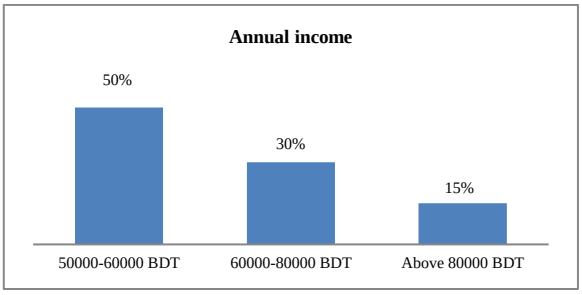

Fig. 7. Annual income of the fishermen.

Credit or loan

In the study area found that, 76% of the fishermen received credit facilities from different type of NGO's and rest of 24% fishermen were not received credit facilities (Table 10). Different type of NGO's such as BRAC, Proshika, CARITAS, Grameen bank lend them in high interest. In similar way, Ali (2013) observed that among the fishermen of the Atrai River 62.5% received credit facilities and 37.5% not received any credit/loan facilities which is similar to present research. Additionally, Islam, 2012 noted that, among the fishermen of the Tangon River 57.5% received credit facilities where as 42.5% fishermen were not received any credit facilities.

Table 10. Loan of the fishermen in the study area adjacent to Padma River.

Loan	Panchabati	Barakuthi	Total	Percentage
Received	37	39	76	76%
Not received	13	11	24	24%

Purpose of taking loan or credit

The fishermen borrowed money near about 40% for fishing activities, 30% for dowry, 15% for buying domestic animal, 10% for small trade and 5% for medical purpose (Fig. 8). Their life is not self-dependent, they depends on other for every aspect of life. They lead very needy life.

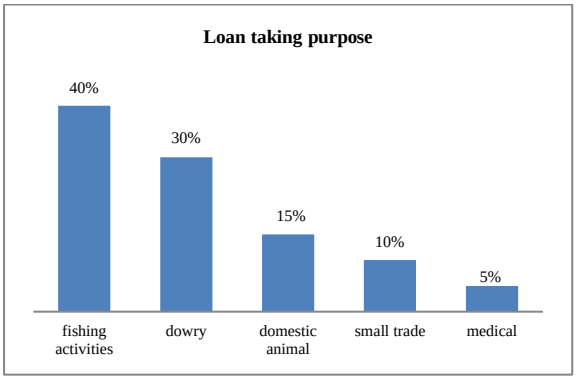

Fig. 8. Loan taking purpose of the fishermen.

Training

Study showed that fishermen around Padma river do not received any training on any dimension of fish culture and other cultivation and handicraft. Ali, 2013 observed that, among the fishermen of the Atrai River only 12.5% fishermen received training on different dimension of fish culture and fisheries management. Hossain *et al.,* 2015 studied on Punarvhaba River and found that, only 20% fishermen received training and 80% fishermen did not receive any training programm.

The critical factors towards vulnerability of fisherman's

The main critical factors were identified in this fisherman community by Focus Group Discussion (FGD). The main problems have been identified from the fishermen during the study period were lack of boat and fishing gears, alternative income source during ban period of fishing, social cohesion, awareness among the fishermen, training facility, leadership and unity among the fishermen particularly in challenging situation, sufficient Government subsidy, educational institute, and medical facilities. There was increasing char land in the river body, insufficient knowledge about ban season, ban size of fish and fishing rules and regulation was not properly used.

Conclusion

From the above discussion it could be concluded that fishermen of Padma river were mostly illiterate, lack of training exposure, lack of awareness about health facilities and other institutional facilities. Because of the geographic location and the nature of the profession, fishermen are one of the most vulnerable groups to numerous stressors .Calamities emanating from the coupled social-ecological systems and institutional arenas put forth synergistic impacts that finally push them into a vicious cycle of pauperization. As a result, acute food deficits and a kind of hidden hunger are persistent for the majority of the fishermen in the fishing villages. However, they need more and more institutional, technical, and organizational support for the betterment of their socio-economic condition and sustainable livelihood. Government should provide loan to the poor fishermen without interest or low interest and subsidy during ban period of fishing. Training program should be arranged to the fishermen by GO and NGO's organization.

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