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THE RELATIONSHIP BETWEEN RISK MEASUREMENT AND THE ACCOUNTING INFORMATION SYSTEM: A REVIEW IN THE COMMERCIAL AND ISLAMIC BANKING SECTORS

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ABSTRACT

Accounting and output of IT systems are effective management tools based on decision-making information. In recent years, Banks have heavily invested in developing risk measurement information systems. I consider it because technological advances probably continue at a fast pace, making the assembly of risk information for financial companies less expensive. This paper briefly summarizes the relationship between accounting information system and the risk measurement.The results of more than 155 studies were integrated after examining more than 500 papers. In the present study. Although some researchers have not found a clear relationship between the accounting information system and risk measurement results, some have. The establishment of an effective accounting information system has been shown to be a competitive advantage.

Although the study topic remains ambiguous, the results will serve as a guide to researchers, practitioners and policy makers, as they can be financially sustainable. This research is aimed at examining the literature on these relationships. The results of the current study will be discussed and further research areas explored.

1.1 INTRODUCTION

Identifying and assessing business risks is critically critical for modern business, when under any situations a scenario will emerge that could adversely impact the company and lead to unintended financial consequences. All of this includes the development of an appropriate risk assessment mechanism that can define, forecast and quantify risks. It should be pointed out that it is accounting where there are such rules and criteria that allow pre-assessment of market risks. Accounting practices and the ideals of risk assessment should also be merged to create such a framework. (Ali, Bakar and Omar, 2016; Ali, Omar & Bakar, 2016; Chebanova, Orlova, Revutska, &Karpushenko, 2019).

Also, going by the necessity of risk management in banking sector, there is always a nexus linking AIS with risk measurement in commercial banking sector. (Rasid, Rahman, & Ismail, 2011) posited a relationship between accounting management practices and risk performance. In this stance, the need for AIS involvement in risk measurement as a way to enhance risk performance is suggested. (Aebi, Sabato, &Schmid, 2012) also pointed to the possibility of the influence of AIS on bank-specific governance using risk governance. The Aebi et al.'s report was centred specifically on the performance of banks during the financial crisis period. The introduction in the 1990s of Value at Risk (VaR) models marks an important step in the evolution of risk management practices. Since 1998, the Basle Committee has allowed banks to obtain oversight approval on the basis of their internal models to set capital requirements for market risk. Both banks and supervisors have therefore made significant efforts to investigate the performance of these internal risk models. Nevertheless, accurate risk measurement is an important way of providing the decision-makers with the requisite quantitative information to properly understand and endorse the risks associated with alternative decisions (Aven, 2016). The key point of the financial risk assessment stage is that corporate finance predicts, analyzes and thoroughly assesses potential risks so that risk factors can be clearly identified in different management activities and financial profit and in corporate expenditure. Finally, they will provide the basis for decisions on financial risk management. Financial risk assessment is an essential prerequisite for monitoring and processing corporate risk and also an essential risk management measure. It is an indispensable precondition for modern businesses to assess enterprise finance risks accurately and thoroughly in competitive markets (Ling-Fang, 2015).

Abu-AlSondos, &Salameh, (2020) indicated that IS mechanism that makes use of the IT portion to assist in monitoring an organization's operation activities. Similarly AIS is a mechanism that makes use of the IT portion to assist in monitoring an organization's economic-financial activities (Ali, 2019). Like any other system of information, an accounting system (AIS) plays a major role in the everyday management of corporate operations. Accounting information systems are considered to be one of the supporting information systems used in management positions such as planning, organization, monitoring and decision taking in order to best leverage the resources available (Ali, Bakar and Omar, 2016; Ali, Omar & Bakar, 2016).The study therefore explores the effect of accounting information systems on risk measurement in commercial and Islamic banking sectors.

1.2 PROBLEM STATEMENT

On other hand, the diverse usage of AIS has suggested its possible influence of organisational operational efficiency, financial sustainability and risk measurement. From the findings of (Alzoubi, 2012; Hamdan, 2012;El-Qirem, 2013; Ali, Bakar and Omar 2016; Ali, Omar & Bakar 2016;Ali, 2019), AIS when employed by organisations enhance information efficiency, therefore positively support operational efficiency. Also, because of the quality service delivery that AIS always support, customer satisfaction is consequently achieved, which by turn influence the organisation's financial sustainability. The aid of information system for financial market forecasting, risk index calculation and others are examples of the advantages of AIS on organisational risk measurement. Therefore, AIS arguably support operational efficiency, financial sustainability and risk measurement. However, the banks are yet to fully utilize the e-technologies, and explore its inherent advantages.

In general, in development countries banks are yet to make good use of the latest state of e-technology (Ali,2019; Ali, Bakar and Omar, 2016). While the trend is changing, there is still a lot to be done to ensure that the banking sector makes full use of e-technology capacity to enhance financial tracking, strategic planning, decision-making and service provision, amongst other items (El-Qirem, 2013:Ali, Bakar and Omar, 2016; Ali, Omar & Bakar, 2016). Specifically, from (Hamdan, 2012;Ali, Bakar & Omar, 2016; Ali, Omar & Bakar, 2016 ;Ali,2019) account, the commercial banks in Jordan that have adopted and have been using AIS are yet to full use the applicable capacity and diverse usefulness of the tool. On this account, AIS usage among the commercial banks is under-utilized. The Islamic banks in Jordan are also found in this situation of AIS under-utilization (AL-Refaee, 2012;Abdelhak & Dalel, 2012). The need for AIS adoption for enhancing operational efficiency, financial sustainability, and risk measurement among the commercial banks is yet to be directly explored in view of investigating its effect on these listed organisational constructs(Ali, Omar & Bakar, 2016). Similarly Abu-AlSondos, Pangil, & Othman, (2012) confirmed for Knowledge Management System for the organizations.

In the light of the above, studies (Wedyan, et al., 2012;Al- Dalabeeh & Al-Zeaud, 2012;Miani & Daradkah, 2008;Ali, Bakar and Omar 2016; Ali, Omar & Bakar 2016;Ali, 2019) that have been conducted on the AIS adoption and usage among both conventional and Islamic banks in globally still have much to be investigated. From the extant literature review –as theoretical limitation from past studies –no study has investigated; the influence of organizational culture on the interaction effect of AIS adoption on risk measurement. The above underscored the practical and theoretical problems that provoked this study.

Against this backdrop, this study centres on measuring the effect of AIS adaptation on OE, evaluating its effect on FS and determining its effect on RM. Lastly, policies and strategies that are influential to the overall growth of the banking sector are suggested through the findings on the selected constructs.

1.3 RESEARCH OBJECTIVE

a. identifying the relationship of the accounting information systems and the risk measurement in commercial and Islamic banking sectors
b. To recommend for policy consideration.

1.4 RESEARCH SCOPE

The scope of the research is described as follows:

a. This research is conducted on commercial banks with the sampling system of traditional and Islamic banks.
b. The AIS studied is a category of information technology or methods primarily used for the management of bank accounts.

1.5 SIGNIFICANCE OF THE STUDY

This research, to the best knowledge of the investigator, is the first to thoroughly analyse the relationship between the organization structures chosen: risk measurement in the commercial and Islamic banking sectors. In this analysis, the research model of AIS adoption and its impact on organizational activities and structures is the basis for a wise analysis. The research also aims to link the risks of accounting inputs to the architecture of the internal control system with a view to reducing the risks of internal control to the lowest possible bank level. In general, banks are the main risk-taking businesses, which ensures that accounting information systems must recognize the risks and ensure that the financial records are right and that the financial events of the banks are correctly represented. This research therefore attempts to relate the accounting system and how its risks can be detected and how if they exist, risks can be dealt with. It also aims to invest risk in order to gain accurate financial details for decision-making.Furthermore, this research contributes to the Bank of Literature on AIS and its organizational importance in response to the clarification of the need for general studies of AIS due to its teething period. It leads to analytical studies on the influence of the implementation of AIS on the general commercial and Islamic banking sector and organizations.

1.6 Effect of Accounting Information Systems (AIS) on Risk Measurement

To the best knowledge of the researcher, no study had been conducted to investigate the effect of AIS on risk measurement. This is traceable to the fact that few studies can be accounted for in AIS generally –being an emerging area in the accounting research (Ali, 2019). However, it is arguable from the literature reviewed that there is necessity to investigate the effect of AIS on risk measurement among financial institutions. This essentially is the concern of this study.

According to Sayed, (2019) Assessing the efficacy of accounting information systems (relevance, reliability and protection of information) to minimize the risk of digital auditing (inherent, control, detection) in Irbid Electricity. The study found major impact on the efficacy of accounting information systems on the risks of electronic auditing in Irbid Electricity Sector. The study suggested further research on achieving performance, accounting control procedures efficiency, and asset management systems to minimize control risk.To start with, (Sharma, & Sharma, 2010) estimated the risk index of all public sector banks. Within the banking sector, a broad-based risk management framework covers interest rate, exchange risk, liquidity risk and credit risk, Using the information available on the balance sheets of Indian public sector banks, the relationship between risk index, asset size, capital adequacy and liquidity are examines, with a total of twenty-eight (28) banks as sample. The result of the findings revealed that: with the risk index (RI), 16 banks have good performance. It was reported that there is no clear cut guideline on benchmarking RI, and book insolvency is reported as a more reliable indicator than risk assessment. Finally, according to the result shown, the Indian banks have the probability of book insolvency that is comparatively high with 0.076.

For a propounded risk-based approach to anti-money laundering and counter-terrorism financing (AMLCTF), (Sathye & Islam, 2011) developed a money laundering and terrorism financing (MLTF) risk assessment. This is specifically done through the use of appropriate changes to the elements of typical credit-scoring model. The money laundering theories employed by the study suggested an inverse relationship between money laundering regulation and the volume of money laundered. This suggests that: the more effective the regulatory mechanism is, the more expensive for money laundering practice, therefore resulting in lesser volume of money to be laundered. (Fang-Ling, 2015). Identified the relationship between the information system for enterprise accounting and the risks of that system. It studies risk evaluation and the basic content and concepts of the method of analytic hierarchy. Cantered on the characteristics of the existing financial risk for the undertaking in every growth, Fang-Ling used qualitative approaches to combine with rigorous analyzes to provide a quantitative basis for mathematical methods research, decision-making to evaluation. Finally, this paper takes an example risk evaluation to check the realistic importance of our model for the company's accounting information system.

In the trend of studying the risk sensitivity of banks as financial institutions, (Sensarma & Jayadev, 2009) analysed the information related to risk management capacities as contained in the banks' financial statements. This provides the information needed regarding the sensitivity of the banks stocks to risk management. The banks' accounting identities present a theoretical framework. The study estimated the overall risk management capacity of the banks through the summary of the interpreted accounting ratios as risk management variables. Then, multivariate statistical techniques using regression analysis are applied in view of investigating the impact of risk management scores on stock return. The results from the investigated Indian banks revealed that: banks' risk management capacities are improving except the setback recorded in the last two years. Banks' stock's return is observed to be sensitive to risk management capability of the investigated banks.

(Jin, Yu, & Mi, 2012) analysed credit risk from industrial and macroeconomic perspective. Using grey incidence analysis method, credit asset quality is identified as an obstacle that limits commercial banks development. With the experience of different industries having different incidences of industrial risk and credit risk, incidence identification method is used to investigate the industry and macroeconomic factor that could affect an impaired loan ratio. The result of the study showed that: there is always a difference in impaired loan ratio according to the influence from the diverse industries, and also the macroeconomics. From the industrial angle, risk deviation scope in the grey risk control provides new content and idea.

(Zheng, Xu, & Liang, 2012) worked to strengthen China's risk-fighting capacity by researching the internal process between capital buffers and risk adjustment. Zheng's report, based on the complex characteristics of banks' ongoing operations, created an unbalanced panel of Chinese commercial bank balance sheet data from 1991 to 2009. Also, generalized moments approach was used to analyze the relationship between short-term capital buffer and portfolio risk changes. The findings indicate a positive relationship between capital and risk changes among capitalized banks. It also shows: if the capital level is retained and the risk increases, the capital level decreases. Thus, low-capital banks will either raise their reserves by risk reduction, or resurrection toy through further risk participation as a way to restore the buffer. Managing short-term capital and risk changes is revealed to be based on capital buffer size.

(Abdullah, Shahimi, & Ismail, 2011) while examining issues affecting operational risks in Islamic banks assessed key issues in measuring and managing operational risks of Malaysian Islamic banks. The study used descriptive, analytical and comparative analyses in the discussion of issues that affect operational risk, risk measurement and capital adequacy among the Islamic banks. Because of the peculiar uniqueness of the Islamic banks compared to the conventional banks in terms of contractual features and general legal environment, operational risk is being extensively discussed. The Basel II principle of effective banking supervision is reported to be suitable measuring the risk quality and operational characteristics of the Islamic banks.

Ojo, (2010)Developmental traces of the importance of risk regulation were sought, explaining the importance of risk in regulatory and government circles. To do this a systematic theoretical analysis is done to clarify risk-based regulation and meta-regulation. Adopting a comparative approach to researching meta-regulatory strategies and risk-based regulations with comparisons to Germany, Italy and the USA, the study asserted that all regulatory strategies should take into account the value of management obligations. It is argued that: management duties influence auditors' use in controlling and supervising.

Li, Li, Wu, & Song, (2012)Integrated risk and optimization model. Project managers' views and interpretation of software process risk are collected via a designed questionnaire. The data collection tool is to discover the likelihood of risk occurrence and the trustworthiness effect. The model system analyzes the study's simulation situations. Results showed: risk management increases trustworthiness. However, risk management is said to be much complementary to a fundamental method of improving software. In lower CMMI-level businesses, software developers are obliged to follow acceptable and optimal risk management feedback approaches.

Gray, Hall, Klease, & McCrystal, (2009) worked on the estimation of the systematic risk in determining capital cost. It is discussed that: estimating systematic risk or beta are determinants in capital cost. Gray et al thus used ordinary least square regression to compile beta estimates of stock returns on market returns from a monthly data for a span of four (4) to five (5) years. It is assumed that a longer time series data will not be adequate in capturing the associated risks with existing assets. It is shown from the study that the ability of beta estimates in predicting future stock had been increasing systematically with the length of the estimated window. The estimation error is reported to be insignificantly different from the assumption that beta equals to one of all the stocks.

Settlage, Preckel, &Settlage, (2009) used conventional and risk-adjusted non-parametric efficiency measuring techniques to analyze the performance of agricultural banking industries in their work on risk-adjusted efficiency and risk aversion in agricultural banking. Also analyzed are: Agricultural banking industries' efficiency score and risk-preference structure. Using DEA for efficiency testing, standard cost efficiency is contrasted with both benefit and risk-adjusted profit efficiency ratings, where risk adjustment is the changed form of conventional DEA. In this case, a mean-variance criterion reflects firm preferences. The risk-adjusted technique also provides estimates of the firm-level risk aversion. The consequence of the conventional method indicates no risk estimate. This suggests low productivity in agricultural banking industry. The risk-adjusted approach, however, suggests more productivity among the banks studied. On average, 77 percent of the inefficiency found by the standard DEA formulation is attributed to the company's risk aversion behaviour. The result showed that most banks are significantly risk-averaged.

Furthermore, in the assessment of the degree of risk involving agricultural products, (Chuan, Junye, & Min, 2010) opined that there is necessity for the implementation of market risk management. Chuan thus conducted a fruit market price analysis and measurement on several fruit species using Value at Risk (VaR) method. This quantitative analysis is to verify the hypotheses that: a. Business performance and b. Random market uncertainty. The empirical study result showed that normal distribution and not optimal distribution are applicable in fruit market risk assessment. From the result, similar market risk fruits have similar characteristics. Therefore, fruit market risk management is important by risk monitoring and classification of various types of fruit production as a single unit. This is said to ensure productivity and precision and sustainably reduce business risk management costs. Chuan's study also stressed the fact that the nature of the risk-aversion mechanism to be instituted must be in accordance with the nature of service or good) in questions. A number of focused studies are needed to investigate the characteristics of the individual, domain, and other relevant variables. This is considered a feasible way to successfully resolve the unusual essence of risk-aversion stances.

In his work on Brunei's Islamic banks' risk management practices, Hassan (2009) evaluated the degree to which Islamic banks in Brunei use risk management practices (RMPs) and techniques in dealing with various types of risks. Using a questionnaire focused on understanding risk, risk management, risk evaluation, risk analysis (RAA), risk detection (RI), risk monitoring (RM), credit risk analysis, and RMPs, the study found three major types of risk to be taken significantly among Islamic banks in Brunei. These are: trade risk, credit risk, and operating risk. The study showed that: Islamic banks are relatively productive with their RI and RAA as the most powerful constructs while studying their RMPs.

Ariffin, Archer, & Karim, (2009) from empirical research conducted to analyze risks in Islamic banks ascertained the understanding of Islamic bankers about the existence of risks, risk measurement and risk management techniques in their banks. Covering 28 Islamic banks across 14 countries studied using survey questionnaires as data collection tool, Ariffin et al's research found that Islamic banks are mostly exposed to similar risks in conventional banks. However there are risk-level discrepancies accounts. The study found applicable theoretical and policy consequences for Islamic banks in their risk reporting approach.

In modelling real-time operational data for operational risk effectiveness, Teplý, Chalupka, & Černohorský, (2009) utilized two major approaches. Using Loss Distribution Approach and Extreme Value Theory as approaches with the standard maximum likelihood estimation method and the probability weighted moments (PWM) as the estimation methods, a heavy-tailed pattern of operational risk data is proved. This proof is in line with numerous past studies. In addition, the study revealed that PWM is consistent if data is limited by being able to provide reasonable and consistent capital estimates. By using Advanced Measurement Approach (AMA) –and not Basic Indicator Approach (BIA) as used in Basel II –the studied banks have the ability of saving 6-7% of its capital requirement on operational risk.

(Rasid, Rahman, & Ismail,2011) analyzed the relationship between Malaysian financial institutions' management and risk management.

Aebi, Sabato, & Schmid, (2012) analysed the influence of bank-specific governance using risk governance specifically on the performance of banks during the financial crisis period. The analysis was conducted by measuring the bank performance using buy and hold returns and ROE, controlling standard corporate governance variables like: CEO ownership, board size and board independence. Then, a descriptive analysis was done to measure the bank crisis performance, the corporate and risk governance variables, and the financial control variable on a large data collected from 372 bank observations. The result showed that banks that have their CRO reports directly to the board of directors perform significantly better during the financial crisis, while banks in which CRO reports are sent to the CEO perform significantly worse. The result of the study thus supportsthe hypothesis that: risk governance in general and the reporting line of the CRO are important to banks' crisis performance. This is because the CEO and CRO may be of conflicting interest, but if the CRO reports to CRO, the risk agenda will be less attention. This study has greatly signified the importance of organizational structure in risk management. The flow of organizational responsibilities and duty has been empirically supported to be a factor in organizational performance in risk management.One study which has made a major effort to incorporate information systems into the resolution of operational risk problems in the banking sector (Flores, Bónson-Ponte, & Escobar-Rodríguez 2006). Flores et al. evaluated the response potential of the banking sector's adopted IS. The study used standardized case formed with a Spanish saving bank, examining processes and systems to change and prevent competitive position. The study recommended specific changes to promote organizational risk information systems (OR-IS). However it is concluded that with the current Basel II, a significant difference exists between the current IS in use and its consistency with the proposed model. Therefore the authors called for further attempts to address IS integration in solving operational risk issues among banks generally.In the same pattern, (Bons'On, Escobar, & Flores, 2008) in their analysis of operational risk measurement in banking institutions and investment firms suggested an evolution scheme involving descriptions of the IS complexity stages of those firms. The IS is proposed to help strengthen organizational risk execution, capture, reduction and management. The study used econometric approach by developing a proxy variable to capture each entity's IS complexity. The factor individual is then evaluated, the country impact explored, and intangible assets weighted. The study revealed the organization size is the study's most influential predictor. The study result showed that: IS decision as referred to by operational risk management is influenced by size, which could cause competition differences between European banking system.

1.7 THE LITERATURE'S GAPS

The above extensive literature forces research to expand the range of information so that gaps can be found in those earlier studies on the basis of this review. As mentioned, there are still few literature and few AIS-based studies – an evolving field with minimal investigation. Consequently, this work primarily extends the amount of AIS literature. In addition, the following are the clear theoretical, practical and methodological differences that will be discussed in this analysis:

1.7.1 THEORETICAL GAP

In the inter-relationship between AIS adoption and risk measurement, Flores, et al., (2006);Bons´On, et al., (2008) are the studies –to the best knowledge of the researcher– that have merely attempted to investigate any relationship between AIS integration in accounting management and risk aversion. Both agitated for a study that will investigate the effect of AIS usage on risk measurement and performance. This is an essential call that this study want to respond to. In addition, from Aebi et al.'s (2012) result that: risk governance in general and the reporting line of the CRO are important to banks' crisis performance. This is because the CEO and CRO may be of conflicting interest, but if the CRO reports to CRO, the risk agenda will be less attention. Therefore, organisational culture as a newly-involved construct is introduced by this study as a moderator to the interaction between AIS adoption and risk measurement.

The inter-relationship between risk performance, aversion and prevention and financial performance has been conceptually argued. However, none has empirical tested this conceptually argued relationship. As another theoretical contribution, this study tests the mediating effect of risk measurement on financial sustainability with the interaction of AIS adoption.

1.7.2 PRACTICAL GAP

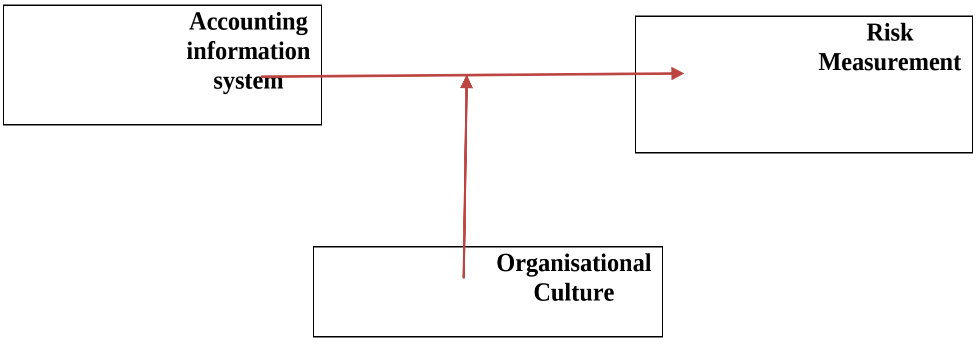
In practice, there is a great deal to be done in studying the effect of AIS adoption in Islamic and conventional banks worldwide. There was no research presented in view of a comparative study on the impact of AIS adoption on risk measurement among Islamic and conventional banks.Majority of the studies that investigated the influence of AIS on risk measurement were on firms selected on the basis of their quotation on financial market of the country under study.

1.7.3 METHODOLOGICAL GAP

The presented research demonstrates that many of the studies used econometric techniques, like Du Point, Logit and DEA analysis. The few others, using statistical methods, used descriptive statistics and regression analysis, but neither used the complexity of the Structural Equation Modeling(SEM) to study the interrelationship variables in the risk assessment. This is an important methodological discrepancy observed in this study. Within this context a methodological approach is introduced for a detailed study of the interacting variables of the model, the Partial Least Square (PLS-SEM).

1.8 Research Model

Figure 1.1 below shows the proposed conceptual research model based on the above for further studies and highlights the theoretical gaps to be addressed in this study. In future research, the following research model could be examined.



1.9 DISCUSSION AND CONCLUSION

The aim of this study is to analyse the relationship between risk measurement and secondary statistics accounting information systems, which show that the system is of great importance and importance to companies and organizations. Through AIS, management gathers and uses valuable information in the decision-making process and in the planning process to achieve organizational objectives and objectives. However, despite the significant development of AIS, there is still an inconsistent outcome that evaluates the effects of AIS on risk measurement.

The scientific basis for risk assessment and risk management is somewhat shaky in a number of areas, since theoretical work and practice rely on perspectives and principles that can mislead decision makers seriously. Examples include the general concept of risk as an anticipated value or distribution of probabilities.

Due to its external validity, the application of the AIS remains an interesting topic to be studied, in particular in developing countries. Several recent studies have shown that in the future quest gaps are either problematic or resolved. Very few studies have explored the risk assessment effect of the AIS and our recommendation for further study into the relation between risk measurement and accounting. In addition, the direct connection between AIS and the non-financial alignment should be discussed in future research. Researchers should study Organizational Culture to determine the direct or moderating effect of risk assessment inter-application of AIS variables. The causal relationship of AIS alignment with progress in risk measurement for future work is therefore still extensively debated.

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