



The role of computerized accounting information systems' components in reducing banking services costs in the Iran banking industry

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ABSTRACT

This study aimed to identify the role of CAIS' components in reducing banking services costs in the Iranian financial institutions (the Iranian banks, financial & credit institutions and Islamic non-profit granting funds). The sample consisted of 67 employees including the financial directors and accountants working in the Iranian financial institutions in Khuzestan province. The study adopted the theoretical and field approaches and the descriptive analytical methodology. CAIS' components consist of human resources, hardware and equipment, software, databases, networks and produces. Findings showed that the components of human resources, hardware and equipment, software, databases, networks and procedures play a significant role in reducing banking services costs. Findings illustrated a positive correlation between each component of CAIS and the reduction of banking services costs. Generally, Findings showed that CAIS relatively has a significant role in reducing banking services costs.

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Introduction

According to the phrase "information is a wealth", information benefits like any valuable stuff. Having useful information needs cost and for gaining and maintaining this wealth, it is required to provide its tools and a proper system should be codified in this regards, since in this growing world, someone succeeds who has the most reliable and relevant information (as a valuable wealth) on proper time and is able to use the related information for any type of decision. In changing and advanced world, especially in complicated world of accounting, which is continuously changing, fast access to correct information is one of the essential parameters in making effective financial decisions in any economical unit and in the mean time information system have a major and increasing role in organizational life. Computer and computerized equipment also are considered as powerful and suitable tool for executing such mentions. The increasing advancement and development of computer science in recent years have extensively affected the economical activities of societies in such way that continuing of activities and performance of many companies and institutes is impossible without computer usage today. These days, computers are widely used in financial and accounting due to their high capabilities and extraordinary abilities. Recent advance in the field of information technology, electronic business, exchange of electronic information, internet communication networks, and more recent inventions, has increased abilities of such equipments. The financial managers of companies can perform analysis and financial calculations for making financial decision by application of microcomputers with high accuracy as soon as possible.

Conceptual Framework and Previous Studies

Concepts of banking

Definition of banks

Banks are institutions where can provide required capitals of owners of industrial, agricultural and commercial entities from public deposit funds. The evolution of banking dates back

to when writing arose, and now as a financial institution that deals with banking and presenting the financial services, continues to evolve.

In general, the term now refers to an institution that has a banking license. Banking license are granted by the financial supervisory system. The license offers to provide the most important services such as accepting deposits and lending. There are other financial institutions that do not have a legal definition of bank and is called non-bank credit institution in the term. Banks are a subset of the financial services industry. Typically, banks profit is resulted from fees for financial services and the benefits that can be achieved through customers' deposits. Iranian banks as economic institutions participate with customers through different contracts and then get their profit that is called "Islamic Banking" in Iran term.

Definition of Non-banking credit institutions

According to "authorized point 1 rules of establishing and how operating non-banking credit institutions in 1351": Non-banking credit institution is an institution that attempts to provide resources by attracting authorized banking deposits (exception of current Gharzol Hasaneh deposit), getting facilities and other financial instruments and then allocate them for giving credit facilities and or in the other way by recognition of Central Bank of the Islamic Republic of Iran, is an intermediary between suppliers and clients. Operations of this institution are effective in both the volume and how distributing of credits.

Banking license

Having a banking license is an essential for a financial institution that wants to provide banking services. According to the most rules, banking basic activities such as taking people deposit are limited to the license holders. However, some banking services are provided by institutions that do not have a banking license. These institutions are known as non-banking institutions. Gharzol Hassanah Fund is an example in this regard.

History on Iranian banking

Since 2001 the Iranian Government has moved toward liberalizing the banking sector, although progress has been slow. In 1994 Bank Markazi authorized the creation of private credit institutions, and in 1998 authorized foreign banks (many of whom had already established representative offices in Tehran) to offer full banking services in Iran's free-trade zones. The central bank sought to follow this with the recapitalization and partial privatization of the existing commercial banks, seeking to liberalize the sector and encourage the development of a more competitive and efficient industry. State-owned banks are considered by many to be poorly functioning as financial intermediaries. Extensive regulations are in place, including controls on rates of return and subsidized credit for specific regions. The banking sector in Iran is viewed as a potential hedge against the removal of subsidies, as the plan is not expected to have any direct impact on banks.

Demand for investment banking services is currently limited. The economy remains dominated by the state; mergers and acquisitions are infrequent and tend to take place between state players, which do not require advice of an international standard. The capital markets are at an early stage of development. "Privatization" through the bourse has tended to involve the sale of state-owned enterprises to other state actors. There is also a lack of sizeable independent private companies that could benefit from using the bourse to raise capital. As of 2009, there was no sizeable corporate bond market. Electronic banking in Iran is developing rapidly. The needed \$70 million initial capital for the opening of each electronic bank as approved by the Money and Credit Council compares with \$200 million required to establish a private bank in the country [30].

Iran's financial institutions

In Iran, financial institutions that are working in banking sector divide into categories according to their trait and objective as follows [23]:

Central banks: "BANK MARKAZI JOMHOURI ISLAMI IRAN" is the central bank of the Islamic Republic of Iran.

The Central Bank of Iran (CBI) was established in 1960 (1339 solar year). As stated in the Monetary and Banking Act of Iran (MBAI), CBI is responsible for the design and implementation of the monetary and credit policies with due regard to the general economic policy of the country. Four major objectives of CBI as stated in the MBAI are:

- Maintaining the value of national currency
- Maintaining the equilibrium in the balance of payments
- Facilitating trade-related transactions
- Improving the growth potential of the country

To achieve the objectives as stated in the MBAI, CBI is endowed with the responsibility of fulfilling the following functions:

- Issuance of notes and coins
- Supervision of banks and credit institutions
- Formulation and regulation of foreign exchange policies and transactions
- Regulation on gold transactions
- Formulation and regulation on transactions and inflow/outflow of Domestic currency

As banker to the government, the CBI is mandated to keep government accounts, grant loans and credits to state enterprises and agencies. The CBI also covers such functions as lending facilities to banks, purchase and sale of government participation papers as well as other legal banking operations.

After the Islamic Revolution of Iran laws and regulations pertaining to money and banking institutions and monetary

policy design and implementation were amended to reflect the priorities and principles as set out in the Constitution of the Islamic Republic of Iran. At present, CBI is responsible for the design and conduct of monetary policy within the context of government's five year development plan and annual budget. In line with the articles of the constitution, the monetary and credit policies are formulated and implemented in consistent with the MBAI as amended, Usury-Free Banking Act of 1983, the Banks Nationalization Act of 1979, and the Law for the Administration of Banks, of 1979 [17].

Commercial government - owned banks: these banks play a major role in economic activity of each country by accepting deposits and grant credit types. In particular, their duty is providing current capital of commercial and production institutions. These banks usually deal with doing normal operations of banking such as accept deposits, transfer money domestically, exchange foreign transactions, issuing guarantees, lending facilities, the opening credits in the current account, discounting commercial notes and papers (buying debit) and other various services.

Commercial banks have forbidden from direct investments in the purchase and sale of goods in order to trade and the creation of big monopolies. Commercial banks consist of Bank Melli Iran, Bank Sepah and Post Bank of Iran.

Developed/Specialized government banks: Developed banks are authorized to perform both banking credit duties and developed duties. Their most original duty is providing partly cheap finance resources in middle/long time to perform the economic projects. These banks are the transfer operative of government economic policies to related sectors and distribute the collected finance resources by correct planning to different economic sectors, and therefore can be classified as follows:

- a. Bank of Industry & Mine: provide medium-and long-term facilities for industrial business organizations, and contribute to establishing industrial business organizations [18].

- b. Bank Keshavarzi: provide banking services for agricultural business organizations of the associations or business organizations and farmers to assist them in performing their role in agricultural development [19].

- c. Cooperative Development Bank: Provide services to the agricultural cooperative societies or social funding guarantees and simplified interest rates [20].

- d. Maskan Bank: provide banking services to individuals or institutions or cooperative housing associations to assist with the construction of residential real estate or buildings [21].

- e. Export Development Bank of Iran: these banks provide credit facilities for Large and small businessmen, and other small savers [22].

Non-Government – owned banks: These banks work as well as commercial banks and are authorized to providing most of banking services; the services usually present with more competitive advantage than commercial banks or other competitors. The mentionable banks in this regard as follows: Novin Eghtesad Bank, Persian Bank, Saman Bank, Karafarin Bank, Pasargad Bank, Sarmayeh Bank, Sina Bank, Shahr Bank, Day bank, Ansar Bank, Mellat Bank, Refah Bank, Bank Saderat Iran, Tejarat Bank, Hekmat Iranian Bank, Gardeshgari Bank, Khavarmianeh Bank and Iran Zamin Bank.

Gharzol Hassaneh banks: these banks provide medium and long-term facilities with lesser fee to meet living needs of needy and poor people. These banks include Garzol Hassaneh Mehr Iran Bank and Gharzol Hassaneh Resalat Bank.

Authorized Non-banking Financial and Credit Institutions (Near- bank): these institutions provide various banking services

for clients but with a little higher fee rate than Non-government owned banks. Unlike the banks, these institutions aren't authorized to print checkbook for their clientele. In order to attract more resources within their activity cycle, they have to present more multi-services to investors. Askareyeh Financial and Credit Institution, Kusar Financial and Credit Institution and Toseah Financial and Credit Institution are examples in this regard.

Gharzol Hassanah Funds (Islamic non-profit granting Funds): these funds are Non-commercial and Non-banking and Credit Institutions that are established according to determined laws and regulars of central bank. The funds have to observe the banking and monetary laws & regulars of country. The funds are just authorized to accept interest free deposits and give interest free credit facilities. They don't be able to receive facilities from banking system. Om Al-Aemah Gharzol Hassaneh Fund and Ansar Al-Mojahedin Gharzol Hassaneh Fund are Some of these institutions.

Concepts of Information System (IS)

Definition of IS

An IS is an organized means of collecting, entering, and processing data and storing, managing, controlling, and reporting information so that an organization can achieve its objectives and goals [9].

Definition of AIS

AIS has been defined in different ways in management and accounting literature. Some of these definitions are as follows:

- A specialized data collection system, with a set of procedures to process them in order to produce the required accounting information for its users [5].
- A set of sub-systems, specialized in processing financial transactions [6].
- A special subsystem of management systems that aims at gathering, processing and production of information related to business transactions of financial attributes in an integrated way and cannot be a separate subsystem [7].

Moreover, the modern view of AISs is that they are no longer limited to providing historical information only, but have been extended to include other types of information such as: the current data (operational and operational control) and future expectations (for problem-solving and planning) [8, 9].

- AIS is known as "one of the sub-systems in the economic union, composed of several sub-systems working together in a mutual coherent and consistent manner, in order to provide historical, current and future financial and nonfinancial information to all those interested in economic integration, including services to achieve their objectives" [10, 11]. Whereas, an Integrated IS is: "the system that consists of sub-systems which complete each other through their work in a harmonious and mutually to exclude the repetition of the generation of information from more than one subsystem, thereby reducing the necessary production costs of the information to the different agencies, as well as reducing the necessary time and effort needed for production" [6, 12, 13]. The importance of integrated AIS in any economic unit comes from the need to find relationships through coordination, exchange and interdependence between each of AIS and with other types of ISs [12]. It also contributes to drawing a clear picture of the nature and volume of work done and the scheme for comparison, which contributes to the assessment of performance (comparison of the work done with the work expected and to identify corrective actions that need to be taken) [14, 15].

Based on what said in above, we can define AIS as follow: "a set of sub-systems that work together in a coherent and consistent and mutual manner, using a set of materials and human input". This is to implement a set of procedures and processes, and is in accordance with the adopted accounting principles to provide historical current and future financial and non-financial information. Having such information helps management and the relevant authorities to perform the tasks and make decisions regarding the achievement of the objectives of the business organization. The following can be concluded:

- AIS is one of the sub-systems of the business organization's overall IS, (such as production, personnel, procurement, etc.), which collectively aim to serve the goals of the business organization.
- AIS consists of several lower-level sub-systems, such as financial accounting and MIS, which work together in a coherent and consistent manner to provide information to different agencies to assist them in planning, control and rationalize decision-making.

Components of CAIS

Any system must have its infrastructure components that interact with each other through a network in order to achieve the desired objectives. That infrastructure is evident in the set of resources available to the system. Some researchers believe that AIS, in light of computers, consist of a set of nested elements and parts that interact with each other to achieve the common objective(s), as follows [16]:

The human element (a group of individuals): Those who implement all system procedures, who undertake to manage the system in terms of preparation, design, operation and extracting the information. These human elements are responsible for operating and running the computer, feeding it with the necessary data and programs for the operation, and determine the quality of output.

Hardware: The equipment used for data entry, operation and extraction of information, including all computer components and accessories, i.e., telephone, telex, facsimile, typewriters, calculators, and any communication means and preparation of data.

Drivers: Software used by the system, such as operating systems for the control of computers and software applications that are used to meet the needs of the management.

Data: The basic material, essential to the accountant to execute the instructions of the application literally, in order to obtain the information.

Database: A storage device that stores data in various storage media.

Network: The basic infrastructure for communication between computers and the related programs.

Operating Procedures Manuals: Print-outs in the form of booklets containing instructions for the preparation of data and how to enter them, as well as instructions for operators who run the system.

In considering these factors, it is evident that the banking AIS consists of a set of human elements represented by all staff in the IS department, who use a range of material parts and supplies for the performance of accounting work, such as hardware and software, books and records, etc. in accordance with specific procedures and accounting rules to record, operate data and deliver its results in a series of reports and financial statements for all parties that might benefit from them in decision-making. It is worth mentioning that the components may be either tangible (personnel, machines, documentary and book group), or intangible (i.e. non-physical such as rules,

procedures and principles) which are inseparable twin components.

Banks' AIS features

AIS in banks include several essential components to ensure that it can achieve the required objectives. Some of the important objectives are shown in Figure 1 below [24]:

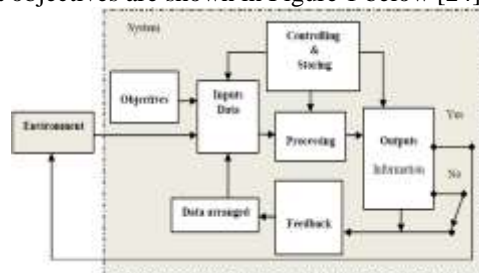


Figure 1: AIS features

Significance of AIS in the efficient work of an organization

AIS is the basic and important foundation for other IS in a business organization. Its significance stems from:

1. The importance of accounting information that has become a vital element of production.
2. Also, it has an important role in determining the effectiveness and efficiency of the business organization.
3. AIS reflect the interaction that takes place inside the business organization and the external environment, including all of the influences, and gives clear, accurate and detailed information about the economic situation of the business organization.
4. AIS is the "business organization's eyes" since it shows, at any time, where the business organization stands, and in which direction it is going. In other words, AIS provides suggestions on how to act and how the organization should perform according to the organization's plan.
5. AIS plays an important role in the success of the decision-maker, as it affects future forecasts, describes its vision and develops the forces that affect a certain position. Furthermore, AIS helps in deciding the best strategic plan for the business organization that can be applied in the long term. At the same time, the decision-maker is better able to make a choice between alternatives (decision-making).
6. It also improves the capacity of management to plan properly, establish policies and integrate the various internal and external environmental factors.
7. At the same time, it coordinates business organization's needs and capabilities to achieve effective internal monitoring for all the material elements of the business organization. Therefore, business organizations have tended to design and build AIS in order to control of the vast amount of necessary information for business organization's management.
8. Also, AIS ensures reliable, valid and accurate access for all levels of management in an appropriate and timely manner, with the lowest cost in making informed decisions.
9. AIS can add value to a business by providing personnel with accurate information in a timely manner, so that tasks can be accomplished efficiently and effectively thanks to the precise design of the system [9]. For a business, AIS can:
 - a. improve the quality of goods or services and reduce costs;
 - b. improve the effectiveness and efficiency of a business organization's procedures;
 - c. improve the process of decision-making; and
 - d. increase the exchange of knowledge and experience.

Previous Studies

There are a lot of Researches in the field of AISs in the worldwide but it is modest in the Middle East and especially in Iran. The significance of AISs is illustrated by their role in

reducing costs and increasing the speed of services provision and achieving some advantages in economic units. Accordingly, the researchers have found a fair number of studies in both Middle East and foreign environments on AISs' components and their role in reducing costs of provided services or production costs. Mahdi Salehi and his coworkers by doing work titled "Usefulness of AIS" found that although AIS is very useful to Iranian corporation; it is a gap between what AIS is and what should be [3]. "Evaluation of the effectiveness of accounting information systems of finance managers of listed companies at Tehran Stock Exchange" is title of article that belongs to Sajady and his coworkers. They concluded that implementation of accounting information systems at these companies caused the improvement of managers' decision-making process, internal controls, and the quality of the financial reports and facilitated the process of the company's transactions. Also, the results did not show any indication that performance evaluation process had been improved [25].

Moeenizadeh and his coworkers by working on a research titled "surveying the position of AIS in banks, financial and credit institutions and interest free loan funds" have found that the position of AIS' current method in the financial institutions is desirable. Therefore, tending to use a daily technology could improve the position [24].

Saed Ahmed Sulub surveyed "The impact of CAIS on reducing costs in Somaliland business companies: a case study". His found that there is a significant impact for CAIS on reducing costs at Telesom Company and Shaam Construction Factory [26].

Al-shbiel, Mohannad Obeid investigated the impact of using AISs in achieving competitive advantage for Jordanian commercial banks. He concluded that there is a statistically significant impact for AISs on achieving the dimensions of competitive advantage (improving the pricing process for banking services, reducing costs of banking services, increasing the speed of provided services, and increasing market share [27]. A. kh. el- Dalabeeh and his coworkers conducted a study in which he aimed to identify the role of CAIS in reducing the costs of medical services provided at King Abdullah University Hospital. Their findings showed that there is a significant role for the CAIS in the reduction medical services costs at the hospital. Also they found that there is a positive correlation between each component of AIS and the reduction of medical services costs at the hospital [28].

Development hypotheses

Based on the literature reviewed above and the findings of previous studies, the study hypotheses can be drafted as follows: H1: Component of human resources plays a significant role in reducing the costs of banking services in Iranian financial institutions.

H2: Component of Hardware plays a significant role in reducing the costs of banking services in Iranian financial institutions.

H3: Component of software plays a significant role in reducing the costs of banking services in Iranian financial institutions.

H4: Component of database plays a significant role in reducing the costs of banking services in Iranian financial institutions.

H5: Component of networks plays a significant role in reducing the costs of banking services in Iranian financial institutions.

H6: Component of procedures plays a significant role in reducing the costs of banking services in Iranian financial institutions.

H7: CAIS plays a significant role in reducing the costs of banking services in Iranian financial institutions.

Research Method

Sample and data collection

The study community consisted of individuals working in Iranian banks, financial and credit institutions and interest free loan funds. The sample fairly selected from the financial directors and accountants working in the mentioned previous financial institutions in Khuzestan province. Questionnaires were handed to respondents, and 70 questionnaires were recovered. After checking the recovered questionnaires it appeared that three of them were unfit/ did not meet the conditions, so they were excluded. Therefore the number of questionnaires used in the statistical analysis was 67, or 95%, which represents an acceptable percentage for conducting statistical analysis

More details about selecting the sample are coming in the table 1 as follow:

The percentage of response	Reviewed numbers of sample	All numbers of sample	Type
95%	23	24	Governmental Commercial Banks
100%	10	10	Specialized Banks
88%	15	17	Non-Governmental Banks
100%	5	5	Gharzol Hassasah Banks
100%	10	10	Financial and Credit Institutions
100%	4	4	Gharzol Hassasah Funds
95%	67	70	Total

Table 1: the reviewed sample' numbers

The study's data collection tool was questionnaire which designed particularly for the purposes of this study in order to measure the role of CAIS' components in reducing the costs of banking services. The questionnaire was developed in accordance with the study literature, with thirty one items divided on three sections: the first section included general information, the second section included to measure the independent variables (related to CAIS' components) and the third section to measure the dependent variable (reducing the costs of banking services).

The responses were rated on a five-point Likert scale as follows: strongly agree (5 point); agree (4 points); neutral (3 points); disagree (2 points); strongly disagree (1 point).

Statistical Analyses

In order to process the data collected for the purposes of the study, the following statistical methods were used:

- 1- Percentages for describing the properties of the study samples.
- 2- Averages and standard deviations to identify the respondents' comments on items.
- 3- Correlation coefficient (Beta) to test the study hypotheses.

4.1. Description of the Study Sample

The below table 2 shows the properties of the study sample.

Testing the hypothesis one/two/three/four/five/six: As the table 3 shows, the correlation coefficient (B) of each hypothesis is more than number 0 and the nearest the number +1; that means all hypotheses are accepted. On the other word, there is a positive and powerful correlation between each component of CAIS and the reduction of banking services costs or the human resources, hardware and equipment, software, databases, networks and produces separately play a significant role in reducing banking services costs.

Also, the table 3 states that the Independent Variables of all hypotheses have a high average (the Mean is more than the number 3) and that means all respondents believed that CAIS' components overall are effective and vital elements in using CAIS.

Variable	Variable Category	Percentage
Gender	Male	71
	Female	29
	Total	100
Age	Less than 30 years	43
	30 – less than 39 years	22
	40 – less than 49 years	18
	50 and older	17
	Total	100
Experience	1-5 years	30
	6-10 years	49.2
	11-15 years	13.9
	16 and older	6.9
Total	100	
Qualifications	Less than Bachelors	31.4
	Bachelors	44.8
	Masters	21.7
	Ph.D	2.1
Total	100	
Educational Field	ACCOUNTING, Finance and Banking	91.9
	Others	8.1
	Total	100

Table 2: the properties of the study sample

Hypotheses Testing

For the purpose of testing hypotheses, the tables 3 and 4 designed that show the average, the standard deviation and correlation coefficient (Beta) calculated for each hypothesis.

Hypothesis	Independent Variable	Mean	S.D	B
H1	Human resources	4.75	0.27	.93
H2	Hardware and equipment	3.26	0.485	.88
H3	Software	4.09	0.353	.86
H4	Databases	4.76	0.621	.74
H5	Networks	4.22	0.45	.89
H6	Procedures	4.5	0.29	.90

Table 3: Means, Standard Deviations and correlation coefficient for hypotheses one to six

Variables	Reducing the costs of banking services	Effect of all components of CAIS or the role CAIS
Statistic Index		
Type of variable	Dependent Variable	Independent Variable
Mean	4.22	4.26
S.D	.33	.41
B		.86

Table 4: Means, Standard Deviations and correlation coefficient of hypothesis seven

Also we can see that the first and six variables have a higher averages respectively (4.75 and 4.5) than others; it clears that the qualified human resources and appropriate produces are the most important and effective components than others. Since the human resources and produces are behavioral elements, therefore executive managers should focus on more skills and training of the human resources then they serve CAIS better. Also if the executive managers consider appropriate produces for CAIS, the running CAIS will be unique.

Testing the hypothesis seven: As the table 4 is shown, the correlation coefficient (B) of hypothesis 7 is more than number 0 and near the number 1 and that means the hypotheses is accepted. On the other word, there is a positive and powerful correlation between the role CAIS and the reduction of banking services costs or CAIS plays a significant role in reducing the costs of banking services in Iranian financial institutions.

The average of costs of banking services variable (more than number 3) in the table states that respondents agree with reducing the costs of banking services

Conclusions and recommendations

This study investigated the role CAIS' components (i.e. human resources, hardware and equipment, software, database, networks and produces) in reducing the costs of banking

services. The study findings found that the components of human resources, hardware and equipment, software, database, procedures and networks play a significant role in reducing banking services costs. It illustrated a positive correlation between each component of CAIS and the reduction of banking services costs. Generally, the study findings showed that CAIS relatively has a significant role in reducing banking services costs.

The findings cleared that the qualified human resources and appropriate produces are the most important and effective components than others. Since the human resources and produces are behavioral elements, executive managers should focus on more skills and training of the human resources and it causes to serving CAIS better. Also if the executive managers consider appropriate produces for CAIS, the running CAIS will be unique.

The study recommends that all components of CAIS should be work in integrated manner in interaction with each other to achieve the target reducing of banking services costs and the following major one enhancing banks profitability.

It also proposes retaining the highest levels of CAIS through keeping up with the latest developments in the fields of software, hardware, databases, networks and conducting regular maintenance regarding information technologies used and also enough training of users during the work can be able to support banks' managers to access the most relevant and reliable information easily and speedily which that in turn enable them to make better decisions for retaining or enhancing banking competitive advantage rather than other competitors.

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