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Assessing Credit Risk

Banking Sector Performance

Highlights

Banking Industry of Ghana

Analysis of the Cost and Benefit

Discovering Thoughts, Inventing Future

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Assessing Credit Risk Management Practices in the Banking Industry of Ghana: Processes and Challenges

By Kwaku D. Kessey

Kwame Nkrumah University of Science and Technology, Ghana

Abstract- The banking industry of Ghana is faced with several challenges among them is credit risk management notwithstanding the fact that, knowledge and technology in that field have increased. Additionally, many banks have created Credit Risk Management Departments which are responsible for managing the credit risks associated with banking operations. However, available data indicate arise in the value of non-performing loans in recent years. This study therefore focused on challenges of operationalization of credit risk management policies, strategies and implementation in banks. The justification of the study is that some banks could have comprehensive risk management policies and strategies but their implementation might be inappropriate. The research examined critically, the portfolio quality of the bank selected for the study. Again, the credit risk management policies of the bank were analysed with reference to national standards. For in depth analysis, the case study approach was adopted. The study approach was both exploratory and explanatory. The staff of the Credit Risk Management Credit Operations Departments of the bank provided primary data. In addition, secondary data on the bank's loans portfolio was obtained from journals and annual reports. Trend analysis was applied to assess the behavior of some selected variables over period of time.

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Assessing Credit Risk Management Practices in the Banking Industry of Ghana: Processes and Challenges

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Abstract- The banking industry of Ghana is faced with several challenges among them is credit risk management notwithstanding the fact that, knowledge and technology in that field have increased. Additionally, many banks have created Credit Risk Management Departments which are responsible for managing the credit risks associated with banking operations. However, available data indicate arise in the value of non-performing loans in recent years. This study therefore focused on challenges of operationalization of credit risk management policies, strategies and implementation in banks. The justification of the study is that some banks could have comprehensive risk management policies and strategies but their implementation might be inappropriate. The research examined critically, the portfolio quality of the bank selected for the study. Again, the credit risk management policies of the bank were analysed with reference to national standards. For in depth analysis, the case study approach was adopted. The study approach was both exploratory and explanatory. The staff of the Credit Risk Management Credit Operations Departments of the bank provided primary data. In addition, secondary data on the bank's loans portfolio was obtained from journals and annual reports. Trend analysis was applied to assess the behavior of some selected variables over period of time. Some key findings from the study revealed that the bank has documented policy guidelines on credit risk management with a senior manager having oversight responsibility for implementation. However, the study showed that there were some implementation challenges of the credit risk policies which have resulted to low quality of loan portfolio of the bank. It is being submitted that bank's risk policies should be reviewed frequently. For example, a policy restructuring exercise of the bank which included suspension of credit to Small and Medium scale enterprises in the high risk economic subsector produced positive results. Again, for effective practice, the credit risk management department should be operated by well trained staff in the field of risk management. Additionally, the practice of introducing effective credit recovery measures has to be improved. Also, banks have to review periodically their credit risk management policies and strategies and compare them with best practices in similar institutions.

I. Introduction

Banks have several advantages in granting loans to customers. Among others, that enhances profit levels of the institutions if debtors meet their obligations. Also, that increases financial resources to the creditors for increased capital base for promotion of investment, for economic growth among others. Therefore, if loans are not effectively managed in the banking sector it has negative effect on banking institutions and the macro economy in general. This study was initiated to examine credit risk management practices in terms of their effectiveness and efficiency within the banking industry.

The introduction of the banking Act, 1993 (Act328) in Ghana increased the number of bank and non-bank institutions in the financial sector. With a liberalised financial sector, competition among banks in creased leading to loose operations in the banking industry with the view to undercutting competitors. That has led to low margins, and other challenges facing the banking sector.

Presently, easy access to financial information has given stakeholders in banking industry, the ability not only to assess returns on investment but also critically examine policies and framework used to manage risks in the financial sector and safety of their investments. This attitude of shareholders has been intensified by poor banking practices in recent times which are attributed largely to the weaknesses of the regulatory frameworks and the risk management practices in banks being major factors that have led to bankruptcy of some notable banks.

After the recent credit crunch, in Unite States of America which in turn escalated to a full-blown global financial crisis in 2008-2009 which led Leman Brothers, a major U.S bank with global presence going bankrupt in 2008 thus producing challenges in the global financial market. This has necessitated a close examination of the numerous issues related to the operation of financial markets to identify the main causes of the crises. Main issues isolated and discussed included capital adequacy levels in the banking sector, the role of rating agencies in financial regulation, the fair-value assessment of banking assets and risk management. Among the revelations of situation analysis, on the experience, was that risk management of financial institutions was not adequate enough.

This implied that managing credit risk in a financial institution is critical for the survival and growth of the institutions. Generally, Credit Risk Management in

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a financial institution includes risk management policies, industry specific standards, the establishment of sound lending principles and efficient framework for managing risk just to mention a few.

Credit creation which is the main income generating activity for banks involves huge risks to both the lender and the borrower. Since credit risk is that risk which can easily and most likely prompt bank failure, a bank with high credit risk has high bankruptcy risk that puts the depositors, assets in jeopardy. Many banks in Ghana are performing poorly as the irnon-performing loans grow year after year, despite the existence of Credit Risk Management Departments responsible for managing credit risks of the banks. Available data show a rise in the value of non-performing loans in many of the banks. For instance, one bank recorded annual average impairment charge amounting to 27million Ghana Cedis (GHS) between 2007 and, 2011.

For in depth analysis the study adopted a case approach was a case study method and concentrated on both exploratory and explanatory principles. The interviewees were top level credit managers, middle level managers, branch managers of the bank selected for research and other staff in Credit Risk Management and, Credit Operations Departments. Both primary and secondary data were used as they provided in-depth quantitative and qualitative information appropriate for the study. While the staff provided primary information, sources of secondary data included the Bank's Credit Risk Management policy manuals, reports and the financial statements of the Bank from 2007 to 2011.

II. REVIEW OF CONCEPTS

Since concepts do not have universal definitions, it is important that studies are based on specific working definitions. For example, in this study, the concept of credit and loans are used interchangeably. Some working definitions of crucial concepts for the study are outlined as follows:

a) The Credit Policy

Credit policies cover, among others, the credit risk philosophy governing the extent to which the institution is willing to assume that risk. That is general areas of credit in which the institution is prepared to engage or is restricted from engaging. Again, credit policies establish the rules and framework for effective management operation of credit portfolio. Credit policies, if effectively implemented enable the financial institution to maintain sound credit underwriting standards. Also, it assists the institutions to assess, monitor and control credit risk. Again, it covers evaluation of new business opportunities, identify, administer and collect challenging credits. This implies that credit policy framework for addressing risk has to be comprehensive.

b) Credit Risk

Credit risk is the first of all risks in terms of its effects on the operations in banking industry. Credit risk arises from uncertainty in counterparty's ability or willingness to meet its contractual obligations. It involves inability or unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, hedging, settlement and other financial transactions. Default risk, a major source of loss, is the risk that customers failure, to comply with their obligations to service debt. Again, credit risk is the risk of loss due to a deterioration of the credit standing of a borrower. According to the Basel Committee (1999) Credit risk is the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. As the Basel II put it, banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit risk and other risks. The effective management of credit risk is essential to the long-term success of any banking institution.

c) Bad Loans

Many studies have examined causes of bad loans occurrence in financial institutions. Berger and De Young (1997) identified poor management as one of the major cause of problem loans. They stated that managers in many banks with problem loans do not practice adequate loan underwriting, monitoring and control. Also, it has been observed that "the accumulation of non-performing loans is generally attributable to a number of factors, including economic downturns and macroeconomic volatility, terms of trade deterioration, high interest rate, excessive reliance on overly high-priced inter-bank borrowings, insider lending and moral hazard among others" Goldstein and Turner(1996). Again, it the problem of loans could emanate from overdrawn account where there is no overdraft limit, the latter being overdraft taken on an account which has not been actively operated for some time and overdraft taken in excess of reasonable operational limits, lack of good skills and judgment on the part of the lenders as a possible cause of bad loans. The other issues are that banks have experienced credit losses because of the failure to use sufficient caution with certain leveraged credit arrangements. Credit extended to highly leveraged borrowers is likely to have large losses in default. Lending against non-financial assets is one of the causes of bad loans. In this context, the lending banks fail to make adequate assessment of the correlation between the financial condition of the borrower and the price changes and liquidity of the market for the collateral assets. Related challenge is that

many banks do not take sufficient account of effect of business cycle on lending. As income prospects and asset values rise in the ascending portion of the business cycle, credit analysis may incorporate overly optimistic assumptions, such as competition among financial institutions in terms of growth, profitability and the desire to be a market leader has the ability to cause financial institutions to lower their standards or improperly price their loan products. These observations point to the fact that credit risk management challenges in the banking industry is a complex issue comprising several interrelated, and interlocking variables which are not easy to dismantle nor easy to handle fully.

d) Framework for Credit Risk Analysis

The framework for analysis was guided by specific principles including Basel Committee submission on Banking Supervision, (Basel, 1999). The observation is that an effective credit approval process is the first step against excessive counter party credit risk which should begin with comprehensive financial and non-financial information which provides a clear picture of the counterparty's risk profile and risk management standards.

In addition, the credit assessment process should identify the purpose, structure of the transaction for which approval is requested while providing a forward looking analysis of the repayment capacity from various scenarios. Some of the processes one might follow to identify and analyse the components of credit risk include non-financial issues such as knowledge of customer, credit referencing bureau and financial factors namely awareness of the purpose for credit, identification and assessment of sources of repayment, financial gearing, security analysis and assessing the business risk of the borrower.

An issue that cannot be overemphasized is a bank's knowledge of their customers, it implies that .a bank should be familiar with the counter party and be confident that it is dealing with an entity of sound repute and credit worthiness (Base1999). This can be achieved in a number of ways such as asking for references from known parties, accessing credit register, evaluating legal status and becoming knowledgeable about the individual responsibility for managing counter party. This could enhance the integrity of the banking system by reducing the likelihood of banks becoming a vehicle for money laundering and so on. Also, knowing your costumer (KYC) could be facilitated by a credit referencing bureau. A credit referencing bureau, a repository of credit information is an entity that collates customer credit information by soliciting creditors such as banks, insurance company and lending institutions to contribute and share the credit information of their customers. It helps lending institutions with an easy means of carrying out their KYCs and enables banks to better manage their risk exposures. The Parliament of Ghana has passed Credit Reporting Act, 2007 (Act 726) which is the foundation for the establishment of a credit referencing bureau in Ghana.

Identifying the purpose of Credit has to be undertaken by the bank in an effort to analyse the credit risk of counterparty. The purpose of the credit facility is important to the lending institutions as it enables them to assess the legality of the transaction it is contracting with customers, relative to laws of the country in which they operate. Again, identification and assessment of sources of repayment is also a major tool for analysing credit risk of customers of bank. A borrower's repayment capacity is measured by identifying the source of repayment, and carefully reviewing future cash income from that source to ensure that it is enough to meet borrower's needs and help generate enough cash flows from the core business to repay debt, pay a competitive return to shareholders or owners and replace long term operating assets.

Assessing the business risk is another way of analysing the credit risk in banking. Business risk is the variability in operating cash flows or profit before interest (Pike et al, 2006). A firm's business risk depends on the underlying economic environment within which it operates. This is a factor exogenous to the bank A business variability in operating cash flows can be heavily affected by the cost structure of the business and hence the operating gearing.

Financial gearing is a way banks analyse the risk of the borrower. It is the risk over and above the business risk from the use of debt capital. (Pike et al, 2006). It seeks to assess the impact of the credit on the capital structure of the counter party. By financial analysis, lending institutions are able to assess the borrowing needs, capital structure and borrower's ability to meet their obligation as per terms of contract.

Financial risk analysis gives an indication of the proportion of both external and internal funding used to finance the assets of the business. Another important factor in the process is security analysis. Because business risk is always present, most financial institutions rely heavily on the security of their portfolio as a means to offset the impact of credit risk on their loan portfolio. (Rose et al 2008). The security analysis in credit risk management involves the evaluation of the marketability of the security, security control and price stability of security being offered.

e) Loan Portfolio Quality

In discussing credit risk management it was found necessary to examine the process of measuring loan portfolio quality which is considered the key to loan portfolio management. Assessing the current performance of the most important asset of a financial institution (the loan portfolio) is a basic requirement for being able to actively manage the level of risk exposure and the profitability of that institution.

In general, portfolio quality indicators identify performing and non-performing aspect of the loan portfolio and relate them to specific indicators which provide a view or a snap shot of the status of the portfolio's performance. By comparing indicators at different points in time, trend analysis is carried out to identify upturn or downturn developments. In assessing the quality of a loan portfolio, classification and provision for bad debt are very crucial.

Therefore, to determine the level of loan provisions to be made in line with banking regulations, The Bank of Ghana has provided the following indicators and standards namely; Current; Other Loans Especially Mentioned (OLEM), Substandard, Doubtful and Loss Table 1, (Bank of Ghana, 2008) for assessment.

Table 1 : Category of Loans and their Provisions

	Category	Provision (%)	Number of days of Delinquency
1	Current	1%	0-Less than 30
2	OLEM	10%	30-Less than 90
3	Substandard	25%	90-Less than 180
4	Doubtful	50%	180-Less than 360
5	Loss	100%	360 and Above

Source: Banking Act, 2004, Section 53(1)

The classification serves several purposes namely; it assists banks to monitor the quality of their loan portfolio by identifying performing and nonperforming loans, in line with banking regulations. Again, the classification helps banks to know the structure of their loan portfolio and for that matter their assets quality.

In Ghana, a major factor considered in granting loans is the ability of the borrower to repay. However to mitigate the risk of default, banks ensure that loans are well secured. Even though advances shall be granted on the basis of the borrower's ability to pay back the advance and not on the basis of sufficient pledge to cover the advance in case of default, it is highly desirable for all advances made to customers and staff to be well secured. This means that in the event of default the bank shall fall on the collateral used in securing the facility to mitigate the effect of loss of principal and interest (Banking Act, 2004). In view of this, banks take into account the assets used in securing the facility to determine the level of provision to be made. Bank of Ghana regulations indicate that certain amount of provisions are made on the aggregate outstanding balance of all current advances, and aggregate net unsecured balance of all other categories.

Another method for measuring portfolio quality is the Risk Coverage Ratio. This measure shows what percent of the portfolio at risk is covered by actual loan loss reserves. It gives an indication of how prepared a bank is for a worst-case scenario. While a higher risk coverage of 100 per cent should generally be preferred, there are cases that justify lower levels of coverage. For instance, in a situation where collateral-backed lending makes up the majority of the portfolio, a ratio below 100 per cent is common. For formalized institutions, regulators, and particularly the tax code, usually set minimum limits on provisions.

Loan write-off ratio is stated as a good measure of portfolio quality. This indicator simply represents the loans that the institution has removed from its books because of a substantial doubt that they will be recovered. The writing off of a loan is an accounting transaction to prevent assets from being unrealistically inflated by loans that might not be recovered. The writing off of a loan affects the gross loan portfolio and loan loss reserves equally. So unless provision reserves are inadequate, the transaction will not affect total assets, net loan portfolio, expenses or net income. Write-offs have no bearing whatsoever on collection efforts or on the client's obligation to repay. Some banks undertake aggressive write-offs in as attempt to bring sanity into their portfolios. They will then show a low portfolio at risk, and only the write-off ratio will allow an analyst to detect that this improvement is apparent than real.

III. ANALYSIS, RESULTS AND DISCUSSIONS

These discussions start with a review of Credit Risk Management policies that guide operations of a bank. The primary data were collected from experienced staff of the bank studied, and analysed.

a) Credit Risk Policies and Decision Making

In terms of decisions made that were based on credit risk policies of the bank, 97per cent of respondents indicated that decision staken by the bank on credit risk is based on laid down policy. Therefore, credit risk management of the bank is in accordance with management policy on risk.

Table 2 shows the credit management policy was ranked by staff of branches, and departments.

Table 2 : Relevance of credit risk management policy(percent)

Variable	Likert Scale (1-5)	Management			Mean
		Very irrelevant Branch Managers	Irrelevant Credit Operations Department	Credit Risk Management Department	
Relevance of Credit Risk Management Policy	Highly relevant (1)	40	67	40	49
	Relevant (2)	60	27	60	49
	Neutral (3)	-	6	-	2
	Irrelevant (4)	-	-	-	-
	Very irrelevant (5)	-	-	-	-
Total		100	100	100	100

Source: Authors' construct

The relevance of credit risk management policy in Table 2 shows that49 per cent of the management staff considers credit risk management policy as highly relevant while another 49 per cent regarded it as relevant. Generally, 98 per cent of the management staff upholds the relevance of the credit risk policy of the bank. Generally, effective use of the credit risk management policy in decision making was the result of training on credit risk given to the staff. Sixty (60) per cent of branch managers indicated that they undertake credit-related training every three months while 40 per cent of them undertake credit-related training every year. The training has made them familiar with the content of the bank's policy, as well as bringing them abreast with current issues on credit risk management which they pass on to the staff.

b) Application of Credit Policy Indicators

The strategies for implementing risk policies were examined consequent upon the fact that an institution could formulate relevant policy but its implementation could be ineffective hence inability to address challenges.

The survey revealed that Credit Risk Management (CRM) policy of the bank under study has some implementation challenges. The study indicated that monitoring of credit in the bank was considered inadequate which was attributed to limited logistics, understaffing, ineffective supervision, by management and poor access to project site for physical inspection among others.

Also, there were delays in submission of application for loans caused by the customers' inability to meet approval requirements, rigid approval procedure, liquidity challenges and slow credit appraisal among other tall list of requirements for customers to satisfy. Since time is of essence in risk analysis, the factors responsible for delays in approval of credit to applicants have negative effect on the time line of the purpose for raising loans and repayment.

Qualitative analysis was made on factors that account mainly for bad loans in the bank. A Likert Scale between 1(Least responsible) and 5 (highly responsible) was attached to some suggested factors for ranking. The mean scores and standard deviations for each factor were determined for general ranking of the factors.

Table 3 : Factors that account for bad loans

Variables	N	Likert Minimum	Scale Maximum	Mean	Standard Deviation	Ranking
Ineffective monitoring	32	1.00	5.00	3.3750	1.53979	1st
Poor credit appraisal	33	1.00	5.00	3.2727	1.68213	2nd
Ineffective credit review process	32	1.00	5.00	3.1250	1.62143	3rd
Non-compliance with credit policy	34	1.00	5.00	3.1176	1.82183	4th
Moral Hazard	30	1.00	5.00	2.8333	1.44039	5th
Business cycles	30	1.00	5.00	2.6333	1.47352	6th

Lack of business management skills by clients	30	1.00	5.00	2.6000	1.45270	7th
Subjective monitoring	28	1.00	5.00	2.3214	1.27812	8th
Delayed loan approval	31	1.00	5.00	2.0323	1.35361	9th

Source: Author's construct. Likert Scale, of 1(Least responsible), 2 (low responsible), 3 (average), 4 (responsible) and (highly responsible).

Using various ranking of variables, per total number of respondents the means in Table 3 rank order of the variables indicate that ineffective monitoring, poor credit appraisal, ineffective credit review process, among others are major factor responsible for bad debt, whilst delay in loan approval is the least effect on creation of bad debt. The low standard deviations indicate that, in terms of scatter diagram, the scores from the respondents were close to their means.

c) *Portfolio at Risk Assessment*

Based on Tor J et al in their analysis of portfolio quality; any portfolio at risk (PaR) exceeding 10 per cent should be a source of concern to management of any financial institution. The application of the standard revealed that apart from the year 2007 in which the bank recorded a PaR of 7.95 per cent Table 4. In all other years the bank recorded a PaR above 10 per cent.

Table 4 : Ratio Analysis (per cent)

	2007	2008	2009	2010	2011
Portfolio At Risk (PAR)	7.95	13.10	44.01	37.3O	21.20
Risk Coverage Ratio (RCR)	9.65	42.20	22.20	9.30	3.2
Write-off-ratio(WOR)	0.77	5.52	9.75	3.50	0.69

Source: Author's Construct

The year 2009 was the year the bank recorded the highest PaR which was 44per cent. This is an indication that the portfolio of the bank was bad thus calling for effective management strategies to address the challenges.

d) *Risk Coverage Ratio*

This measure shows what percent of the portfolio at risk is covered by actual loan loss reserves. It gives an indication of the institution's preparedness for a worst-case scenario. Normally a higher ratio is preferred. It can be seen from Table 4 that the in the years 2008 and 2009 bank showed enough preparedness to cover the risky portion of the portfolio, but the bank performed poorly in subsequent years.

e) *Write-Off Ratio*

This indicator simply represents the loans that the institution has removed from its books because of a substantial doubt that they will be recovered. A lower ratio is preferred. The main purpose is to serve as a control indicator that will allow a better understanding of portfolio at risk. From Table 4 the ratios were higher in 2008 and 2009 which is an indication that all was not well with the bank. After making huge impairment charges for these years the trend started to decline in 2010 and further declined in 2011 showing some improvement in the portfolio.

f) *Trend Analysis of Portfolio Structure*

The trend analysis of quality of credit portfolio between 2007 and 2010 is based on The Bank of Ghana standards are presented in Figure 1. The line graphs in Figure 1 show the trend of the loan classification of the bank's portfolio. It could be realized that the loss figure continuously increased over the years from 2008 to 2010, but declined in 2011.
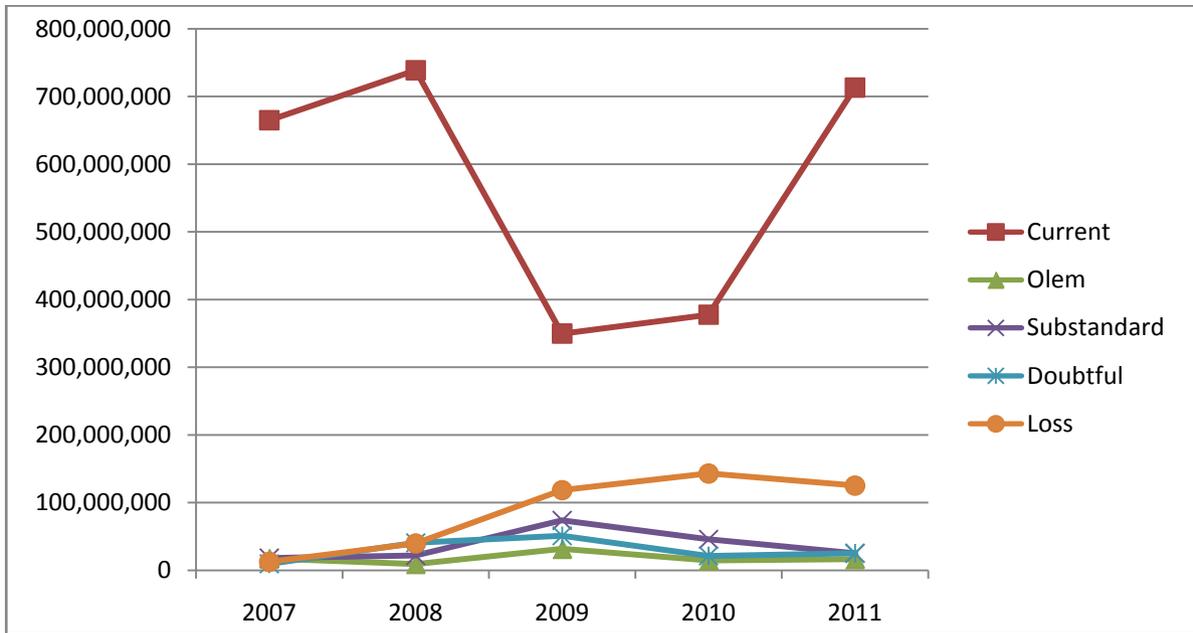
Data Source: Authors' construct

Figure 1 : Trend projection of Loan classification (In Ghana Cedis)

OLEM, Substandard, and Doubtful portfolio started rising between 2007 and 2009 and then started declining from 2009. According to bank official the trend in Figure 1was a result of ineffective policy. In terms of the fact that in 2008 the bank embarked on an expansion drive which led to granting of a lot of loans. Some of the loans were not assessed properly. In the year 2009, after assessing realization portfolio quality challenges, the management decided to slow down lending and work on the portfolio quality.

g) Trend of Impairment

The trend in Figure 2 shows impairments charge to income statement over a period of five years period (2007 to 2011). It is obvious that the impairments sharply rose in 2008 and continued to increase in 2009. It also began to decrease after 2009 to 2011. Impairment charges are actual amount that the bank charges to its income statement of which is deemed not recoverable. According to the bank this is a more prudent way of charging for bad loans where actual impairment charge is based on a proper assessment of the portfolio and that any portion identified to be irrecoverable is written off.

Data Source: Authors' construct

Figure 2 : Trend of Impairments

h) Non-Performing Loans

The Figure 3 shows the percentage of non-performing loans to total portfolio. From the results, it is obvious that the percentage of non-performing loan increased steadily from 2009 to 2010, it then began to decline.
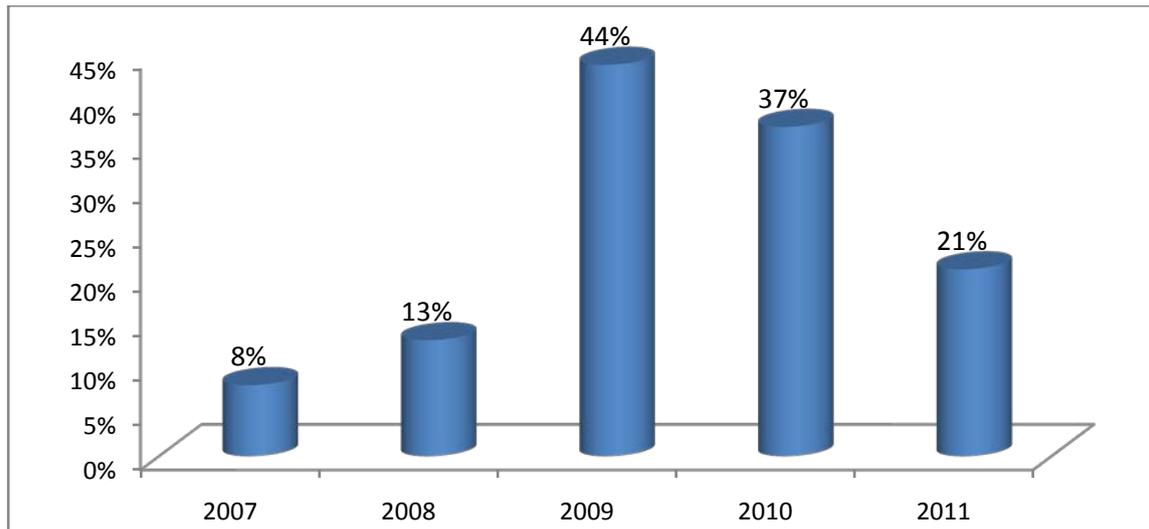
Data Source: Authors' Construct

Figure 3 : Non -Performing Loans to total Portfolio (per cent)

But the decline in 2010 was the result of increase in the total portfolio as a result of aggressive lending the bank embarked on rather than actual significant decline in non-performing loan compared with the preceding years. In other the decline was the result of mathematical principle of ratios.

i) Risks Exposure

The study showed that the bank is exposed two main sources of risk namely, exposures to other financial institutions on the fiscal landscape and exposures to customers. Exposure to customers was identified to be the main cause of risk to lending in the bank. The main sources of risk exposures to customers identified were individual personal loans and commercial loans granted to private entrepreneurs. However, asset quality of the bank was not quite good as the portfolio deteriorated year after year within the period under review. Consequently, the bank developed its own internal risk management strategies. These include formulation of credit policies and strategies that outlined the bank's credit appetite, credit governance structures and credit risk management and control systems. It was also revealed that, the bank employs varied techniques to mitigate their credit risk exposures. Some of these measures included use of collaterals, portfolio diversification, exposures at default, probability of default, loan-given loss, use of credit referencing bureau and loan insurance. Against, this background, study revealed that challenges encountered during loan recovery included poor location of clients, and ineffective communication when a change in policy is made or a new policy is introduced.

j) Key Findings

The study has brought to the fore some salient issues in credit risk management of banks in Ghana. Some of the key findings include: low asset quality of the bank under review as its portfolio deteriorated year after year from 2007 to 2011. The bank recorded huge amount of non-performing loans especially in 2009 and 2011 from 44 and 37 percentage points of total loans respectively.

The non-performing loans ratios for the past five years, however, indicated a general marginal declining trend after the year 2010 which was attributed to the restructuring exercise the bank undertook in 2009 and the improvement in its loan monitoring and recovery activities in that year.

The bank was exposed to two main risks namely exposures to other financial institutions and to customers of the bank in lending. The main sources of risk exposures to customers identified were individual personal loans and commercial loans granted to private businesses and enterprises.

In line with the prudential requirement of Bank of Ghana, the bank developed its own internal risk management strategies for managing its credit risk. Some of these included credit policies and strategies that outlined the credit appetite of the bank, credit governance structures and credit risk management and control systems.

Again, the study revealed that, the bank employs varied techniques to mitigate its credit risk exposures. Some of these measures include collateralization, exposures at default, probability of

default, loan-given loss, the use of credit referencing bureau and insurance of loans granted. That is, customers are required to pay a certain percentage as insurance for loans contracted. The insurance protects the bank against default as a result of the death of the customer or any permanent disability which will render the borrower incapable of paying the facility.

Among the factors which accounted for loan default, were ineffective monitoring of loans, and poor credit appraisal. It was noted a major challenge encountered during loan recovery was inadequate information on customer location such as residential address which is either incorrect or not easy to trace.

Also, new credit policies formulated are not communicated on time across the departments of the bank. This demon strates an institution alcommunication failure

IV. RECOMMENDATIONS

From the observations through the study, submitted that, to improve upon credit risk management, banks should improve upon its loan monitoring as loans default could be minimized through regular monitoring and supervision of credit granted to customers. Again, effective monitoring would prevent diversion of funds into other business ventures instead of the intended purposes. Also, effective monitoring of loan facilities through field visits and reviewing of customers' accounts on regular basis enables the bank to assess borrowers' current financial conditions, ensure the adequacy of collaterals, ensures that loans are in compliance with the terms and conditions of the facility, and identify potential challenges in relation to loans, for necessary action to be taken.

Regular training programmes for credit staff in areas such as credit appraisal, risk management and financial analysis should be frequent as knowledge and technology in those are changing fast. Effective training modules must be designed to advance the knowledge and skills of Credit staff so as to improve the quality of credit appraisal.

It is necessary that banks participate actively in operations of the credit referencing bureau by providing the centre with relevant information on their borrowing customers. This will enable the banks to share information on their recalcitrant borrowers and reduce the risk of default. Also, customers with bad credit history could then be denied credit and improve the loan quality of the bank.

Additional motivation should be given to performing Credit Risk Departments on the basis of amount of loans as well as the quality of the loan portfolio, to improve upon the safe growth in assets of the bank.

V. CONCLUSION

In conclusion, one could submit that banks, in Ghana have Credit Risk Management policies that comply with international standards and the worked out policies and strategies are satisfactory. However, there are some implementation challenges which have resulted to worsening quality of the loan portfolio. To improve upon the portfolio quality, some banks have restructured their credit programmes and have suspended lending to Small and, Medium Enterprises (SME) subsector, which is considered risk prone. Although that policy could have positive effect on the credit activities of the bank it is not poverty reduction friendly as many SMEs in developing countries are among the poor in society. Notwithstanding their profit motive and sustainability, the submission is that when banks are restructuring their policies with reference to Credit Risk Management they should formulate policies which are poverty friendly especially in developing countries to improve the effect of the banking industry on the society.

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Analysis of the Cost and Benefit of the Combination Product of Chattel Financing and Factoring

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Abstract- First we introduced business processes of the chattel financing and factoring financing mix. Then we built a model of costs and benefits from the perspective of banks and SMEs, and discussed the main factors affecting net profits of both supply and demand in the supply chain finance portfolio of products. At the same time we compared the difference from net profits of both supply and demand in the supply chain finance portfolio of products, finding that the bank's net income is higher than the combination of a single supply chain finance product, but depending on the gap between potential shortage costs of a single product chattel and the financing costs plus insurance costs. Finally, we made use of dynamic game theory and game equilibrium point between the two sides, and assisted in decision-making with models.

Keywords: cost-benefit analysis, combination product, chattel financing and factoring.

GJMBR - C Classification : JELCode : G20

ANALYSISOFTHECOSTANDBENEFITOFTHECOMBINATIONPRODUCTOFCHATTELFINANCINGANDFACTORING

Strictly as per the compliance and regulations of:

Analysis of the Cost and Benefit of the Combination Product of Chattel Financing and Factoring

Li Zhou [α], Hong Zhang [σ] & Dongxu Chen [ρ]

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I. Introduction

a) Combined Products Defined

Chattel financing and factoring financing mix is a chain finance portfolio business, to provide chattel mortgage financing for borrowers, dealing with factoring financing after the sale of goods to the downstream core business, paying off the chattel financing with the money of factoring financing, finally returning the money to a factoring financing supply.

b) Agent Analysis for Demand

To carry out the need-analysis, let's take Huaneng Power Plant, a coal dealer for example. Due to the coal dealer inventory of goods sent to the downstream power plant, and the inventory can be reduced, if there's not a certain amount of safety stock, goodwill will decline because of shortages, so the partnerships with downstream customers greatly reduced. Thus it's necessary to utilize own movable chattel to apply the bank for mortgage, getting some advance procurement funds for replenishment needs. When the borrower get the receivable accounts after sending goods to the downstream power plant in North China , due to the need to repay the loan, borrowers have to the needs for factoring financing.

Borrower's funding gap:
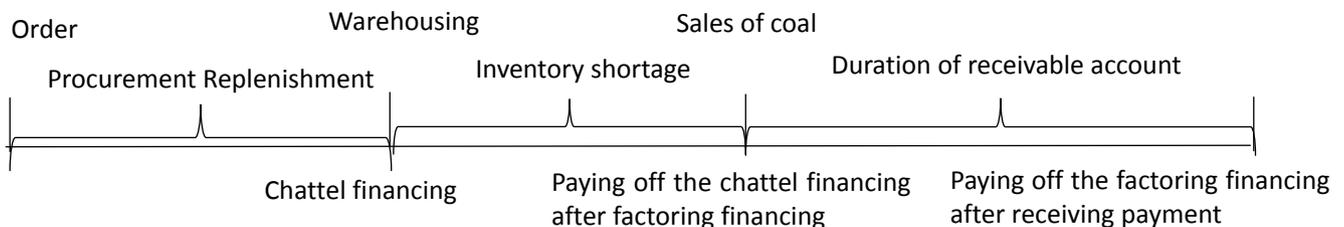
c) Advantages

The product use factoring financing to replace previous chattel financing, so the borrower's business chain get combined, in line with the borrowing enterprise business needs, while echoing the former to achieve closed financing as well as reducing the pressure on the credit risk of its own funds and enterprises. For banks, due to multiple financing, loan fees can be increased, and the rate of return improved.

For most SMEs, they need to rely on high-speed turnover of inventory profit, while banks in the mortgage business inventories often set rigid regulations that companies must pick up after filling the funding gap with their own funds, which bring SME dealers a certain amount of pressure on cash flow. Once the cash flow risk appears, they will not be able to complete delivery. The combination of chattel financing and factoring financing provides a good solution to this problem.

d) Suitable Users

For dealers having a certain amount inventory as well as requiring safe stock, they're more suitable for use in combination chattel financing and factoring financing. At the same time, these stocks are easy to preserve and cash with a stable price. In reality, such

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combination products are often used in the coal power industry chain of coal dealers, steel trade enterprises of steel construction industry chain, tire dealers of rubber automobile industry chain, and dealers of oil, iron and other industries.

II. Introduction to the Business Process of the Combination Product of Factoring Financing and Chattel Financing

There are three kinds of typical supply chain financial product portfolio. And the cost-benefit model of purchase order financing and factoring portfolio construction is close to chattel financing and factoring combination, this is due to the proximity of the purchase order financing and stock financing objective, that is, to purchase; the bank loan amount are similar, namely as a percentage of the price of the goods; factoring financing purpose are borrower to return previously. So in order to simplify the research, as well as focus on the point and avoid repeated exposition, also because the reality real estate financing are more and more common, order financing requirements is relatively high, so we only study on estate financing and factoring product portfolio, confirming warehouse and factoring product portfolio.

The figure of inventory financing and factoring process (see figure 1):
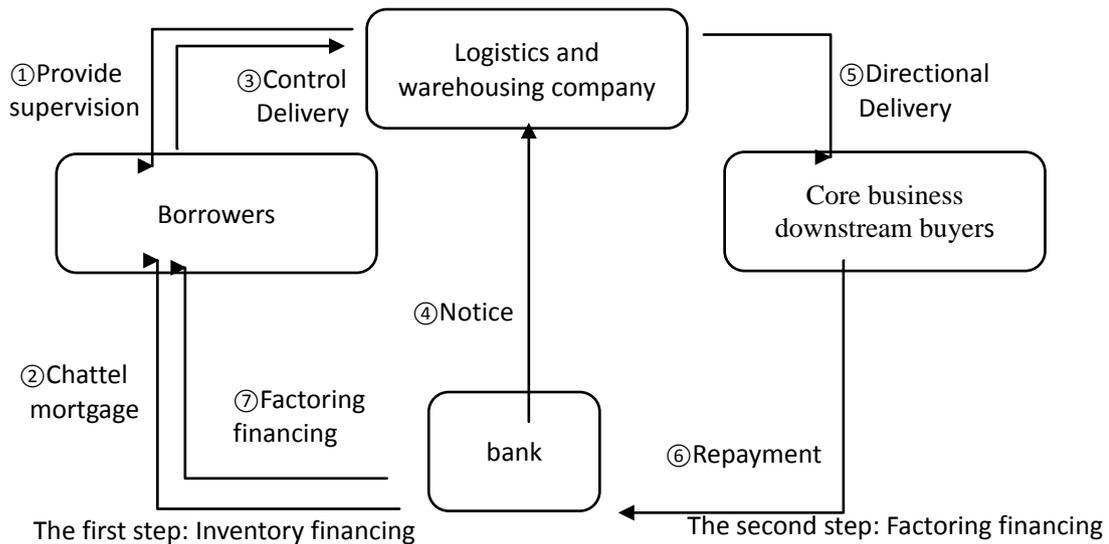
Figure 1 : Inventory financing and factoring process

Dealer (SME supply chain system) first chattel mortgage by way of its own stock pledged to the banks financing after the sale of goods to the core business, factoring financing for loans to return chattel mortgage, and finally downstream core businesses will be paid to play dedicated factoring into the bank account, ending combination product financing.

Operation of the process is described as follows: logistics, warehousing regulated firm and the borrower and the bank signed a tripartite cooperation agreement, the borrower to the warehousing company issued a notice quality, storage company sent a double-site supervision goods, logistics and warehousing company issued a quality notification letter to the bank stating goods already regulated, and completed the quality procedures, banks provide financing to the borrower. Submitted by the borrower from the bank downstream from the list prepared statement available to downstream buyers, accounts receivable factoring financing chattel mortgage repayment of bank financing, the requirements of the goods, the bank internal downstream buyers approved line of credit, to logistics and warehousing the company issued a regulatory directive shipment, after the company received regulatory warehouse delivery instruction bank to release the goods to the borrower, the borrower submits invoices and contracts and other materials to the bank, the bank borrowers issuing factoring financing: Bank closed transfer insurance factoring financing, inventory financing for early return until the downstream core businesses will be paid into the bank account factoring, the bank principal and interest after deducting factoring financing, the remaining funds returned to the borrower to complete the combination of financing.

III. Costs and benefits Model of the Combination Product of Chattel Financing and Factoring Financing

There are several hypothetical model of inventory financing and factoring financing mix, in reality, due to the vastly different enterprise's own situation and the difference of supply chain financial products of each

bank, there exist different assumptions. Based on theoretical assumptions underlying premise, what the author studies has more reality and operability.

a) *Model Assumptions and Parameters Meaning*
  i. *Assumptions of the Model*

- Inventory banks pledge a one-time payment in accordance with the number of contracts downstream core buyers.

- Business inventories sales rate is constant.

     According to the model assumptions, the sales pace is constant, with the time change, inventory change over time. (see figure 2).
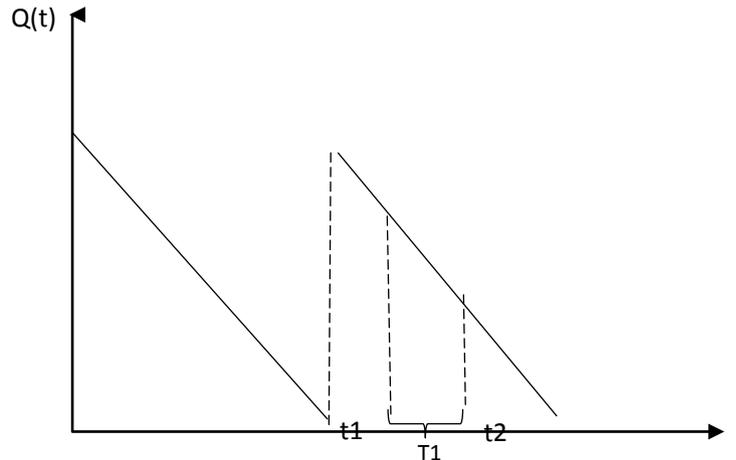
Figure 2 : Inventory change over time

(3) Not to consider any risks (including market and credit risk).

  ii. *The Definition of the Parameters*

Parameters and their meanings shown in Table 2.

Table 1 : Parameters and their Meanings

Parameters	Meanings
$Q(t)$	Change in inventory over time
D	Slope of inventory over time(positive value)
P_1	Purchasing price(yuan/ton)
P_2	Sales price(yuan/ton)
λ_1	Inventory pledge rate
T_1	Time for inventory financing(year)
β	Insurance rates
R_0	Bank average cost(interest paid to customers)
R_1	Inventory financing rates
T_2	Time for factoring financing(year)
C	Storage costs and others
R_2	Factoring financing rates
λ_2	Factoring financing ratio
F	Opportunity cost of shortage
π_1	Net profits of the bank
π_2	Net profits of the borrower's enterprise

b) *Bank Cost-Benefit Analysis*

     In the combination of business financing inventory financing and factoring, the earnings is interest in both periods, the cost is the interest paid to depositors of two cycles. It follows that the bank's net income is:(see equation 1)

$$\pi_B = P_2 \cdot \int_1^2 D dt * \lambda_1 (R_1 - R_0) T_1 + P_2 * \int_1^2 D dt * \lambda_2 (R_2 - R_0) T_2 \qquad (1)$$

     We can clearly see, the more spread of the borrower sale of goods is, the higher the income is. And the main business is just the cost of borrowing the bank's earnings, so companies want to lower borrowing and lending rates, as well as to compress financing time.

i. *Borrower cost-benefit analysis*

In the combining products of chattel financing mixed by factoring financing, the costs of SMEs are mainly paid to the bank's interest, premiums paid to the insurance company and the costs of logistics and warehousing company. Benefits are spread from sales of goods, then we get net income derived there from for SMEs as:

$$\pi_C = (P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \beta - P_2 \cdot \int_1^2 Ddt(\lambda_1 \cdot R_1 \cdot T_1 + \lambda_2 \cdot R_2 \cdot T_2) \tag{2}$$

We can clearly see, the more spread loan companies traded goods, the higher the income. And the main business is just the cost of borrowing the bank's earnings, so companies want to lower borrowing and lending rates, as well as financing time.

c) *Bank-enterprise game analysis based on chattel and factoring portfolio of products and a single product selection*

i. *Differences between different financing models*

The contrast between the movable part of the financing and factoring financing portfolio of products, a single supply chain financing product differentiation, and supply and demand sides of costs and benefits are discussed in this section. Because earnings of simple inventory financing are difficult to quantify, and upstream supply chain enterprises generally adopt factoring financing, the comparison with the single factoring financing has a greater value.

a. *Comparison of bank net income*

According equation 1, when chattel financing and factoring financing combine, the net income of the bank is:

$$\pi_B(\text{combine}) = P_2 \cdot \int_1^2 Ddt * \lambda_1(R_1 - R_0)T_1 + P_2 * \int_1^2 Ddt * \lambda_2(R_2 - R_0)T_2$$

bank net income of single factoring financing is, see equation 3 :

$$\pi_B(\text{single}) = P_2 * \int_1^2 Ddt * \lambda_2(R_2 - R_0)T_2 \tag{3}$$

$$\pi_B(\text{combined}) - \pi_B(\text{single}) = \Delta\pi_B = P_2 \cdot \int_1^2 Ddt * \lambda_1(R_1 - R_0)T_1 > 0$$

The difference is the interest paid by chattel financing required. So from the bank point of view ,the profits of combining products of chattel financing mixed by factoring financing is higher than a single factoring financing.

b. *Borrower's ROE comparison*

Since in the chattel financing and factoring financing mix, the borrower can get the money first by chattel financing, to purchase, through the goods or of the production, so that no costs associated with the loss is out. In single factoring financing, only when all the goods is delivered, borrowers can obtain factoring financing, so there bring out the out-of-stock loss F compared to a combination of chattel financing and factoring financing. In the auto supply chain system once appeared out of stock, the loss is generally not brought low, because companies will lose the trust of the downstream core enterprise, and core downstream businesses will actively look for other suppliers, so as for the dealers, the costs F can not be underestimated.

According to equation 2 when chattel financing and factoring financing is combined, the net income for borrowing businesses is:

$$\pi_C(\text{combined}) = (P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \beta - P_2 \cdot \int_1^2 Ddt(\lambda_1 \cdot R_1 \cdot T_1 + \lambda_2 \cdot R_2 \cdot T_2)$$

Both make the difference, then we get, see equation 4:

$$\pi_C(\text{single}) = (P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \lambda_2 \cdot R_2 \cdot T_2 - F \tag{4}$$

To make the difference, then we get:

$$\Delta\pi = F - P_2 \cdot \int_1^2 Ddt \cdot (\lambda_1 \cdot R_1 \cdot T_1 + \beta) \tag{5}$$

The difference between income borrower is the opportunity loss due to lack of inventory resulting subtracted from the interest in chattel financing period.

ii. *Dynamic Bank-Enterprise Game Analysis*

a. *Model Assumptions*

- In the model, because the supply chain financial products are put into the credit of core business, the default risk is extremely low. It is assumed that the game model is completely symmetric information, while irrespective of credit risk.

- This model is a dynamic model. Since corporate loan demand is first proposed by the borrower to choose a single factoring financing or combining products of chattel financing mixed by factoring financing, then the bank decided to loan or not.

b. *Analysis of Model*

This model is a dynamic game with complete information. First, the decision is made by the borrower in the first step to choose the combination of factoring financing or mixed-products financing; the second step is to select the bank, whether it is a single factoring financing or combining products of chattel financing mixed by factoring financing, banks can decide to loan or not according to the profits. Then we can build tree-like figure of bank-enterprise dynamic game loan process (see Figure 3).
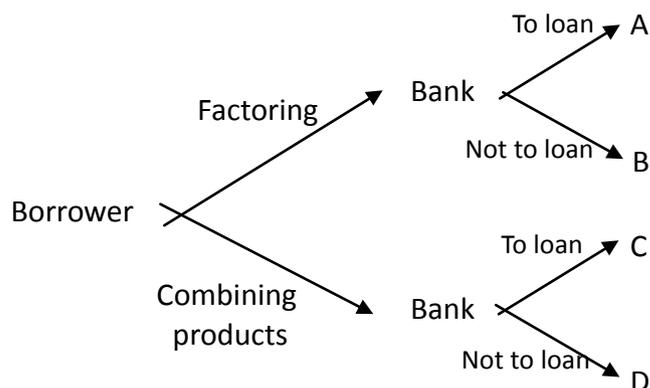
Figure 3 : Tree-like figure of bank-enterprise dynamic game loan process

In this game, the borrower has two options, one is single factoring financing, the other is movable property financing combined with factoring financing. The bank also has two options, one is to carry out lending, the other is not to loan. Thus produced four possible outcomes A, B, C, D. Now four possible results are shown below, borrowers earnings are following by bank earnings.

$$A = [(P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \lambda_2 \cdot R_2 \cdot T_2 - F, P_2 * \int_1^2 Ddt * \lambda_2(R_2 - R_0)T_2]$$

$$B = (0,0)$$

$$\pi_C(\text{combined}) = [(P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \beta - P_2 \cdot \int_1^2 Ddt(\lambda_1 \cdot R_1 \cdot T_1 + \lambda_2 \cdot R_2 \cdot T_2),$$

$$P_2 \cdot \int_1^2 Ddt * \lambda_1(R_1 - R_0)T_1 + P_2 * \int_1^2 Ddt * \lambda_2(R_2 - R_0)T_2]$$

$$D = (0,0)$$

According to backward induction deduction, let's start the analysis from the bank. In factoring cooperation with the supply chain member companies, credit risk of bank loans due to the core business of the endorsement has been well controlled, and the risk of default is very low and negligible. Therefore, in the decision to loan or not, credit risk is not considered, but banks need to compare with other loan yield issues. Yields factoring financing is not low in bank lending products, on the one hand for small business loans, interest rates are higher; on the other hand, to establish a cooperative relationship with the core business of the bank financing in the supply chain, upstream and downstream supply chain enterprises will become potential customers, in the long run, comprehensive income is higher, and the bank would be happy to participate, so the banks will choose to loan lending companies factoring financing. In the process of combining inventory financing with factoring financing, absolute returns of banks are higher than single factoring financing, and the difference is the interest of chattel financing. So the banks will loan to combining products of chattel financing mixed by factoring financing.

Shall we select a single borrower in the end supply chain financing or a combination of movable and

factoring financing? The key is to look at the opportunity cost F arose by shortages. If out of costly business losses resulting potential loss is large, that is, F cost more than the sum of chattel financing and insurance expenses, that is:

$$\text{F} > P_2 \cdot \int_1^2 Ddt \cdot (\lambda_1 \cdot R_1 \cdot T_1 + \beta)$$, the borrower can choose a combination of financing, at this time the dynamic equilibrium is point C. If the shortage cost F is less than the sum of chattel financing costs and insurance cost, that is:

$$\text{F} < P_2 \cdot \int_1^2 Ddt \cdot (\lambda_1 \cdot R_1 \cdot T_1 + \beta)$$, the borrower would choose a single factoring financing, then the dynamic equilibrium is point A.

IV. Empirical Analysis

a) Case Background

i. Introduction

Let's take enterprise X for example, a coal dealer in Huaian City, Jiangsu Province. X was established in July 2001, the registered capital is 300 million yu an, and the legal representative invested 2 million yu an accounting for 67% while other individual shareholders accounted for 33 percent. It is a limited liability company. The company's main business is coal operation in Huaian, as well as transportation of deputy battalion coal and other commodities. There are 30 employees.

ii. Enterprise production and management

Enterprise X has run business in Huai'an area for many years. It acquired a good reputation in the market and produced a relatively high quality coal, and has become one of the major coal Huaian local dealer. Its annual average sales are 90 million, and average annual net profit is 5 million, with the assets debt ratio of 65%, below the lower level of traders. The financial risk is relatively controllable, as well as the inventory turnover rate is faster than their peers accounts, and receivable payment is guaranteed. The company's management has a wealth of management experience, hoping to forge ahead and expand high-quality market, but they are more sensitive to market risk.

Enterprise X on downstream customers is relatively stable, long-term cooperation with the upstream Zaozhuang Coal Co., Ltd. Wang Chao. Wang Chao Coal is one of the largest coal mine in Zaozhuang Tengzhou City, with more than 1,800 employees, up to 80 million tons of coal reserves, more of which is 5500 kcal high-quality coal. Since Huai'an and Zaozhuang are similar cities along the Beijing-Hangzhou Grand Canal, the cost for coal to arrive at Huaian by sea is low. The two sides have much cooperation and high degree of mutual trust.

Enterprise X's downstream major customers is local power plant in Huaian, such as Huaneng Huaiyin

Power Plant, Plant Huai'an, Huai'an biomass power plant, as well as a small amount of coal supplied to the needs of enterprises and institutions. Most of downstream customers have a fairly good comprehensive strength, and the repayment of accounts receivable is timely and stable with good reputation. In addition, the enthusiasm of cooperation is high.

iii. Introduction of bank-enterprise cooperation

Bank S is the national joint-stock commercial bank which entered into Huai'an early. Compared to state-owned banks, the customer acceptance is lower in third-tier cities, so bank S actively runs characteristic business, which mainly targets SMEs. With a supply chain financial services to open the market, SMEs favour bank S most. Enterprise X and bank S began factoring financing cooperation in 2012 and achieved win-win cooperation, and in 2014 they started to carry out a combination of business personal property financing and factoring financing, so the recognition between the two parties is high.

b) Enterprise X's Application of Chattel Financing and Factoring Financing

i. Interpretation of contract between enterprise X and upstream or downstream companies

On May 1 2014, Enterprise X and Huaneng Huaiyin Power Plant signed a supply contract, which required supply 18,000 tons standard coal of 5,500 kcal or more to prepare for the summer peak before June 1, 2014. The two sides agreed on a purchase price for P2 (550 yuan / ton), and an account period for T2 (about three months).

Enterprise X has Q (O) (20,000) tons of inventory in the Zaozhuang Grand Canal Dock (purchase price Pi is 500 yuan / ton) to provide for the downstream buyers. Because Wang Chao coal mine is relatively strong, Enterprise X is required to pay the bill in advance in each purchase, and it takes 1-2 weeks before freight arrives at Zaozhuang Grand Canal Dock. At the same time due to the slow shipping from Zaozhuang to Huai'an, which takes a week and a half, Enterprise X needs long time to stock and transport.

Enterprise X needs five days to complete transporting 18,000 tons of coal, and the daily transportation is D (3600 tons). The average transport is 600 tons per vessel in the Beijing-Hangzhou Grand Canal, which needs six ships a day. The price is 25 yuan per ton from Zaozhuang to Huai'an, and logistics costs 450,000 and warehousing costs 10,000 yuan. So the total is C (46 million). Inventory changes (see Figure 4).
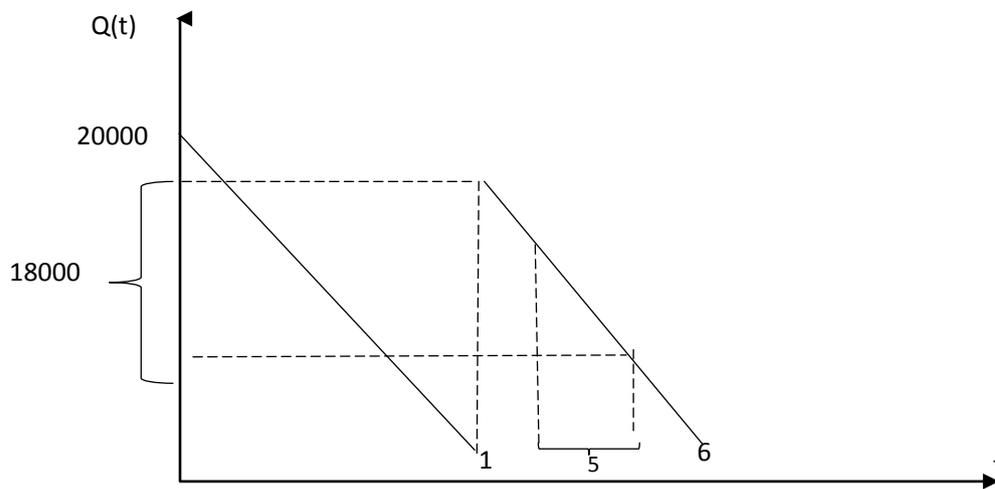
Figure 4 : Inventory change over time

ii. *Enterprise X signed a financing contract with the bank*

• *Signing a chattel financing contract*

Enterprise X is using trade finance with stronger competence, at the same time, it carries out direct marketing to the downstream plant, and its repayment ability is guaranteed with low risk, so the bank S agreed to give X corporate chattel financing. On May 1, 2014, Enterprise X and bank S signed a chattel financing agreement. The chattel financing ratio can not exceed 70% of the value of freight, and the loan interest rate is RI (9%), and the period Tl is no more than three months. In the period from the date of the application of the borrower to the sales to power plant, the first beneficiary of property ownership is bank S, Enterprise X assume joint responsibility to protect individuals, and must apply for property insurance. The first beneficiary is bank S.

• *Signing factoring financing contract*

Huaneng Huaiyin Power Plant is an important branch of business of Huaneng Group, and is the largest thermal power plant in Northern regions. The total installed capacity is 1.8 million kilowatts with strong profitability, so the plant is the core customer of bank S. The bank agreed to grant factoring financing.

Enterprise X and bank S signed the factoring financing contract. The contract stipulates factoring financing ratio does not exceed 70% of the accounts receivable, and the loan interest rate is R2 (8%), and the financing terms T2 does not exceed six months.

c) *Parameter Assignment*

Parameters and their meanings, values shown in Table 2:

Table 2 : Parameters and Meanings

Parameters	Meanings	Values
$Q(t)$	Change in inventory over time	
Q_0	Initial inventory	20000
D	Slope of inventory over time(positive value)	3600
P_1	Purchasing price(yuan/ton)	500
P_2	Sales price(yuan/ton)	550
λ_1	Inventory pledge rate	0.7
T_1	Time for inventory financing(year)	1/12
β	Insurance rates	0.3%
R_0	Bank average cost(interest paid to customers)	2.9%
R_1	Inventory financing rates	9%
T_2	Time for factoring financing(year)	1/4
C	Storage costs and others	46
R_2	Factoring financing rates	8%
λ_2	Factoring financing ratio	0.7
F	Opportunity cost of shortage	15

i. *Calculation of bank-enterprise costs and benefits*

• *Calculation of bank S's costs and benefits*

According to equation 1 we can obtain the net benefit of the bank: see equation 6.

$$\pi_B = P_2 \cdot \int_1^2 Ddt * \lambda_1(R_1 - R_0)T_1 + P_2 * \int_1^2 Ddt * \lambda_2(R_2 - R_0)T_2 \tag{6}$$

$$\pi_B = 550 \cdot \int_1^6 3600dt * 0.65(9\% - 2.9\%)\frac{1}{12} + 550 * \int_1^6 3600dt * 0.7(8\% - 2.9\%)\frac{1}{4}$$

$$= 121{,}100\text{yuan}$$

ii. *Calculation of enterprise X's costs and benefits*
According to equation 1 we can obtain the net benefit of the bank: see equation 7.

$$\pi_C = (P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \beta - P_2 \cdot \int_1^2 Ddt(\lambda_1 \cdot R_1 \cdot T_1 + \lambda_2 \cdot R_2 \cdot T_2) \tag{7}$$

$$\pi_C = (550 - 500) \cdot \int_1^6 3600dt - 460000 - 550 \cdot \int_1^6 3600dt \cdot 0.3\% - 550 \cdot \int_1^6 3600dt(0.65 \cdot 9\% \cdot \frac{1}{12} + 0.7 \cdot 8\% \cdot \frac{1}{4})$$

$$= 223{,}400\text{yuan}$$

iii. *Bank-enterprise game analysis of equilibrium*
• *Spreads contrast of bank S*
    Bank S obtained conventional income of single factoring financing interest.

According to equation 3, we can calculate the net benefit of the bank in single factoring financing from equation 8: see equation 8.

$$\pi_B(\text{single}) = P_2 * \int_1^2 Ddt * \lambda_2(R_2 - R_0)T_2 \tag{8}$$

$$\pi_B(\text{single}) = 550 * \int_1^6 3600dt * 0.7(8\% - 2.9\%)\frac{1}{4} = 88{,}360\text{yuan}$$

Obviously, now bank S's earnings in combined finaniicng is higher than the previous single factoring financing.

Previously what enterprise X applied to the bank is factoring financing, according to equation 4, we can

calculate the net benefit of the borrower in single factoring financing from equation 9: see equation 9.

• *ROE comparison of enterprise X*

$$\pi_C(\text{single}) = (P_2 - P_1) \cdot \int_1^2 Ddt - C - P_2 \cdot \int_1^2 Ddt \cdot \lambda_2 \cdot R_2 \cdot T_2 - F \tag{9}$$

$$\pi_C(\text{single}) = (550 - 500) \cdot \int_1^6 3600dt - 460000 - 550 \cdot \int_1^6 3600dt \cdot 0.7 \cdot 8\% \cdot \frac{1}{4} - 150000 = 15{,}040\text{yuan}$$

In the research process, the corporation highly recognized compared to single factoring financing, chattel financing and factoring financing can advance a certain period to get liquidity as well as pre-arranged purchasing stocking. Wang Chao coal mine requires getting money 1-2 weeks before delivery, and transportation by ship from Zaozhuang to Huai'an also needs about 1-2 weeks, so the two cycles equal to nearly a month, and this is just X's chattel financing business cycle. So compared to the original one, single factoring financing is able to solve the problem of

pressure on the stock, and to meet the urgent needs of power plant orders.

Based on past experience, there will be many plants suddenly asking enterprise X for goods in the year, and their inventory can not only meet a one-time large orders, but also is difficult to guarantee delivery plant at a predetermined time. Power thus considers X having insufficient strength, and may turn to dealers of other coal purchased next time. Years of hard business enterprise market share of X will decline. Profits on the account will suffer an annual loss of $ 150,000, not

including losses resulting goodwill. F therefore is more than 15 million.

d) Dynamic game analysis

According to the analysis of models and assumptions of dynamic game model with complete

information in 1.3.2, we obtained bank-enterprise tree-like figure as follows (corporate in the front, the bank in the post), (see Figure 5).
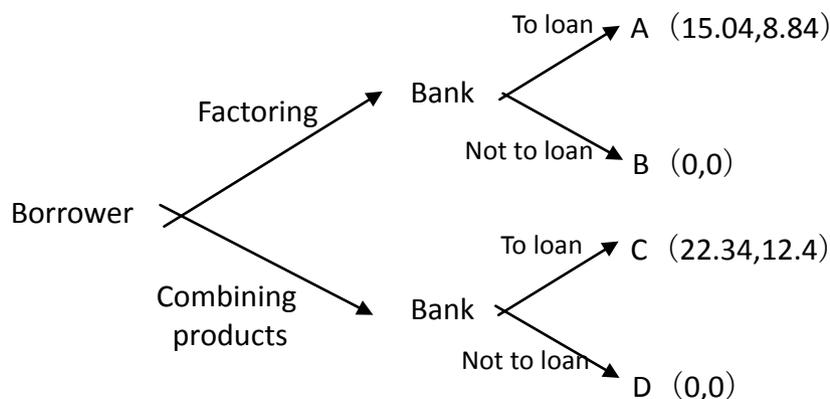
Figure 5 : Tree-like figure of bank-enterprise dynamic game loan process

According to backward induction deduction, let's begin to analyze from bank S. Bank's selection to loan or not is based on the comparison of other loan products, if other comprehensive income products are high, bank S may not give supply chain financial products loans. Because supply chain finance has a core business of credit repayment guarantee to do, the bank's risk is lower compared to other products, while banks can greatly expand the core business as a link to the upstream and downstream industry customers. In this process the bank can also provide consulting, financial and other intermediary services for related enterprises. Therefore bank S will choose to lend.

The borrower enterprise X choose combining products of chattel financing mixed by factoring financing or single factoring financing? It depends on which situations has higher returns for enterprise X. Compared to single factoring financing , combining products costs higher in two parts, one is the cost of insurance, and the second is interest generated in chattel financing period. And compared to single factoring financing, combining products have a shortage cost F, according to X's own situation, F strikes $150,000, more than two parts of cost of a single product. Therefore, enterprise X will choose the combining products, and the equilibrium point at this time is C.

V. ACKNOWLEDGEMENTS

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Determinants of Banking Sector Performance in Pakistan

By Beenishameer M. Ameer

Abstract- The purpose of this research is to examine the relationship between bank-specific and macro-economic indicator over bank performance by using data of ten Pakistani banks including five conventional banks and five Islamic banks over the period 2010-2014. Dependent variable taken for this study is Return on assets, Return on Equity to measure the Banking Sector Performance and independent variable taken for this study including specific factors (Size, Capital, Loan, Deposits, Expenses, Credit Risk and Liquidity) and macroeconomic factors (Gross Domestic Product, Foreign Direct investment and Inflation).This paper uses the correlation and regression method to investigate the impact of size, loans, capital, deposits, liquidity, credit risk, expenses, economic growth, inflation and foreign direct investment on major performance indicators. The empirical results have found strong evidence that both internal and external factors have a strong influence on the performance. A result of study denotes that credit risk, expenses and inflation have indirect link with the bank performance, whereas size of bank, capital, deposit and loan have a significant positive relation with bank's performance and liquidity have insignificant positive relation with Performance of bank. This study reveals the positive insignificant relation between GDP and performance but significant relation between FDI and performance and indirect relation between inflation and profitability. The results of the study are of value to both academics and policy makers.

Keywords: commercial banks, banks profitability, (ROA) return on assets.

GJMBR - C Classification : JELCode : G20

DETERMINANTSOFBANKINGSECTORPERFORMANCEINPAKISTAN

Strictly as per the compliance and regulations of:

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I. Introduction

a) Study back ground

The Banking sector acts as the life blood of modern trade and commerce to provide them with a major source of finance. This increasing phenomenon of globalization has made the concept of efficiency more important both for the non-financial and financial institutions and banks are the part of them. Banks largely depends on competitive marketing strategy that determines their success and growth (Anon, 2013). Banking sector is very essential part of monetary system. It contributes to economic development so it must be sound and perform well. Due to increasing trend of globalization, efficiency becomes very crucial for banking and non-banking business. Financial Institutions also contribute to the number of diverse sectors of the economy in different ways; it is the source of investment, provide the facilities in the payment procedure and help to export and import products (Hussain & Bhatti, 2010).

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The financial system of Pakistan is dominated by the commercial banks. The financial history of the country significantly altered in early 1970s with nationalization of domestic banks and growth of public sector development finance institutions. By the end of 1980s, it became quite clear that the national socio-economic objectives could not be achieved by nationalization. The public sector in banking and non-bank financial institutions was liable for financial inefficiency, deteriorating quality of assets and growing threats of downfall of financial institutions. By the end of 1990, public sector's share in the banking industry was almost 90 percent in total assets, while the rest belonged to foreign banks, as domestic private banks did not exist at that time. Besides this high shares existed for deposits, advances and investments. The structure of banking system in Pakistan underwent significant changes after 1997 when the banking supervision process was aligned with international best practices. Privatization of public sector banks and the ongoing process of merger/consolidation brought visible changes in the ownership, structure, and concentration in the banking sector (State Bank of Pakistan, 2009).

Financial intermediaries perform key financial functions in economies; provide a payment mechanism, match supply and demand in financial markets, deal with complex financial instruments and markets, provide markets transparency, perform risk transfer and risk management functions. Economies that have a profitable banking sector are better able to withstand negative shocks and contribute in the stability of the financial system (Athanasoglou, Brissimis & Delis, 2005).

The Pakistani banking system has traditionally occupied an important position in Pakistan financial system which is based on universal banking framework that legally authorizes commercial banks to service various kinds of activities in financial markets. Most of transactions and activities of money and capital markets are carried out by Banks in Pakistan became more open to these kinds of risks particularly in the financial liberalization period after 1990s. As a result of various financial risks, financial crises in 1994, 2000 and 2001 occurred and they showed how important risk management is to the financial institutions and the businesses in the real sector. After the 2001 Crisis, the Rehabilitation Program was launched by Pakistan

Banking Regulation and Supervisory Agency. State and private banks were restructured and profitability and stability of Pakistan banking system increased with the help of this program (Qazi Abdul Subhan, 2010). The major development started in earlier 1990s in the banking sector of Pakistan. The basic intention of these changes is to take such steps which can bring efficiency and accuracy in them. Following are the major changes happened because of restructuring in the banking sector. Firstly, Privatization of banks primarily increased the quality of services by professionalism. Secondly, Privatization made enormous upward movement in profits due to more innovative product because banks have already loss the extensive part of profit due to inefficiency and deficiency in the quality of service during era of nationalism. Thirdly, due to reforms, banks apply hard and severe procedures for the evaluation of loans; which decreased the default ratio of borrowers (Dr. Salma & Ahmad, 2011). There are mixed studies on performance of banks based on the number of countries and types of banks included in the study sample.ROA and ROE have been widely considered as performance measures (Delis & Staikouras, 2006; Hassan & Bashir, 2003), while researchers have also included Interest Margin (Khrawish, 2011).

Performance as defined by Bourke (2013) is the net after-tax income of banks commonly measured by return on assets and return on equity ratios. Numerous external factors that affect these ratios include; inflation rate, real interest rate, real gross domestic product, imports and exports of a country etc.

The basic reason to conduct this study is to examine the relationship between bank-specific and macro-economic characteristics over bank performance. It is the vital requirement for the competitiveness of financial service organization. It plays a key role in order to attract depositors for supplying their funds on advantageous terms. Inclusively a better and gainful financial institution is capable to recover loss more easily and helped to bring the stability in the monetary structure. The stakeholder of banks and regulators are assures higher profits figures by reducing the chances of financial problems (Ramlall, 2009; Rahman, 2011).

b) Statement of Problem

Financial sector is considered to be the main contributor to economic development. As banks is one of the key financial sectors so the strong and profitable banks leads to economic growth of country. The growing importance of bank's performance make the regulators, bank management, researchers, educational institutes, to take significant interest to examine the determinants of banks performance (Athanasoglou *et al.*, 2005; Said et al., 2013). So that they can appraise the banks performance in term of profit and regulate the regime policies, financial plans decision to reach the

desired goals and choices of depositor (Pasiouras & Kosmidou, 2007; Ali, 2010). It has been found that liquidity, cost, equity/capital, and bad debt/advances these variables have direct effect over banks profitability (Sufian, 2009; Rahman, 2011; Anon, 2013).

This study reveals the gap that other variables can also be tested to find their impact over performance of commercial banks in Pakistan. The broad question of my research study is "Determinants of banking sector performance" creates the need to carefully evaluate the impact of other bank specific factors (size, capital, loan, deposits and liquidity, credit risk and expenses) and economic indicator (GDP, inflation and FDI) on performance of banking sector, which is measured through return on assets (ROA) and return on equity (ROE).So that formulation of strategies took place for development in the banking sector performance.

c) Objectives

The basic objective of this research is to determine the variables affecting Bank's performance. Sub objective include:

- To observe the performance of five conventional banks and five Islamic banks in Pakistan in last 5 year.
- To identify factors affecting the bank's performance.
- To determine which factors effect positively and which effect negatively and to find the gaps between them.
- To investigate the existing economic indicators and banks specific variables and its relation with the bank's performance in Pakistan.
- To suggest the strategies for improving bank's performance.

d) Research Question

The main question of my research study is:

What are the impacts of bank specific factors on bank's performance in Pakistan?

- What is effect of size on bank's performance?
- How loan affect bank's performance?
- What is the relationship of capital and bank's performance?
- What is the relation of deposits with the performance of bank?
- What is the connection of cost and bank's performance?
- What is the link between credit risks and bank's performance?
- What is the relationship of liquidity ratio and bank's performance?

What are the impacts of Macroeconomic variables on bank's performance in Pakistan?

- What is the link of GDP on performance of banks in Pakistan?

- What is the relation between FDI and banks performance?

- What is the influence of inflation on performance of banks in Pakistan?

e) Significance of Study

The growing importance of bank's performance make the regulators, bank management, researchers, educational institutes, to take significant interest to examine the determinants of performance (Athanasoglou et al., 2005).So that they can appraise the banks performance in term of profit and regulate the regime policies, financial plans decision to reach the desired goals and choices of depositor (Pasiouras, & Kosmidou, 2007; Ali, 2010). This is the first paper addressing the determinants of banking sector performance. Past researchers and practitioners have not given the proper attention to macroeconomic indicator and credit risk. This paper helps in understanding the bank specific factors and economic indicator and their impact on the performance of the banking system.

Finally, the researches about the banks performance even become very significant due to fiscal and monetary crises. In the coming years around the globe, these crises have essential effect on many countries banking sector. Hence, the necessary plan of a bank's organization is to attain performance, which is the important condition for operating any business (Deger & Adem, 2011). The study of economic indicators is also necessary because it helps us to understand the trend of economic activities which complements the monetary policy, and this monetary policy has its impacts on the bank's performance.

In order to increase the profit, the key success factors of banks should be determined so that formulation of strategies took place for development in the banking sector.

f) Research Study Plan

WEEKS	TASK	TASK NAME	TIME REQUIRED	TASK COMPLETED	MEETING DATE
WEEK -1	1	BASIC RESEARCH DISCUSSION	2 WEEKS	5%	8th ,15th September
WEEK -3	2	AREA FINALIZATION	1 WEEK	10%	22nd September
WEEK-4	3	INITIAL TOPIC DISCUSSION AND BASE PAPER	1 WEEK	20%	29th September
WEEK-5	4	FINALIZATION OF TOPIC AND BASE PAPER	2 WEEKS	25%	6th ,13th October
WEEK-6	5	FURTHER DISCUSSION ON TOPIC AND REDIFINING THE TOPIC	1 WEEK	30%	20th October
WEEK-7	6	INITIAL FORMAT OF PROBLEM STATEMENT, RESEARCH OBJECTIVE AND METHODOLOGY	1 WEEK	45%	4th November
WEEK-8	7	PROPOSAL SUBMITTION	2 WEEKS	60%	16th December
WEEK-10	8	PROPOSAL RESUBMITTION AFTER ACCEPTANCE	1 WEEK	70%	6th February
WEEK 11	9	LITERATURE ENRITCHMENT	2 WEEK	75%	24TH March
WEEK-13	10	DATA GATHERING	2 WEEKS	80%	7th April
WEEK-15	10	DATA ANALYSIS	3 WEEKS	90%	21th April
WEEK-19	11	RESULTS, DISCUSSION AND CONCLUSION	2 WEEKS	95%	6th May
WEEK 21	12	FIRST DRAFT SUBMITION	2 WEEKS	99%	15th May
WEEK-23	13	SUBMITTION OF FINAL COMPLETE RESEARCH	2 WEEKS	100%	1st June
END					

g) Research Structure

The current research is structured as follow: chapter 1 consists of introduction which includes, background, scope and structure of research, chapter 2 consists of review of literature, chapter 3 consists of methodology, outlining both the broad research design and justifying the particular methods and techniques selected. Chapter 4 consists of results outlining the finding of research. Chapter 5 includes analysis and evaluation that tells us about the significance of the results and it spots the implications in the light of the research questions. Chapter 6 includes the conclusion and limitations of the research and it also includes some recommendations. This concludes with bibliography and appendences.

II. Literature Review

The determinants of banks' performance are usually assorted into internal and external factors. Some studies were country specific and few of them considered panel of countries for reviewing the determinants of profitability. Overall these studies

propose that the determinants of profitability for bank can be divided into two groups; internal and external factors. These studies specify return on asset (ROA) and return on equity (ROE) as the dependent variables and considering the internal and external factors as independent variables (Bourke, 2013).There are mixed studies on performance of banks based on the number of countries and types of banks included in the study sample. ROA and ROE have been widely considered as performance measures (Delis & Staikouras, 2006; Hassan & Bashir, 2003), while researchers have also included Interest Margin as performance measures (Khrawish, 2011).

Performance as defined by Bourke (2013) is the net after-tax income of banks commonly measured by return on assets and return on equity ratios. Numerous external factors that affect these ratios include; inflation rate, real interest rate, real gross domestic product, imports and exports of country etc. The external determinants are reflecting economic and legal environment that affects the operation and performance of banks. According to the nature and purpose of each study, different variables could be used. Among the internal determinants, there are bank specific financial ratios representing capital adequacy, cost efficiency, liquidity, credit risk, asset quality, and size. Economic growth, inflation, market interest rates, investment and ownership are external determinants that affect bank profitability.

a) Impact of Bank Specific Factors on Profitability

In Pakistan, banks have been playing an important role in the economic development (Anis, 2013) and they are also affected by the macroeconomic conditions. Over the past decade, Pakistani banks have faced financial stability challenges due to changes in economic indicators. A lot of work has been done in foreign literature, Haque, Osman and Ismail (2003) and Kosmidou, and Pasiouras (2007) give evidence of significant contribution of external factors towards earnings of banks, but there are few studies which evaluate the performance of banking sectors in Pakistan, Hamdani (2011) and Gul, Irshad, and Zaman (2011) have done research into this topic covering only up to five-year time period. Hassan and Bashir (2003) analyze the factors of Islamic bank's performance across eight Middle Eastern countries for 1995-2000 periods. In Pakistan case, Ali (2011) find higher total assets may not necessarily lead to higher profits due to the diseconomies of scale and higher loans contribute towards profitability but their impact is not significant. Also it is found that equity and deposits have significant impact on profitability. Some studies aimed at analyzing bank profitability in groups of countries, such as Grigorian and Manole (2002), Sufian (2009), Hassan and Bashir (2003), Athanasoglou et al., (2005). A various number of internal and external determinants were used

to forecast the profitability and efficiencies. Burki and Niazi (2006) analyzed the impact of financial reforms on the efficiency of state, private and foreign banks of Pakistan by using data of 40 banks for the period 1991-2000. They found a positive impact of banks size, interest income to earning assets and loans to deposit ratio on estimated efficiency scores.

Young Tang (2012) examines the profitability of banking zone on different countries. They take about 18 European countries' data during the 2001-2010 periods. They found a significant positive association with the return on equity and the level of interest rates, bank concentration and government ownership during their study. Allen and Gale (2004) identified a positive relationship between size and profitability. They found that higher the funds can easily meet their rigid capitals so that they can have extra funds for giving loans to borrowers and thereby increase their profits and earning levels. Campbell study in (2007) explains market structure and performance in 18 European countries using pooled data. Their finding includes that anti-trust or regulatory policy should be designed at changing market structure in order to increase competition or the quality of bank performance. Increasing concentration in banking markets should not be restricted by antitrust or regulatory measures.

Haskell (2012) finds a positive and direct relationship between capital and profits of banks. It implies that a more efficient bank should have higher profits since it is able to maximize on its net interest income. A study conducted by Barros and Ferreira (2010) examined the factors that influence the bank's profitability in Malaysia and the result of this study shows that efficiency in managing cost and interest rates of market are key determinants in determining commercial banks' profitability. It is also concluded that if current account deposit without interest increases reduces the cost of banks and it will increase the profit. Commercial banks in many countries usually engage in investment activities provide new funds to its clients. This progression will run easily if transformation from savers to borrowers happened (Bologna, 2013). According to Chris study in (2006) and Anon (2013), there are many types of risk which involved in this process and credit risk is a major risk for banks, in which banks granted loans to its customers and there is a risk of customers inability to pay loan or risk that loan will not be paid on timely manner or paid partially. They find a negative relationship between credit risk and profitability. It shows that whenever there is negative relationship between them, then it signify that greater risk linked with loans, higher the level of loan loss supplies which thereby and create a trouble at the profit-maximizing strength of a bank.

i. Deposits

Deposits are the main source of banks funding and are the lowest cost of funds. The more deposits are

transformed into loans, the higher the interest margin and profit. Therefore deposits have positive impact on profitability of the banks. Naceur and Goaied (2005) stated that profitability of bank is closely related to the amount of cash the bank holds. Deposits play a key part in bank financing, as an important part of commercial bank assets are generally financed by customer deposits. Therefore, a bank that is able to generate more cheap deposits will be able to provide more loans competitively and will generate higher profits, if all other factors are held constant. The results imply that banks with higher amount of capital rank high because of its ability to accumulate more deposits than weakly capitalized banks (Khoirunissa, 2007). The study of Grigorian and Manole (2002) empirical evidence stated that those banks that have ability to achieve a higher level in deposit accounts with respect to its assets can perform best . Funds availability can be increase by the proportion of sum of deposits to sum of assets and available funds can be use by the bank in various ways as profitable investment and lending activities. Mobarek and Kalonov (2013) concluded that previously isolated banks financing costs beside financial crises the core deposits such as demand deposits and savings are largely inelastic.

Ratnovski and Huang (2009) found that Canadian banks compared with other large commercial banks were more flexible in the economic crisis of 2008, because it got more support from depository funds as compared to other banks which relied more on wholesale funding. With a superior portion of customer deposits in the liabilities of banks can also increase the bank's profitability. The research study of Garcia, Gavila, and Santabárbara study (2009) recognized that the relation between deposits of commercial banks and their individual performances is very strong. Deposit acts as a cheap and secure source of finance in compared to other financing resources.

ii. *Expenses*

Molyneux and Thornton (2008) studies on a sample of seventeen commercial bank 2000-2005 time period in Malaysia. In this study, it is found that efficient expenses management is one of the most significant in explaining high bank profitability, high expense ratio is associated with low bank profitability.

An extensive literature is available which revealed that expenses can be used to measure the profitability of any institute. For example, direct relationship of cost and quality improvement means which banks keep expenses low can make higher profits. In all businesses, profit is lower by higher cost and profit is higher by lower cost. The study conducted by Bourke (2013) revealed that reduction in costs and improvement in efficiency increases the profitability of financial institutions, as well as there is a negative relationship between a ratio of operating expenses and

profitability. Recent studies also cover the area bank efficiency such as (Berger & Humphrey, 2003). These studies show that there is indirect relationship between operating costs and the bank's profitability i.e. as the operating costs decrease, the profitability of banks increase. Expenses are measured by the ratio of costs to revenue. By this ratio banks can obtain an idea about the efficiency of management and it shows the ratio of expenses to revenue of companies. Kosmidou (2008) stated that banks that have higher capital ratio bear less operating costs and earn greater return. It is used as a determinant of the capacity to manage costs .Reduction in the income of banks is due to incompetency of the management to control the cost of bank and connected to pressure in the competitive market (Muriu, 2011). Some other researchers Samad, 2004; Zeitun, 2012) found a negative connection of the cost-revenue and profitability. This implies that commercial banks are able to work at a lower cost. This results is agree through outcome of Siraj and Pillai (2012) that shows the effective cost control is condition of improving the profitability of Swiss banks. So expense to income ratio is an indicator of operating effectiveness, that declines approximately all over the places in different amounts due to increase in competition and banks expenditures decrease for a breakeven point of production. Some other past studies also provide extensive literature which showed that efficiency and profitability are positively correlated (Alexiou & Sofoklis, 2009; Olson & Zoubi, 2008; Kablan, 2012).

iii. *Loan*

Garcia et al., (2009) found that better capitalized bank seem to be more profitable. Also, in case that a bank's loan volume is growing faster than the market, the impact on bank profitability is positive. According to past researches that described a positive relationship between the percentage of loans in the assets of bank and performance, or there is also the literature available that show an indirect or negative link between performance of bank and liquidity (Chiorazzo, Milani & Salvini, 2008; Barros et al., 2010). Sufian (2009) reported that as advances/loans granted by bank's increase, bank's profitability also increase. The greater amount of the loan, the higher the NIM and bank profits. Sasrosuwito (2011) stated that there is a direct connection between the profitability and loan. When the financial institutions perform more lending activities, they express to be more profitable. If a higher level of reserves for bad debt is maintained then the bank's ability to make loans reduce and therefore decreased profitability of banks significantly. Bank loans are major source of revenue, and chances to have positive impact on profits. Better economic conditions improve the credit worthiness of borrowers, this increase in credit demand from households and businesses, positively

affects the bank's performance (*Chiris, 2006*; Dridi and Hassan, 2009).

iv. *Size*

In most finance literature, total assets of the banks are used as a proxy for bank size. Bank size is represented by natural logarithm of total asset (log A). The effect of bank size on profitability is generally expected to be positive. Hunjra and Bashir study (2014) revealed that relation between size and capital sufficiency of a bank is direct and which shows that comparatively large bank produces higher profit rates than small size banks. *Siraj and Pillai* (2012) demonstrated that certain costs can be saved with the increase of banking institutions size. Along with the technological innovations many of the banks lean to increase their size over time to enhance their branch networking operations. Naceur and Goaied (2005) investigated that bank do not significantly affect the banks profits because the bigger banks do not mean the higher earnings (represented by the return on Assets ROA). Kakakhel (2013) found that banks with medium size network may have the earning issues in that particular branch network but the overall profitability of firm is not affected by the bank size because of optimization of the operations. The Study of Javaid, Anwar and Zaman (2011) recommended that size of the bank may be positively affect the profitability up to a certain limit and further than this limit it may be negative because of different elements i.e. the countries selected for test and periods of study. Researchers also found that there is direct link between size and profitability of a bank and costs might reduced only up to some extent with the increase of bank size and some time even large banks address the inefficiency of scale. Mamatzakis (2010)) analyze the indirect relation between the bank size and the performance of bank and also revealed that the variables that are directly related to the strategic planning of the banks (i.e. personnel expenses, size, loans to assets ratio, equity to assets ratio) are the ones that mainly explain profitability. Said et al. (2013) found a positive relationship in the size and profitability of banks. It also examined that economies of scale depend upon the size of bank because small size banks is less gainful than the large size banks, while negative ratio of bank size with profitability is also showed by empirical evidences. Research conducted by Jaffar and Manarvi (2005) found that increased provision of funds in large banks can easily covered their unyielding capital and additional funds can be available to them for making loan payments to borrowers and to boost their profits and income levels.

v. *Capital*

The ratio of equity to total assets (CA) is considered one of the basic ratios for capital strength. It is expected that the higher this ratio, the lower the need for external funding and the higher the profitability of the bank. It shows the ability of bank to absorb losses and handle risk exposure with shareholder. Equity to total assets ratio is expected to have positive relation with performance that well-capitalized banks face lower costs of going bankrupt which reduces their costs of funding and risks (Brook, 2008; Bourke, 2013; Parashar & Venkatesh, 2010). Generally the companies can raise money from two major sources internal source and external source. When a company plowbacks the part of its profits that is internal source and when the firm raise money through the issuance of equity or the debt that is external source. So the capital structure is considered as the source through which the any company finances itself whether through debt or equity, as this is the crucial component of firm because it determines what return remains for stockholders after paying the debt holders. The company should always strive that combination of debt and equity (i.e. capital structure) which is beneficial for the all stakeholders of the company especially shareholders (Rattray, 2012).Some research study revealed various results regarding financial leverage of the firm. The first one is negative connection between finance leverage and performance of firm calculated by the return on equity. Second the difference in performance of high levered firms and low levered is not significant and finally the financial leverage and performance are negatively related no matter whether firm is growth or not. The negative relationship occurs because of excessive borrowing as it magnifies the bankruptcy risk and lowers the tax shield which ultimately affects profits and performance. Same results have been revealed by the other researchers (Olson et al.,2008) found the negative relationship between firm performance and capital structure same as revealed by packing order theory which shows that the profitability and leverage are negatively related because the excessive amount of debt decreases the business performance due to burden placed by debt. Abhor (2005), revealed that performance or profitability of firm is positively related to the short term debt, which shows that short term borrowing is preferable to profitable firms. However it was also revealed in same research that performance is indirect linked to long term debt and the direct influenced to total debt. Same results are driven by the other researcher, Haskell (2012) identified that the major source of financing bank assets is debt, and the major part of debt is the short term debt. However there are no definite relation defined for capital structure and profitability of firm like theory of tradeoff defines positive link between firm performance and firm performance, the other theory of agency cost identifies the firms with higher debt have low agency costs improves efficiency of the firm which ultimately enhances the company performance and the theory of pecking order shows the negative relationship between firm performance and firm debt level (Gul et al., 2011).

vi. *Liquidity*

The ratio of liquid assets to total assets (LQD) is used in this study as a measure of liquidity. The higher this percentage the more liquid the bank is. Insufficient liquidity is one of the major reasons of bank failures. However, holding liquid assets has an opportunity cost of higher returns. Bourke (2013) finds a positive significant link between bank liquidity and profitability. However, in times of instability banks may chose to increase their cash holding to mitigate risk. Unlike Hunjra and Bashir (2014), Molyneux and Thorton (2008) come to a conclusion that there is a negative correlation between liquidity and performance levels.

Banking is the passing funds from surplus holders of the money to the deficit holders, which identifies the bank role as intermediary. Such activities make banks more prone to the liquidity risk. The commercial bank's liquidity is paying ability of banks for all the obligations (i.e. contractual) whenever they come due. Liquidity also impacts the bank's profitability so the banks need to manage the liquidity very well because of the positive relationship between liquidity and profitability. Banks can face financial crisis and shocks effectively if it has adequate liquidity but the excessive liquidity can diminish profitability because liquid assets have little capacity to generate interest so the liquid assets held by banks should be adequate not the excessive (Levine, 2000).

Sometimes liquidity and profitability move oppositely because shareholders and depositors desire different things. Shareholders have interests in profitability however depositors have interests in liquidity. So the banks should hold the optimal liquidity because the excessive liquidity and illiquidity are like financial diseases which negatively affect the banks profits and performance (Li, 2011). To overcome the dilemma in liquidity and profitability trade off the banks should strive for optimal liquidity level means the banks should not have lack or excess of liquidity (Anis, 2013) consistent with results of (Disinter, 2012). For the liquidity working capital is the crucial component for the financial management of the company. Efficiency in managing the working capital affects the profitability. Barros et al. (2010) investigated that different liquidity factors affect the almost every profitability ratio so the profitability would increase with the increase in free cash flows and decrease in cash conversion cycle of firm. So the value for the corporate shareholders can be created if the managers strive to reduce the inventories and days in account receivables (Goldberg, 2004).

vii. *Credit Risk*

Credit risks include the risk of loss due to nonpayment by borrower of a loan or both the principal or interest amount, the level of bad debts problem loans and allowance for loan losses (Campbell, 2007).

Trujillo-Ponco study (2012) reveals that credit risk is the risk of loss due to inability and unwillingness to pay loan that granted by a bank, either partial or full. Credit risk is vital factor of the bank's performance. The greater the bank's exposure to credit risk, the greater the tendency of banks experiencing financial crisis and vice-versa. Garcia et al., (2009) reported in study that credit risk is crucial because the default of a large client can make bank less profitable, which result in bankruptcy of bank. The study concluded that deviations in bank profitability are largely influence by changes in credit risk, and that greater supervision of credit risk is normally linked with increase in profitability.

Dridi and Hassan (2009) found a negative relationship between credit risk and profitability. It shows that whenever there is negative relationship between them, then it signify that greater risk linked with loans, higher the level of loan loss supplies which thereby and create a trouble at the profit-maximizing strength of a bank.

Ali (2010) study shows that financial institutions that are advance more risky loans raise the non performing loans and reduce the performance. Reasons which create high risk loans, decrease in profit is due to addition in unpaid loans may raise, because of these loan losses. This result is making clear that the banks that advanced more risky loans bared the loss of accumulated unpaid loans. These bad debts lower the yields of effected banks. The study of Allen and Gale (2004) revealed that the profitability is measured in terms of ROA and ROE, that were negatively related to the default rate of loans of banks, it reduce the profitability of that bank. If the bank's credit risks carefully manage then by keeping credit risk within satisfactory limits, rate of return can be increased and this will maximize profitability (Ramlal, 2009; Khoirunissa, 2007).

b) *Impact of Macroeconomic Factors on Profitability*

As Pakistan is dominated by Banking sector (SBP, 2012), it is of vital concern to associate their profitability with country's progress, and hence, a study to identify the cumulative impact of macroeconomic variables on the performance of banks would add to the strategies devised in interest of the institutions' development.

Goldberg (2004) statistically proved direct relationship of inflation rate and indirect relationship of real interest rate on ROA of 5 major Islamic banks over a period of 1984-2002. Staikouras and Wood (2003) reviewed the performance of European Banking industry for years 1994-1998. Using ordinary least square method and fixed effects model they concluded that interest rate has a significant positive but growth of GDP exerts significant negative impact on ROA. Kablan yousafi (2012) also estimated the profitability of 583 European Union domestic banks where cross sectional regression showed a significant positive effect of GDP on profits. Further, Kosmidou (2008) examined domestic

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and foreign commercial banks in 15 European Union countries. Estimates show significance of macroeconomic conditions to ROA. Mancka (2011) considered six years data of 60 Islamic banks operating in 18 countries Results ascertain that GDP and inflation positively influence the revenue of banks. Disinter (2012) scoped out the profitability of Nigerian banks concluded that both real interest rate and inflation have a considerable link with ROA and ROE. Sufian (2009) worked on the banks in Philippines. Findings of linear regression showed evidence of insignificant positive impact of GDP and market capitalization on ROA but, negative impact of inflation. Deger and Adem (2011) take balanced panel data of five large banks of Macao. Linear model shows strong influence of inflation on ROA, GDP and interest rate show no effect. Jaffar and Manarvi (2005) utilized annual data of 389 banks operating in 41countries of Sub-Saharan Africa for period 1998-2006. Linear regression model estimated positive contribution of GDP growth and CPI on asset returns, whereas using random effects estimation, Francis (2001) indicated negative relationship of inflation. Alexio and Sofoklis (2009) and Anthanasoglou et al., (2005) also worked on such large samples to study profitability of banks in developed and developing economies. Ramlall (2009) studied Taiwanese banking firms. Quarterly categorized financial data of 31 local commercial banks reflect negative impact of GDP and real interest rate. Parashar and Venkatesh (2010) used pooled regression methods and estimated positive impact of determinants of Malaysian commercial banks. Muriu (2011) focused on banks of UAE functioning between 1996 and 2008. A simple regression model assessed positive relationship between GDP and revenue. Banks performance is expected to be sensitive to macroeconomic variables. In the literature in terms of external determinants, generally three macroeconomic variables are used: Annual real gross domestic product growth rate (GDP), annual inflation rate (INF) and Foreign Direct Investment (FDI).

i. *GDP*

It is a measure of the total economic activity and it is adjusted for inflation. It is expected to have an impact on numerous factors related to the demand and supply for banks deposits and loans. According to the literature on the association between economic growth and financial sector performance, GDP growth is expected to have a positive relation on bank profitability (Demirguc-Kunt & Huizinga, 2001; Bikker & Hu, 2002). In this context, we expect a positive relationship between bank profitability and GDP development as the demand for lending is increasing.

Economic indicators in 2013 propose that economic activity should be stabilized in the first part of the year. This stabilization should be continued in the second part and export thus benefits a growth of global demand and domestic demand which is being supported by the appropriate monetary policy position. In addition, the reforms in financial markets since July last year and the continued execution of structural reforms should be such that they may prove beneficial for the economy. Simultaneously, necessary adjustment of balance in the public and private sectors, and the related tensed credit conditions, will carry on evaluating on economic activity (Anon, 2013).

GDP of Pakistan has been increased due to the outstanding public debt but income per capita is lower than indebtedness per citizen. This public debt altogether is the consequence of the poor structural conditions in the foreign and domestic accounts. In local market many tools are present to the government by which it funds can be mobilized to finance or tackle the deficit I budget. Variable tools of debt have variable rules in terms of ease of use, outlay and periods of maturity. (Syed Imran Rais, 2012). Depreciation of the currency to the relation with Euro leads the borrowers who have loans in Euros towards the miserable financial situations of loans and increasing their risk of default loans. The financial crisis occurring in the world has worsened our banking system, by worsening the macroeconomic indicators and the loans offered. Increasing inflation and change in the GDP has destroying effect on the banking portfolio. By statistical analysis of the period of Albania it is concluded that Growth rate of GDP has fallen. This fall is due to the economic and financial crisis. And the factors responsible for this decrease of ∆GDP are the difficulties faced by the financing business and deficiency of demands, the decrease in payments and savings is due to the reason that most of the family not lend by the banks and deduction is made from their net income from remittance (Haque et al., 2003).

ii. *Inflation*

It is defined as "*the average amount by which goods and services are increasing." (Rattray, 2012).* In the study of Pakistan, Inflation has worst impacts on economic growth .i.e. increase in one unit of inflation results in the decrease of GDP and similarly interest rate also has a very clear opposite or inverse relation with economic growth. (Rehman, 2011).

This measures the overall percentage increase in Consumer Price Index (CPI) for all goods and services. Inflation affects the real value of costs and revenues. The relationship between the inflation and profitability may have a positive or negative effect on profitability depending on whether it is anticipated or unanticipated (Brook, 2008). If an inflation rate is anticipated, banks can adjust interest rate in order to increase revenues than costs. On the contrary, if inflation rate is not anticipated, banks cannot make proper adjustments of interest rate that costs may increase faster than revenues. But most studies observe a positive impact between inflation and profitability (Bourke, 2013; Hassan and Bashir 2003; Haque et al.,

2003) and that we expect to be positive in this study. Financial activity is lessened by higher inflation. Economies having high inflation rate have mediators who will lend less and ineffectively allocate the capital, and capital markets have less liquidity and is smaller. Many inflation forces may distinguish the association between inflation and financial sector conditions. If the high inflation persists for a long time growth rates will be decreased. The data in the paper highly assist the nonlinear relationship between inflation and performance of financial sector, maybe driven by doorstep rates of inflation (John, 2000).

If the inflation rate is higher than the interest rate of your bank then you have to pay less back. Increase in inflation make the forecasting of prices and cost difficult so it is difficult to make investment planning. As rate of inflation or general prices appreciates, need of people for dollars appreciates to continue their business. Interest rate increases with the increase in the demand of the money. Increase in the rate of interest demotivated spending behavior of people, as the investment cost also increases. lfkf Unforesee able variations in rate of interest have influences customers reluctant to sign long term contracts or agreements related to businesses (Haskell, 2012).

The factors determining effectiveness of banks in China, also determine the effects of inflation on effectiveness of banks at the same time having power over specialized factors of industries and financial institutions. Empirical results in this study show a direct relationship between productivity of banks, cost effectiveness, growth of financial institutions, efficiency of stock exchange markets and inflation in China. Low productivity in banks resulted from high rate of taxes and other fluctuations in market activities. (Yong Tan, 2012).

iii. *FDI inflow*

Policy making and expanded local markets of Pakistan are normally favorable to FDI, however terrorism and law and order situations and innate calamities are demotivating factors for investors. Pakistan was ranked at tenth amongst the largest beneficiary of (IFDI) in year 2006 to year 2008 in the continent of Asia. Other developing countries are also successfully investing in Pakistan. The strategy administration is also at favorable terms with investors, and as compare to other neighbor countries investing in Pakistan is easier. But these benefits do not continue for long; FDI flows condensed by 60% from year 2009 to year 2010, an indication of worldwide trends and internal complications. (Hamdani, 2011). FDI inflows to Pakistan have improved in the last 20 years in particular regions, ratio of the countries investing in Pakistan become greater than before; but great amount of FDI is at a standstill from the countries investing before. In Pakistan the FDI inflows are not only intense but also irregular.

The most interesting is, the main investors are also trade partners of Pakistan.

Consequently, it is interesting to know the cause and effect relation of FDI inflows from trade partners with growth, trade and domestic investment and gauge the impact of the concentrated FDI inflows on exports, domestic investment and growth in Pakistan (Li, 2011). FDI has great impact on predicament and non predicament economic situations. Overseas banks are lenders more influenced by economic indicators in rising markets. Overseas entrants' help in the supply of production of more versatile forms of funds, in standard foremost loan supply are less influenced by macroeconomic activities but are more responsive to foreign irregularities. Introduction of foreign entrants into up-and-coming markets slows down the frequency of substandard situations or credit risk, but increases the prospective for superior infection through impacts of ordinary lenders. The contamination matter is condensed when overseas banks have an impactful supplementary existence, as contrasting to sustaining domestic markets through foreign exchange (Goldberg, 2004). The results in this article indicate a sturdy direct and significantly positive developmental impact of FDI all the way through the entire continent, and particularly in African region and countries notified for their oil production. And at the same time foreign banks lending in Africa cause significant growth. (José Brambila Macias, 2009).

c) Theoretical Framework
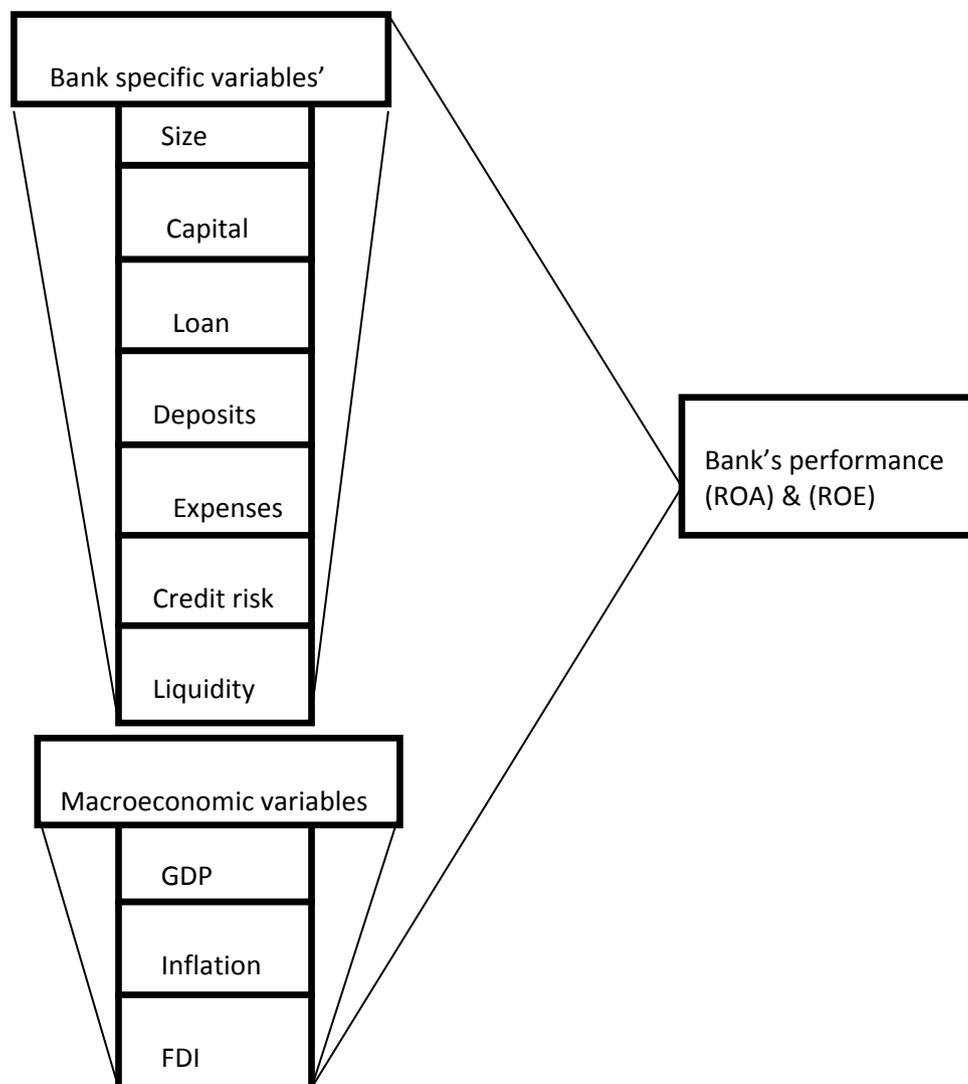
d) Research Hypotheses

The objective of this study is to find out the relationship of internal and external factors with Bank's performance. Based on the objective, the present study seeks to test the following hypothesis:

H01: There is a no direct relationship between SIZE and bank's performance.

H1: There is a direct relationship between SIZE and bank's performance.

H02: There is no direct relationship between CAPITAL and bank's performance.

H2: There is a direct relationship between CAPITAL and bank's performance

H03: There is no direct relationship between LOAN and bank's performance.

H3: There is a direct relationship between LOAN and bank's performance.

H04: There is no direct relationship between DEPOSITS and bank's performance.

H4: There is a direct relationship between DEPOSITS and bank's performance.

H05: There is no indirect relationship between EXPENSES and bank's performance.

H5: There is an indirect relationship between EXPENSES and bank's performance.

H06: There is no indirect relationship between CREDIT RISK and bank's performance.

H6: There is an indirect relationship between CREDIT RISK and bank's performance.

H07: There is no indirect relationship between LIQUIDITY and bank's performance.

H7: There is an indirect relationship between LIQUIDITY and bank's performance.

H08: There is no indirect relationship between INFLATION and bank's performance.

H8: There is an indirect relationship between INFLATION and bank's performance.

H09: There is no direct relationship between GDP and bank's performance.

H9: There is direct relationship between GDP and bank's performance.

H010: There is no direct relationship between FDI and bank's performance.

H10: There is a direct relationship between FDI and bank's performance.

III. Research Methodology

a) Conceptual Framework

i. Dependent Variables

The profitability variable is represented by two alternative measures: the ratio of profits to assets, i.e. the return on assets (ROA) and the profits to equity ratio, i.e. the return on equity (ROE). In principle, ROA reflects the ability of a bank's management to generate profits from the bank's assets, although it may be biased due to off-balance-sheet activities. ROE indicates the return to shareholders on their equity and equals ROA times the total assets-to-equity ratio. The latter is often referred to as the bank's equity multiplier, which measures financial leverage. Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE. Since an analysis of ROE disregards the greater risks associated with high leverage and financial leverage is often determined by regulation, ROA emerges as the key ratio for the evaluation of bank profitability *(Gracia et al., 2009)*.

The Return on Asset and Return on Equity taken as dependent variable in order to measures the performance with respect to the bank specific factors and Macroeconomic Indicators.

Table No.1

Dependent Variables	Notation	Assessment
Return On Asset	ROA	Net Income/Total Asset
Return On Equity	ROE	Net Income /Total Equity

ii. Independent Variables

For independent variables seven bank specific factors and three macroeconomic indicators selected to measure the relation with profitability of the Pakistan's Commercial banks.

Table No.2

	Independent variables	Notation	Assessment
Bank specific factors	Size	LogA	Log of Total Assets
	Capital adequacy	CA	Total Equity / Total Asset
	Loan	L	Short term and long term loan / sum of Asset
	Deposits	D	Short term and fixed Deposit / sum of asset
	Expenses	EX	Total expenses / Total Assets
	Liquidity	CA/CL	Current asset / Current liabilities
	Credit risk	CR	Total nonperforming loans / Total loans
Macroeconomic variables	Economic activity	GDP	Annual growth rate of economy
	Inflation	INF	Annual % change in consumer price
	Foreign direct investment	FDI	FDI is a direct investment into production or business in a country by a company in another country

b) Research Approach

The research study of Saunders, Lewis and Thorn hill's (2008) describes two common approaches: Deductive and Inductive approach. The study of Saunders et al. (2008) identified that deductive reasoning is narrower in nature and is concerned with testing or confirming hypotheses. It works from the more general to the more specific. Sometimes this is informally called a "top-down" approach. Inductive approach works the other way, moving from specific observations to broader generalizations and theories. Sometimes call this a "bottom up" approach. It begins with specific observations and measures begin to detect patterns and regularities, formulate some tentative hypotheses that we can explore, and finally end up developing some general conclusions or theories.

Robson (2002) explains the 5 steps of deductive research:

- Explore assumptions /hypothesis with one of the research strategy.

- Shows the relationship between two variables to describe the assumptions/hypothesis in operational conditions.

- Testing hypotheses.

- Examining the outcomes of hypothesis

- Revise the outcomes of hypothesis.

Deductive type approach has been selected for this quantitative study with the creation of hypotheses to test their model, hypothesis and operational terms. With this approach, the relationship between bank specific

factors, economic indicator and performance has tested.

c) Research Objectives

The basic types of research objectives includes: exploratory, descriptive and explanatory (Deloof, 2003).

Robson (2002) stated that exploratory study is the effective method to explore or find out the new insights and concepts. This is helpful for resolving the problem that is unsure. The study of Ibe (2013) discuss that descriptive studies helps you to collect t he data and answer the research objectives which you want to study. Already existing literature is used to form the hypotheses about impact of bank specific factors on profitability and economic indicator on lending activity and these hypotheses are tested by data. However Saunders et al., (2008) described that explanatory or causal study focus over the cause and effects of one thing over the others. This study is causal in nature as it implies the cause and effect relationship between bank specific factors, economic indicators, profitability and lending activity. It is also descriptive in nature because this research is mainly quantitative and it describes the data and its characteristic. It explores the existing phenomenon by using statistical techniques. Therefore explanatory study and descriptive method is the best way to describe the purpose of this research.

d) Research Design

A longitudinal study is an observational research method in which data is gathered for the same subjects repeatedly over a period of time. Longitudinal research projects can extend over years or even decades. This research study is longitudinal because it tracks the banks performance from year 2010 to year 2014. According to Yin (2003) seven strategies are applied to descriptive, exploratory and explanatory stage which is: specific case study, action research, experiment, survey, ethnography, grounded theory, and archival research. Some strategies are used for inductive approach and some of them are used for deductive approach. Archival research strategy has been chosen for this research in which secondary data is the main source of data (Saunders et al., 2008).

e) Sampling

In today's world economic growth of a country depends on its financial sector especially banking institutions working in that country. This study is conducted to examine the determinants of financial performance of both banking sectors running at the same time in Pakistan i.e. Conventional Banks and Islamic Banks. For this purpose a sample of 10 Banks are selected including five Conventional and five Islamic Banks. Data of these 10 banks are obtained of 5 years from 2010-2014 from their Audited Annual Financial Statements i.e. Income Statement and Balance Sheet. In Pakistan Commercial banks include twenty nine (29) conventional and five (5) Islamic banks (SBP, 2012). Out of these only twenty three (23) banks are listed at stock exchanges (ISE, 2014; KSE, 2014; LSE, 2014). So five conventional banks (HBL, UBL, ABL, MCB, and NBP) and five Islamic banks (Meezan Bank, Burj Bank, Dubai Islamic Bank, Bank Islami, Albarka) have been included in the sample. In this research the purposive or judgmental sampling is used. Purposive sampling is form of non probability sampling in which probability of each sample is known so it would be possible to answer the research questions or testing hypotheses with statistic.

No	Acronym	Conventional banks name	Website
1	ABL	Allied Bank Ltd.	www.abl.com
2	UBL	United Bank Ltd.	www.ubl.com
3	HBL	Habib Bank Ltd.	www.hbl.com
4	MCB	Muslim Commercial Bank	www.mcb.com
5	NBP	National Bank Of Pakistan	www.nibpk.com
No	Acronym	Islamic banks name	Website
6	MEBL	Meezan Bank Ltd.	www.meezanbank.com
7	BBL	Burj Bank Ltd.	www.bblbank.com
8	DIB	Dubai Islamic Bank	www.Dubaislamicbank.com
9	BI	Bank Islami	www. banklslami.com
10	ALB	Albarka	www.albarkabank.com

f) Data Collection

The data is collected through secondary sources. Annual balanced panel data of selected banks for 5 years (2010-2014) is used in this study. Macroeconomic data has been taken from World Bank Publication (WDI, 2014), and Economic Survey of Pakistan (2010-2014). Data for ratio analysis is obtained from financial statements of banks through; concerned websites. All bank level financial data (In thousands and Rupees) is converted to Pakistani Rs. (Millions) for accurate and standardized estimation.

g) Data Analysis Technique

Two most important statistical techniques are used to examine the relationship of dependent variable and independent variables. These techniques are the Bivarriate correlation and multiple regression analysis of the ratios because literature suggests that it is valid method where variables show stable relationship across

the bank (Gul, Irshad & Zaman, 2011). The data analysis is performed through Microsoft Excel and SPSS.

h)   Ratio Analysis

1) HABIB BANK LIMITED

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Capital adequacy ratio	14.61	15.62	15.31	15.39	16.25
LOAN	Total loan/Total assets	0.50	0.40	0.31	0.33	0.32
EXPENSES	Total expense/total assets	0.03	0.03	0.02	0.02	0.02
	Financial assets/Total assets	0.03	0.04	0.02	0.02	0.02
	Total loan/Total assets	0.50	0.40	0.31	0.33	0.32
SIZE	Total Investment /total assets	0.28	0.37	0.49	0.48	0.50
DEPOSIT	Deposit/Assets	0.81	0.82	0.75	0.82	0.82
LIQUIDITY	Loan/Deposits	0.62	0.49	0.41	0.40	0.39
	Return on assets	1.9	2.16	2	1.38	1.78
PERFORMANCE	Return on equity	18.86	21.7	21	18	20
CREDIT RISK	Total NPL / Total loans	3.26	2.7	2.68	2.5	2.55

2) ALLIED BANK LIMITED

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total capital/total risk weighted assets	13.84	13.43	16.17	17.85	19.75
LOAN	Total loan/Total assets	0.56	0.47	0.43	0.36	0.32
EXPENSES	Total expense/total assets	0.09	0.09	0.08	0.07	0.08
	Financial assets/Total assets	0.03	0.00	0.02	0.02	0.00
	Total loan/Total assets	0.56	0.47	0.43	0.36	0.32
SIZE	Total Investment /total assets	0.27	0.38	0.42	0.49	0.51
DEPOSIT	Deposit/assets	0.83	0.77	0.81	0.83	0.79
LIQUIDITY	Loan/deposits	0.68	0.61	0.53	0.44	0.46
	Return on assets	1.89	2.1	2.03	2.14	1.9
PERFORMANCE	Return on equity	28.8	29.4	28.4	30	25.9
CREDIT RISK	Total NPL / Total loans	5.28	8.08	7.24	6.56	6.88

3) MUSLIM COMMERCIAL BANK

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total capital/total risk weighted assets	22.07	21.79	22.13	22.25	20.41
LOAN	Total loan/Total assets	0.45	0.35	0.31	0.30	3.25
EXPENSES	Total expense/total assets	0.02	0.03	0.02	0.02	0.02
	Financial assets/Total assets	0.0078	0.0014	0.0020	0.0015	0.0015
	Total loan/Total assets	0.45	0.35	0.31	0.30	3.25
SIZE	Total Investment /total assets	0.38	0.48	0.52	0.55	0.55
DEPOSIT	Deposit/Assets	0.76	0.75	0.71	0.78	0.74
LIQUIDITY	Loan/Deposits	0.59	0.46	0.44	0.39	0.44
	Return on assets	3.13	3.18	2.91	2.72	2.78
PERFORMANCE	Return on equity	25.91	26.17	24.59	23.09	23.83
CREDIT RISK	Total NPL / Total loans	3.26	2.7	2.68	2.5	2.55

4) NATIONAL BANK OF PAKISTAN

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total Capital/Total risk weighted assets	16.93	16.1	15.5	15.24	17.39
LOAN	Total loan/Total assets	0.46	0.46	0.50	0.45	0.41
EXPENSES	Total expense/total assets	0.03	0.03	0.03	0.03	0.03
	Financial assets/Total assets	0.02	0.04	0.01	0.04	0.07
	Total loan/Total assets	0.46	0.46	0.50	0.45	0.41
SIZE	Total Investment /total assets	0.29	0.28	0.26	0.29	0.36
DEPOSIT	Deposit/Assets	0.80	0.81	0.79	0.81	0.80
LIQUIDITY	Loan/deposits	0.57	0.57	0.63	0.56	0.51
	Return on assets	0.02	0.02	0.01	0.00	0.01
PERFORMANCE	Return on equity	0.14	0.14	0.11	0.04	0.08
CREDIT RISK	Total NPL / Total loans	3.06	2.13	2.08	2.2	2.25

5) UNITED BANK LIMITED

	Ratios	2010	2011	2012	2013	2014
CAPITAL	Total capital/Total risk weighted assets	14.5	14.3	15	13.3	16.08
LOAN	Total loan/Total assets	0.477	0.418	0.406	0.387	0.385
EXPENSES	Total expense/total assets	0.03	0.03	0.03	0.03	0.03
	Financial assets/Total assets	0.017	0.015	0.024	0.029	0.020
	Total loan/Total assets	0.477	0.418	0.406	0.387	0.385
SIZE	Total Investment /total assets	0.321	0.378	0.390	0.420	0.439
DEPOSIT	Deposit/Assets	0.79	0.79	0.78	0.82	0.81
LIQUIDITY	Loan/deposits	0.61	0.53	0.52	0.47	0.55
	Return on assets	1.7	2.1	2.1	2	2.03
PERFORMANCE	Return on equity	19.8	23.5	23.8	22.3	25.15
CREDIT RISK	Total NPL / Total loans	3.42	4.41	3.27	3.84	2.48

6) MEEZAN BANK

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total Capital/Total Risk weighted Assets	12.41	14.89	14.08	12.48	11.88
LOAN	Total loan/Total assets	0.13	0.03	0.02	0.03	0.22
EXPENSES	Total expense/total assets	0.03	0.03	0.03	0.03	0.02
	Financial assets/Total assets	0.39	0.35	0.32	0.39	0.40
	Total loan/Total assets	0.13	0.03	0.02	0.03	0.22
SIZE	Total Investment /total assets	0.36	0.49	0.56	0.46	0.26
DEPOSIT	Deposit/Assets	0.85	0.85	0.84	0.88	0.87
LIQUIDITY	Loan/Deposits	0.16	0.04	0.02	0.04	0.25
	Return on assets	1.18	1.91	1.48	1.31	1.19
PERFORMANCE	Return on equity	16.4	28.18	24.34	23.69	22.2
CREDIT RISK	Total NPL / Total loans	1.71	1.92	2.3	2.31	2.49

7) BURJ BANK

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total Capital/Total Risk weighted Assets	38.44	41.81	22.55	20.76	18.72
LOAN	Total loan/Total assets	0.17	0.08	0.02	0.16	0.20

EXPENSES	Total expense/total assets	0.06	0.04	0.03	0.05	0.03
	Financial assets/Total assets	0.38	0.45	0.50	0.54	0.62
	Total loan/Total assets	0.17	0.08	0.02	0.16	0.20
SIZE	Total Investment /total assets	0.29	0.36	0.36	0.17	0.20
DEPOSIT	Deposit/Assets	0.71	0.74	0.76	0.80	0.82
LIQUIDITY	Loan/deposits	0.24	0.11	0.03	0.20	0.06
	Return on assets	-3.49	-1.27	0.23	-2.25	-1.08
PERFORMANCE	Return on equity	-11.68	-5.7	1.44	-20.76	-10.22
CREDIT RISK	Total NPL / Total loans	3.35	1.4	1.23	2.89	3.39

8)DUBAI ISLAMIC BANK

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total capital/Total risk weighted assets	20.87	20.85	19.06	14.9	17.8
LOAN	Total loan/Total assets	0.11	0.10	0.14	0.14	0.11
EXPENSES	Total expense/total assets	0.01	0.05	0.05	0.04	0.04
	Financial assets/Total assets	0.57	4.96	0.41	0.44	0.58
	Total loan/Total assets	0.11	0.10	0.14	0.14	0.11
SIZE	Total Investment /Total assets	0.15	0.27	0.34	0.31	0.18
DEPOSIT	Deposit/Assets	0.79	0.80	0.84	0.84	0.83
LIQUIDITY	Loan/deposits	0.14	0.13	0.17	0.17	0.13
	Return on assets	-0.019	-0.012	0.005	0.002	0.006
PERFORMANCE	Return on equity	-0.13	-0.09	0.05	0.02	0.08
CREDIT RISK	Total NPL / Total loans	1.42	1.41	2.27	2.27	2.01

9)AL BARKA

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total capital/Total risk weighted assets	15	15.78	18.47	15.96	16.01
LOAN	Total loan/Total assets	0.03	0.03	0.04	0.04	0.06
EXPENSES	Total expense/total assets	0.02	0.02	0.02	0.02	0.02
	Financial assets/Total assets	0.10	0.06	0.05	0.06	0.07
	Total loan/Total assets	0.03	0.03	0.04	0.04	0.06
SIZE	Total Investment /Total assets	0.09	0.12	0.11	0.11	0.11
DEPOSIT	Deposit/assets	0.18	0.21	0.20	0.20	0.19
LIQUIDITY	Loan/deposits	0.15	0.15	0.19	0.22	0.33
	Return on assets	1.2	1.3	1.3	1.3	1.3
PERFORMANCE	Return on equity	11	12	13	13	14
CREDIT RISK	Total NPL / Total loans	1.15	1.12	1.27	1.24	2.01

10) BANK ISLAMI

	Ratios	2010	2011	2012	2013	2014
CAPITAL ADEQUACY	Total capital/total risk weighted assets	19.5	17.18	15.13	15.37	16.7
LOAN	Total loan/Total assets	0.11	0.08	0.13	0.09	0.19
EXPENSES	Total expense/total assets	0.04	0.04	0.03	0.03	0.03
	Financial assets/Total assets	0.43	0.42	0.37	0.44	0.40
SIZE	Total loan/Total assets	0.11	0.08	0.13	0.09	0.19

	Total Investment /total assets	0.30	0.36	0.39	0.36	0.30
DEPOSIT	Deposit/Assets	0.85	0.86	0.86	0.87	0.89
LIQUIDITY	Loan/Deposits	0.13	0.10	0.14	0.10	0.21
	Return on assets	0.12	0.79	0.46	0.23	0.33
PERFORMANCE	Return on equity	0.99	8.28	5.78	3.38	5.35
CREDIT RISK	Total NPL / Total loans	2. 15	1.48	2.20	1.84	2.45

Years	2010	2011	2012	2013	2014
FDI	1.63%	0.81%	1.59%	1.65%	2%

(Pakistan board of investment, 2014)

Years	2010	2011	2012	2013	2014
GDP	2.4%	3.67%	3.7%	4.1%	4.2%

(Economy survey of Pakistan, 2014)

Years	2010	2011	2012	2013	2014
Inflation	13.88%	11.92%	12.00%	12.2%	12.00%

(Economy survey of Pakistan, 2014)

Performance (ROA),(ROE) $= \beta_{o} + \beta_1 \times Size + \beta_2 \times Capital + \beta_3 \times Loan + \beta_4 \times Deposit + \beta_5 \times Credit\ Risk + \beta_6 \times Liquidity + \beta_7 \times Expenses + \varepsilon$

This equation shows the relationship between the dependent variable performance as measured by the Return on Asset (ROA) & Return on equity (ROE),

i) Model Specification

In this research study multiple regressions used to determine for the influence of each variables on dependent variable. The regression equation is:

$Y = \beta_{0} + \beta X$

Y = dependent variables which ROA, ROE

β_0 = constant

X = independent variable

β = value of independent variable

The model is expressed by an equation as:

the independent variables includes the (size, capital, loan, deposits, expenses, credit risk and liquidity).

Profitability (ROA), (ROE) $= \beta_{o} + \beta_8 \times Inflation + \beta_9 \times GDP + \beta_{10} \times FDI\ \varepsilon$

This equation shows the relationship between the dependent variable performance as measured by the Return on Asset (ROA) and Return on Equity (ROE) the independent variables includes the (Inflation, GDP and FDI).

IV. DATA ANALYSIS

a) Correlation Analysis

Pearson correlation is use to measure the strength of relationship of dependent variable and independent variables. It shows the linear relationship between two sets of data. We applied correlation to all

the factors affecting banks performance in Pakistan. We discussed correlation results of each factor separately. Summarized results of correlation are shown in the tables explained under each hypothesis explained separately. *Correlation is significant at the 0.05 level (2-tailed).

i. First Hypothesis

This hypothesis postulates that size of the bank will have an effect on the overall performance of banks in Pakistan. The proposed hypothesis is:

H1: There is a direct relationship between SIZE and bank's Performance.

Correlation Results

Table No.1

Return on Asset	Pearson Correlation	1	.318
	Sig. (2-tailed)		.025
	N	50	50
Return on Equity	Pearson Correlation	.304	1
	Sig. (2-tailed)	.020	
	N	50	50

The correlation analysis shows that SIZE have a positive relationship with r =.318 for ROA and r=.318 for ROE. It depicts that the larger banks are better placed

than smaller banks in harnessing economies of scale in transactions to the plain effect that they will tend to enjoy a higher level of profits, means that as size of bank

increase, performance also increase. The result is significant at 0.05. In this p<.05 which means that bank size and performance has significant relation. The result is consistent to previous findings of Molyneux and Thornton (2008), Bourki (2006) and Gul et al. (2011). So *Hypothesis no.1* (There is a direct relationship between SIZE and bank's performance) is accepted.

ii. Second Hypothesis

This hypothesis assumes that capital/equity investment of the bank also has relationship with performance of banks in Pakistan. The proposed hypothesis is:

H2: There is a direct relationship between CAPITAL and bank's performance.

Correlation Results

Table No. 2

Return on Asset	Pearson Correlation	1	.521
	Sig. (2-tailed)		.026
	N	50	50
Return on Equity	Pearson Correlation	.643	1
	Sig. (2-tailed)	.002	
	N	50	50

The correlation analysis shows that CAPITAL have a positive relationship with r =.521 for ROA and r=.643 for ROE .As p<0.05 so, the result is highly significant for this hypothesis. The result is consistent to previous findings of Hassan and Bashir (2003), Brooke (2008) and Rattray (2012). So *Hypothesis no.2* (There is a direct relationship between CAPITAL and bank's performance) is accepted.

iii. Third Hypothesis

This hypothesis suggests that advancement of loan have impact on performance of banks in Pakistan. The projected hypothesis is:

H3: There is a direct relationship between LOAN and bank's performance.

Correlation Results

Table No. 3

Return on Asset	Pearson Correlation	1	.289
	Sig. (2-tailed)		.042
	N	50	50
Return on Equity	Pearson Correlation	.459	1
	Sig. (2-tailed)	.008	
	N	50	50

The correlation analysis shows that LOAN have a positive relationship with r =.289 for ROA and r=.459 for ROE .As p<0.05 so, the result is highly significant for this hypothesis. The result is consistent to previous findings of Suffian (2009), Barros et al., (2008) and Zeitun (2012). In this p<.05 which means that loan and performance has significant relationship. So *Hypothesis no.3* (There is a direct relationship between LOAN and bank's performance) is accepted.

iv. Fourth Hypothesis

This hypothesis suggests that deposits of bank are linked with its performance. The expected hypothesis is:

H4: There is a direct relationship between DEPOSIT and bank's performances.

Correlation Results

Table No. 4

Return on Asset	Pearson Correlation	1	.387
	Sig. (2-tailed)		.024
	N	50	50
Return on Equity	Pearson Correlation	0.187	1
	Sig. (2-tailed)	.002	
	N	50	50

The correlation analysis shows that DEPOSIT have a positive relationship with r =.387 for ROA and r=.187 for ROE. As p<0.05 so, the result is highly significant for this hypothesis. The result is consistent to previous findings of Grigorian and Manole (2002), Bologna (2013). In this p<.05 which means that deposit and performance has significant relationship. So *Hypothesis no.4* (There is a direct relationship between Deposit and bank's performance) is accepted.

v. *Fifth Hypothesis*

This hypothesis recommends that credit risk is connected with performance of bank. The anticipated hypothesis is:

H5: There is an indirect relationship between CREDIT RISK and bank's performance.

Correlation Results

Table No.5

Return on Asset	Pearson Correlation	1	-.478
	Sig. (2-tailed)		.039
	N	50	50
Return on Equity	Pearson Correlation	-.318	1
	Sig. (2-tailed)	.004	
	N	50	50

The correlation analysis shows that CREDIT RISK have a negative relationship with r =-.478 for ROA and r=-.318 for ROE .As p<0.05 so, the result is highly significant for this hypothesis. The result is consistent to previous findings of Gracia et al., (2009), Sasrosuwito (2011) and Said et al., (2009). So *Hypothesis no.5* (There is an indirect relationship between CREDIT RISK and bank's performance) is accepted.

vi. *Sixth Hypothesis*

This hypothesis advises that liquidity is associated with performance of bank. The predictable hypothesis is:

H6: There is an indirect relationship between LIQUIDITY and bank's performance.

Correlation Results

Table No. 6

Return on Asset	Pearson Correlation	1	.0326
	Sig. (2-tailed)		.765*
	N	50	50
Return on Equity	Pearson Correlation	.0431	1
	Sig. (2-tailed)	.524*	
	N	50	50

The correlation analysis shows that Liquidity have a weak positive relationship with r =.0326 for ROA and r=.0431 for ROE. As p>0.05 so, the result is highly insignificant for this hypothesis. The result is consistent to previous findings of Levine (2000), Dinister (2012) and Anis (2013) concluded that banks excessive liquidity can diminish profitability because liquid assets have little capacity to generate interest so the liquid assets held by banks should be adequate not the excessive. Performance trade off the banks should strive for optimal liquidity level means the banks should not have lack or excess of liquidity. So *Hypothesis no.06* (There is no indirect relationship between LIQUIDITY and bank's performance) is accepted.

vii. *Seventh Hypothesis*

This hypothesis proposes that expenses of bank are associated with its performance. The expected hypothesis is:

H7: There is an indirect relationship between EXPENSES and bank's performances.

Correlation Results

Table No. 7

Return on Asset	Pearson Correlation	1	-.478
	Sig. (2-tailed)		.036
	N	50	50
Return on Equity	Pearson Correlation	-.285	1
	Sig. (2-tailed)	.026	
	N	50	50

The correlation analysis shows that EXPENSES have a negative relationship with r =-.478 for ROA and r=-.285 for ROE .As p<0.05 so, the result is highly significant for this hypothesis. The result is consistent to previous findings of Berger and Humphrey (2003), Kosmidou (2008) and Campbell (2007). So *Hypothesis no. 7* (There is an indirect relationship between EXPENSES and bank's performance) is accepted.

viii. *Eight Hypotheses*

This hypothesis proposes that Inflation rate is negatively associated with bank performance. The expected hypothesis is:

H8: There is an indirect relationship between INFLATION and bank's performance.

Correlation Results

Table No. 8

Return on Asset	Pearson Correlation	1	-.330
	Sig. (2-tailed)		.036
	N	50	50
Return on Equity	Pearson Correlation	-.237	1
	Sig. (2-tailed)	.040	
	N	50	50

The correlation analysis shows that INFLATION have a negative relationship with r =-.330 for ROA and r=-.237 for ROE .As p<0.05 so, the result is highly significant for this hypothesis. The result is consistent to previous findings of Staikouras and Wood (2003), Anthanasoglou et al., (2005) and Haskell (2012). So *Hypothesis no.8* (There is an indirect relationship between INFLATION and bank's performance) is accepted.

ix. *Ninth Hypothesis*

This hypothesis proposes that Gross domestic product has positive significant relationship with performance. The expected hypothesis is:

H9: There is direct relationship between GDP and bank's performance.

Correlation Results

Table No. 9

Return on asset	Pearson Correlation	1	.220
	Sig. (2-tailed)		.006
	N	50	50
Return on Equity	Pearson Correlation	.001	1
	Sig. (2-tailed)		.056*
	N	50	50

The correlation analysis shows that GDP have positive relationship with r =.220 for ROA and r=.001 for ROE .As p> 0.05 so, the result is not significant for this hypothesis. The result is consistent to previous findings of Bikker and Hu (2002) and Annon (2013). So *Hypothesis no. 09* (There is no direct relationship between GDP and bank's performance) is accepted.

x. *Tenth Hypothesis*

This hypothesis proposes that Foreign Direct Investment has positive significant relationship with performance. The expected hypothesis is:

H10: There is direct relationship between FDI and bank's performance.

Correlation Results

Table No.10

Return on Asset	Pearson Correlation	1	.245
	Sig. (2-tailed)		.033
	N	50	50
Return on Equity	Pearson Correlation	.189	1
	Sig. (2-tailed)		.029
	N	50	50

The correlation analysis shows that FDI have positive relationship with r =.245 for ROA and r=.189 for ROE .As p< 0.05 so, the result is significant for this hypothesis. The result is consistent to previous findings of Hamdani (2011) and Jose Brambila (2009). So *Hypothesis no.10* (There is direct relationship between FDI and bank's performance) is accepted.

b) *Regression Analysis*

In order to investigate the relationship between several independent or predictor variables and a dependent or criterion variable, multiple regression technique is applied with confidence since both dependent and independent variable(s) are quantitative.

Regression results

Impacts of bank specific factors on bank's performance (ROA)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.432[a]	.510	.393	.167

Model summary shows the overall model fitness. R value shows that banks performance and bank specific factors (size, capital, loan, deposits, expenses, credit risk and liquidity) are correlated. For bank specific variables value of R is .432 which shows that there is correlation between performance and bank specific factors. R Square value is .51 which shows that

51% variation in performance is explained by the bank specific variable. 49 % variation in dependent variable is unexplained. The adjusted R square value is 0.393 this value is adjusted for extraneous predictor used in the model. Adjusted R square value shows that 39.3 % variation in dependent variable is explained by independent variable.

	Coefficients					
	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
BANK SPECIFIC VARRIABLE	(Constant)	1.280	.592		2.163	.032
	SIZE	.177	.102	.104	.733	.025
	CAPITAL	.063	.100	.312	1.628	.026
	LOAN	.230	.024	.209	2.13	.048
	DEPOSIT	.091	.126	.123	.989	.022
	CREDIT RISK	.088	.242	-.172	2.09	.004
	LIQUIDITY	.012	.045	.031	.263	.051*
	EXPENSES	.248	.082	-.346	1.482	.046
F value =10.142 p= 0.05						

The values of unstandardized coefficients beta values are the regression equation values which help to predict dependent variable performance from independent variables (size, capital, loan, deposits, expenses, credit risk and liquidity).

$$Performance\ (ROA) = \beta_{o} + \beta_1 \times Size + \beta_2 \times Capital + \beta_3 \times Loan + \beta_4 \times Deposit + \beta_5 \times Credit\ Risk + \beta_6 \times Liquidity + \beta_7 \times Expenses + \varepsilon$$

Performance (ROA) $=1.280_+ .104\times$Size $+ .312\times$Capital $+ .209\times$Loan$+ .123\times$Deposit $+-.172\times$Credit Risk$+$
$.031\times$Liquidity $+ -.346\times$Expenses $+ \varepsilon$

The above equation shows that value of intercept β_o is 1.280, this value represents that if the values of all predictors are zero than value of profitability would be 1.280. The value of β_1o.104 which reveals that if size variable changes by 1%, there would be 10.4% change in ROA, by holding the other predictors constant. So hypothesis is accepted.

The value of β_2o.312 this shows that if capital changes by 1%, there would be 31.2% change in ROA, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROA and capital .So hypothesis is accepted.

The value of β_3o.209 which reveals that if loan changes by 1%, there would be 20.9% change in ROA, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROA and loan .So hypothesis is accepted.

The value of β_4o.123 this shows that if deposit changes by 1%, there would be 12.3% positive changes

in ROA, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROA and deposit. So hypothesis is accepted.

The value of β_5-0.172 which reveals that if credit risk changes by 1% there would be -17.2% changes in ROA, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROA and credit risk. So hypothesis is accepted.

The value of β_6 o.031 this shows that if liquidity changes by 1%, there would be 3% change in ROA, by holding the other predictors constant. In this $p>0.05$ so there is insignificant relationship between ROA and liquidity. So null hypothesis is accepted.

The value of β_7-o.346 which reveals that if expenses changes by 1%, there would be -34.9% change in ROA, by holding the other predictors constant In this $p<0.05$ so there is significant relationship between ROA and expenses. So hypothesis is accepted.

Regression results

Impacts of Macroeconomic factors on bank's performance (ROA).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.372[a]	.241	.099	.446

Model summary shows the overall model fitness. R value shows that banks performance (ROA) and macroeconomic variables (Inflation, GDP and FDI) are correlated. For bank specific variables value of R is .372 which shows that there is correlation between performance and macroeconomic factors. R Square value is .241which shows that 24.1% variation in ROA is

explained by the macroeconomic variable. 75.9% variation in dependent variable is unexplained. The adjusted R square value is 0.089 this value is adjusted for extraneous predictor used in the model. Adjusted R square value shows that 9.9% variation in dependent variable is explained by independent variable.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
MACROECONOMIC VARRIABLES	(Constant)	1.088	.342		3.163	.000
	INFLATION	.157	.200	-.116	1.876	.0322
	GDP	.098	.160	.066	2.628	.054*
	FDI	.430	.039	.137	1.98	.018
F value = 9.42 p=0.05						

The values of unstandardized coefficients, beta values are the regression equation values which help to predict dependent variable performance from independent variables (Inflation, GDP and FDI).

Profitability (ROA) $=\beta_{o+} \beta_8\times$Inflation $+ \beta_9\times$GDP $+ \beta_{10}\times$FDI$+ \varepsilon$

Profitability (ROA) $=1.088_+ -.116\times$Inflation $+ .066\times$GDP $+ .137\times$FDI$+ \varepsilon$

The above equation shows that value of intercept β_o =1.008, this value represents that if the values of all predictors are zero than value of performance would be 1.008. The value of β_1 -.116 which reveals that if inflation variable changes by 1%, there would be -11.6 % change in ROA, by holding the other predictors constant. In this $p<0.05$ so there is significant negative relationship between ROA and inflation. So hypothesis is accepted.

The value of β_2 0.066 this shows that if GDP changes by 1%, there would be 6.6% change in ROA, by holding the other predictors constant. In this $p<0.05$ so there is insignificant relationship between ROA and GDP. So null hypothesis is accepted.

The value of β_3 0.137 this shows that if FDI changes by 1%, there would be 13.7% change in ROA, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROA and FDI. So hypothesis is accepted.

Regression results

Impacts of bank specific factors on bank's performance (ROE).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.237[a]	.320	.203	.127

Model summary shows the overall model fitness. R value shows that banks Performance and bank specific factors (size, capital, loan, deposits, expenses, credit risk and liquidity) are correlated. For bank specific variables value of R is .237 which shows that there is correlation between performance and bank specific factors. R Square value is .320 which shows that 32% variation in performance (ROE) is explained by the bank specific variable.68 % variation in dependent variable is unexplained. The adjusted R square value is 0.203 this value is adjusted for extraneous predictor used in the model. Adjusted R square value shows that 20.3% variation in dependent variable is explained by independent variable.

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
SPECIFIC VARRIABLE	(Constant)	1.423	.442		1.453	.031
	SIZE	.108	.122	.097	.833	.045
	CAPITAL	.045	.106	.302	1.568	.036
	LOAN	.367	.033	.201	2.23	.044
	DEPOSIT	.065	.112	.113	.787	.029
	CREDIT RISK	.048	.032	-.132	2.22	.049
	LIQUIDITY	.023	.042	.045	.243	.059*
	EXPENSES	.237	.067	-.226	1.562	.0346
F value =09.121 p= 0.05						

The values of unstandardized coefficients beta values are the regression equation values which help to predict dependent variable performance from independent variables (size, capital, loan, deposits, expenses, credit risk and liquidity).

$$Performance\ (ROE) = \beta_o + \beta_1 \times Size + \beta_2 \times Capital + \beta_3 \times Loan + \beta_4 \times Deposit + \beta_5 \times Credit\ Risk + \beta_6 \times Liquidity + \beta_7 \times Expenses + \varepsilon$$

$$Performance\ (ROA) = 1.423 + .097 \times Size + .302 \times Capital + .201 \times Loan + .113 \times Deposit + -.132 \times Credit\ Risk + .045 \times Liquidity + -.226 \times Expenses + \varepsilon$$

The above equation shows that value of intercept β_o is 1.423, this value represents that if the values of all predictors are zero than value of performance (ROE) would be 1.423. The value of β_1 0.097 which reveals that if size variable changes by 1%, there would be 9.7% change in ROE, by holding the other predictors constant. So hypothesis is accepted.

The value of β_2 0.302 this shows that if capital changes by 1%, there would be 30.2% change in ROE, by holding the other predictors constant. In this $p<0.05$

so there is significant relationship between ROE and capital. So hypothesis is accepted.

The value of β_3 o.201 which reveals that if loan changes by 1%, there would be 20.1% change in ROE, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROE and loan .So hypothesis is accepted.

The value of β_4 o.113 this shows that if deposit changes by 1%, there would be 11.3% positive changes in ROE, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROE and deposit. So hypothesis is accepted.

The value of β_5-0.132 which reveals that if credit risk changes by 1% there would be -13.2% changes in

ROE, by holding the other predictors constant. In this $p<0.05$ so there is significant relationship between ROE and credit risk. So hypothesis is accepted.

The value of β_6 o.045 this shows that if liquidity changes by 1%, there would be 4.5% change in ROE, by holding the other predictors constant. In this $p>0.05$ so there is insignificant relationship between ROE and liquidity. So null hypothesis is accepted.

The value of β_7.o.226 which reveals that if expenses changes by 1%, there would be -22.6% change in ROE, by holding the other predictors constant In this $p<0.05$ so there is significant relationship between ROE and expenses. So hypothesis is accepted.

Regression results

Impacts of Macroeconomic factors on bank's performance (ROE)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.202[a]	.143	.099	.344

Model summary shows the overall model fitness. R value shows that banks performance (ROE) and macroeconomic variables (Inflation, GDP and FDI) are correlated. For bank specific variables value of R is .202 which shows that there is correlation between ROE and macroeconomic factors. R Square value is .143 which shows that 14.3% variation in ROE is explained by

the macroeconomic variable. 85.7% variation in dependent variable is unexplained. The adjusted R square value is 0.099 this value is adjusted for extraneous predictor used in the model. Adjusted R square value shows that 9.9 % variation in dependent variable is explained by independent variable.

Coefficients

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
MACROECONOMIC VARRIABLES	(Constant)	1.068	.144		2.134	.000
	INFLATION	.133	.220	-.066	2.11	.032
	GDP	.012	.310	.033	0.628	.051*
	FDI	.240	.039	.169	1.544	.029
F value = 7.12 p=0.05						

The values of unstandardized coefficients, beta values are the regression equation values which help to predict dependent variable performance from independent variables (Inflation, GDP and FDI)·

$$Performance\ (ROE) = \beta_{o\,+}\,\beta_8 \times Inflation + \beta_9 \times GDP + \beta_{10} \times FDI + \varepsilon$$

$$Performance\ (ROE) = 1.068_{+}\ -.006 \times Inflation + .033 \times GDP + .169 \times FDI + \varepsilon$$

The above equation shows that value of intercept β_o is 1.068, this value represents that if the values of all predictors are zero than value of performance would be 1.068. The value of β_1-.006 which reveals that if inflation variable changes by 1%, there would be -6 % change in ROE, by holding the other predictors constant. In this $p<0.05$ so there is significant

negative relationship between ROE and inflation .So hypothesis is accepted.

The value of β_2 0.033 this shows that if GDP changes by 1%, there would be 3.3% change in ROE, by holding the other predictors constant. In this $p>0.05$ so there is insignificant relationship between ROE and GDP. So null hypothesis is accepted.

The value of β_3 0.169 this shows that if FDI changes by 1%, there would be 16.9% change in ROE, by holding the other predictors constant. In this $p<0.05$

so there is significant relationship between ROE and FDI. So hypothesis is accepted.

c) *Summarized Results*

Hypothesis	Accepted/Rejected	Related Studies
H1. Size	Accepted	(Bourke ,2006), (Gull et al.,2011)
H2. Capital	Accepted	(Rattray, 2012),(Brooke ,2008)
H3. Loan	Accepted	(Zeitun, 2012),(Suffian ,2009)
H4. Deposits	Accepted	(Neceur and Goaied,2005),(Bologna, 2013)
H5. Credit risk	Accepted	(Gracia et al., 2009),(Sasrosuwito,2011)
H06.Liquidity	Accepted	(Levine,2000),(Anis ,2013)
H7. Expenses	Accepted	(Berger and Humphrey ,2003),(Kosmidou,2008)
H08.GDP	Accepted	(Annon,2013),(Mancka,2011)
H9 .FDI	Accepted	(Annon,2013),(Mancka,2011
H10.Inflation	Accepted	(Goldberg ,2004),(Haskell,2012)

V. Conclusion, Recommendations, Limitations and Future Implications

a) *Conclusion*

This study investigates the impact of bank-specific factors and macroeconomic indicators on bank's performance in the Pakistan's banks for the 2010-2014 periods. Individual bank characteristics (internal and external factors) are considered as determinants of bank performance in Pakistan. Banks with more equity capital, Size, Loans, Deposits, Expenses, Liquidity, Credit risk and macro factors i.e., economic growth, Foreign direct investment and Inflation are perceived to have more safety and such an advantage can be translated into higher performance. For this purpose, two hypotheses have been developed for analyzing bank's performance i.e., Hypothesis1 states that bank specific factors have significant relationship with performance. Whereas, hypothesis 2 states that microeconomic indicator have significant relationship with performance. The result shows that both hypotheses have accepted and have a significant impact on performance of the Bank's in Pakistan. It is conform from outcomes of research study that credit risk, expenses and inflation have indirect link with the bank performance, whereas size of bank, capital, deposit and loan have a significant positive relation with bank's performance and liquidity have insignificant positive relation with Performance of bank. So the banks should hold the optimal liquidity because the excessive liquidity and illiquidity are like financial diseases which negatively affect the banks performance (Li, 2011). To overcome the dilemma banks should strive for optimal liquidity level, means that banks should not have lack or excess of liquidity (Anis, 2013) consistent with results of (Dinster, 2012). The amount of equity capital directly related with performance because bank have more safety against uncertain shocks. In additional, our outcomes also revealed that high ratio of loan-to-total assets could also give indication of higher level of

profits. Thus management should wisely focus on credit and liquidity dealings; these should be arranged in such a way that it would enhance banks performance. Banks also ensure the sensible utilization of deposits; it also encouraged the investment of equity capital and advanced more loans for maximization of profit.

The result of GDP and liquidity shows that they have an insignificant positive relation with bank's performance which is measure in term of ROA and ROE. The country is facing many economical and financial problems like hyper inflation, less FDI inflow and fluctuation in GDP growth, the reasons behind these problems are war of terror, poor management by government, government is indulged in unnecessary debate which is not linked directly with the welfare of general public of Pakistan and is neither helpful for the revival of the economy. These all problems are linked with the performance of all financial institutions and other organizations working in Pakistan. The positive relation between FDI inflows and performance supported by our literature review because as the foreign direct investment from a particular country increases the economic condition of a particular country gets improved, more employment opportunities increases and people have more money to repay the loans this will decrease the credit risk of a particular country and as from the study of Li(2013) it is obvious that ratio of countries investing in Pakistan is increasing resulting in increase in FDI inflow so the credit risk in Pakistan's bank will decrease and performance of banks increases. The inverse relation between inflation and performance is observed This result is also obvious from our literature review in which a study by Haskell(2012) tells us that increase in inflation is not good for the lenders i.e. banks etc because they lend money at low interest rates which is beneficial from borrowing point of view but the credit risk for the lenders increases and from borrower's point of view when the inflation is prevailing repayment of the loans from money is also not significant.

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b) Recommendations & Suggestion

Stake holders will be able to use the facts and figures from the results of this study and locate that at which point they should withdraw their investment. By identifying the factors which affect Return on asset, new investors can critically analyzed annual financial reports of bank and will make debt or capital financing decisions in better way.

Technological innovations also play very important role in the profitability of bank and provide evidences that banks which have more advanced technologies is relatively more profitable than its competitors. The management of banking firm should encourage those factors which help to increase profit and try to overcome their liabilities.

The financial institution should maintain optimal level of Liquidity in order to avoid any issues related to liquidity. Banks can also go for factoring whether Recourse basis or Non Recourse basis in order to improve the cash management and enhancing liquidity.

The non-performing loans should be given important considerations by keen personnel's because these affect the overall performance and position of Banks. On the basis of the loan portfolios of the banks, banks should spot their customers having permanent or timely problems regarding non repayment of loans by establishing the policies to support or enhance the chances of repayment of loans. In order to recover maximum loans banks must follow the legal procedures for the implementation of guarantees and collateral.

Government of Pakistan should pay proper attention to increase the GDP growth and FDI inflow in Pakistan and should strive harder to lower down the inflation, unemployment and financial crisis in Pakistan. If the economic, social and political conditions of Pakistan are improved it would certainly have positive impact on lending activity of banks as it is obvious from our analysis and literature review. And banks should perform stress test analysis for this reason.

Banks should also forecasts the economic activities and changing trends of the economic indicators and on the basis of these indicators they should manage the quality of their loan portfolios.

c) Limitations

One limitation of this study is that it is included five Conventional and five Islamic banks of Pakistan .The sample size of present research is 10 banks which is quite small keeping in view the scope of determinants of banking sector performance in Pakistan due to lack of time. If data is collected from all the 36 commercial banks then the scenario would be different.

Another limitation of this study is that data is totally financial and secondary in nature. So outcomes of research study drawn from the data of five years 2010-2014 period only due to availability of the data and variability of data.

Other problem is that less work by Pakistani scholars on Pakistan banking sector performance, limited a widespread analysis of the literature. Moreover, only profitability is used as the measure of performance. Industry specific factors contributing to performance are not covered in this paper.

d) Future Implications

For future research, this study can be extended to cover longer time periods. Unbalanced panel data can be used to incorporate the banks which are recently established. Quarterly data can be analyzed to reveal more precise results. Other data analysis techniques can be applied to verify the relationship.

Other internal factors like Bank charges, reserve ratios can also be included in the research for broadening its scope. Companies from other Sectors can also be taken into consideration for clear understanding of the determinants of performance. Industry specific factors with firm specific factors can also be taken for further study of this research. We can make our study more acceptable by including extra features in our analyses.

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Cost-Benefit Analysis of Confirming and Factoring Financing Portfolio

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Abstract- We analyze the single cycle and multiple cycles of confirming storage and factoring financing portfolio and introduce their business process. Then from the perspective of banks and medium and small companies, we construct the model of cost-benefit analysis to figure out the influential factors of the cost and benefit of both parties. Next we compare the ROE of both parties in the single supply chain financial product with that in the portfolio based on the single cycle of the portfolio. Finally we apply the dynamic game theory to produce the equilibrium point to assist decision making. This study shows that the net profits of both the banks and money-borrowing companies are better in the confirming storage and factoring financing portfolio comparing to single factoring financing, which indicates a Pareto improvement. The ROE of money-borrowing companies increase as the ratio of first deposit increases.

COSTBENEFITANALYSISOFCONFIRMINGANDFACTORINGFINANCINGPORTFOLIO

Strictly as per the compliance and regulations of:

Cost-Benefit Analysis of Confirming and Factoring Financing Portfolio

Li Zhou [α], Hong Zhang [σ] & Yifan Yang [ρ]

Abstract- We analyze the single cycle and multiple cycles of confirming storage and factoring financing portfolio and introduce their business process. Then from the perspective of banks and medium and small companies, we construct the model of cost-benefit analysis to figure out the influential factors of the cost and benefit of both parties. Next we compare the ROE of both parties in the single supply chain financial product with that in the portfolio based on the single cycle of the portfolio. Finally we apply the dynamic game theory to produce the equilibrium point to assist decision making. This study shows that the net profits of both the banks and money-borrowing companies are better in the confirming storage and factoring financing portfolio comparing to single factoring financing, which indicates a Pareto improvement. The ROE of money-borrowing companies increase as the ratio of first deposit increases.

Keywords: cost-benefit analysis, confirming storage and factoring financing portfolio.

I. Introduction

a) Combined Product Definition

Bank of the borrower to provide advance payment (Bao Duicang), for the upper reaches of the core enterprise procurement of goods, The borrower may sell the goods to the large downstream buyers designated by the bank. Take the downstream buyers account receivable to the bank for factoring financing. Use the money to fill the confirming of factoring financing storehouse financing the acceptance of exposure. After receiving the loan from the enterprise, the bank will deduct the principal and interest of factoring financing. The balance will be returned to the borrower.

b) Analysis of the Product's Demand Motivation

This kind of product mostly suits the needs of large trade companies, both the upstream and downstream customers of which take up strong positions. Take the demand analysis of Jidong cement dealer as an example. Due to the fact that the dealer needs to send the loans to the accounts of cement manufacturer, the needs of advance payment financing exist, and the confirming storage financing business can pay the loans in a lump sum directly to upstream core enterprises in the form of banker's acceptance bill. The downstream dealer acquires low unit purchase price because of the relative large purchase volume. Thus the confirming storage financing is well liked be the dealers and the demand flourish. After picking up goods with the first deposit, the dealer sends goods to the downstream estate agent, obtaining the accounts payable of downstream core enterprises. Apparently the money-borrowing companies have the needs of using factoring financing to pay back the remaining exposure of confirming storage financing. When the banker's acceptance bill is paid back, the money borrowing company delivers all the goods to downstream core enterprises, it has needs for second time factoring financing to release the liquidity pressure and to afford advance payment.

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The exposure of money borrowers (see diagram 1)

Purchase from advance payment

Put in storage   Cement sales

| Deliver goods due to the amount of storage filling | Sale goods due to the amount of storage | Collection period of accounts receivables |

Confirming storage financing

Pay back the confirming storage financing after factoring financing

Pay back the factoring financing after receiving payments for goods
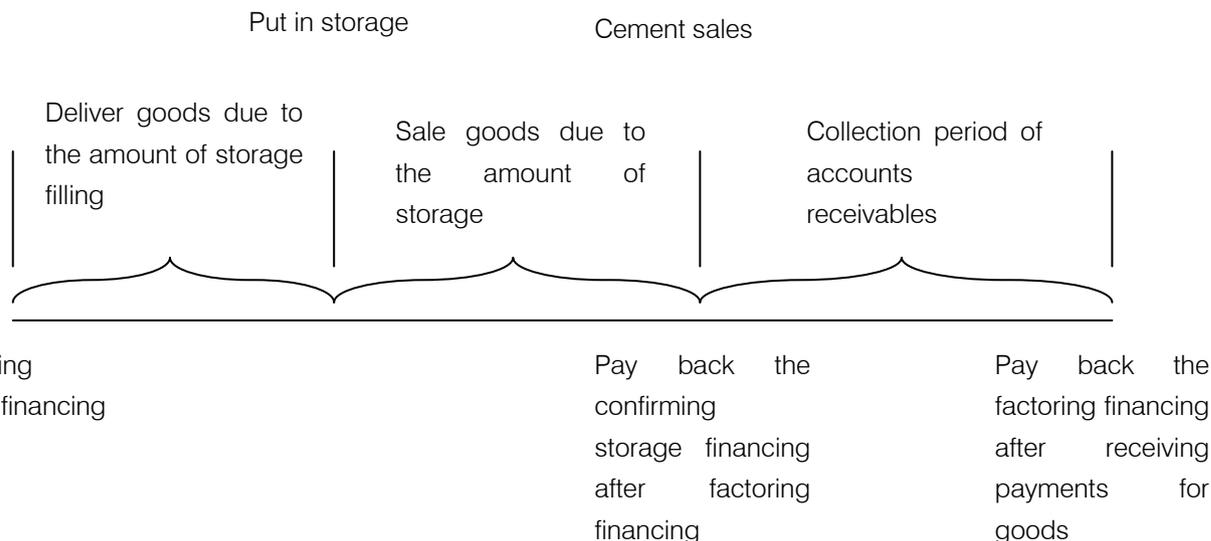
Diagram 1 Cash exposure of Jidong cement dealer

c) Product Advantage

The confirming storage and factoring financing portfolio is a typical supply-chain financial portfolio. The bank provide financing service for all the business on the supply chain, ensuring financing of money-borrowing companies on every step on the supply chain such as purchase, transportation and sales, in the meantime they enlarge their user groups. In the supply chain system, as the company's commodity form keeps moving forward from future's drawn right to material form then to accounts receivables, the risk of banks are accordingly released. The rate of return also rises because of the cross selling of financial products. Money-borrowing companies are responsible only for picking orders from downstream enterprises and purchasing from upstream enterprises. The demand for financing is outsourced to banks, thus realizing a win-win situation for bank and the company.

d) Applicable Users

As for dealers, if both the upstream and the downstream enterprises are core companies, their positions in the supply chain is relatively low, thus the confirming storage and factoring financing portfolio suits the situation when external financing is needed to raise the turnover rate of products. These dealers usually belong to large trade companies, with strong suppliers and strong downstream companies, so they need to pay in advance for purchases while sell on credit. In reality companies in the following supply chains most recently use this kind of product: cement manufacturing plant+cement dealer+real estate enterprise; coal manufacturing plant+coal dealer+power generation

enterprises; rubber manufacturers+tyre dealers+car manufacturers. The objective of this portfolio includes but is not limited to the supply chains mentioned above, but it needs to suit the characteristics of these supply chains, which is core company+dealer+core company, plain speaking the strong+the weak+the strong.

II. Analysis on a Single Cycle of Confirming and Factoring Financing Portfolio

a) Introduction of the Single Cycle Business Process

Borrowers are provided with financing from banks to purchase goods from core upstream enterprises, so they can sell products to core downstream enterprises. The accounts receivables factoring financing from downstream companies can serve as deposit for goods. Before the banker's acceptance bill expires, the exposure of confirming storage financing must be fulfilled. Finally core downstream enterprises pay back their loan to factoring accounts specific to banks, thus end the portfolio financing process.

Single cycle business process flowchart of confirming and factoring financing portfolio is depicted in diagram (1-1):
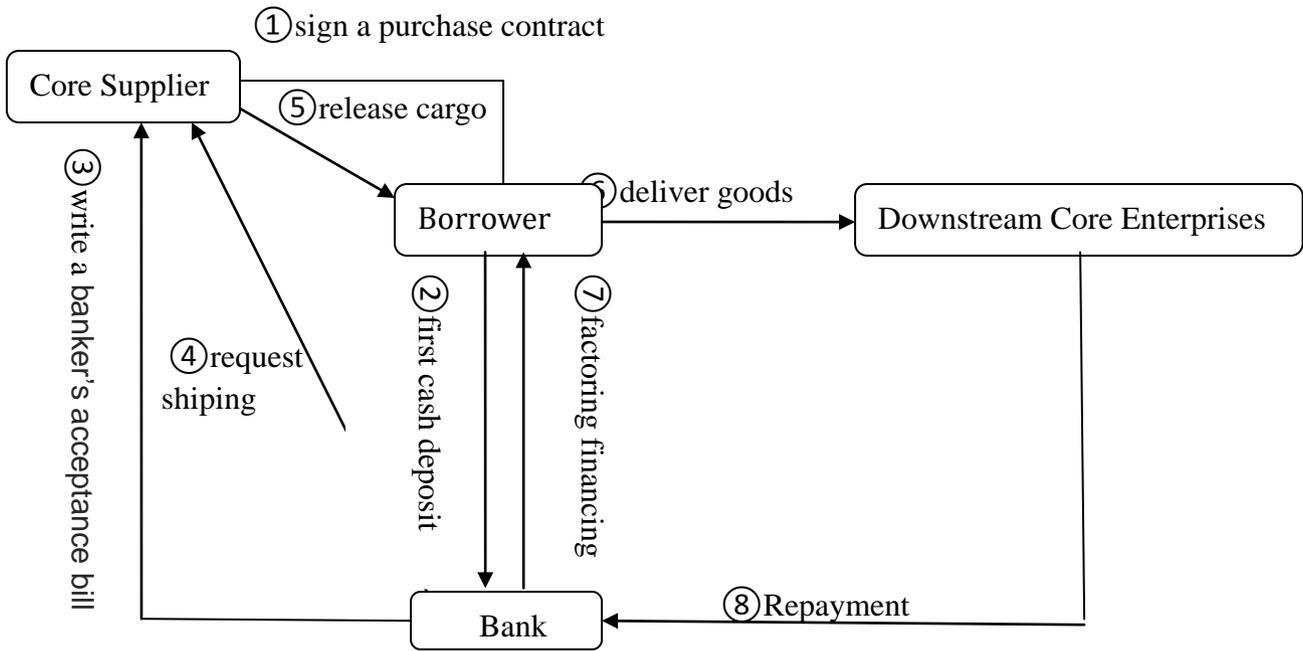
1-1 Single cycle business process diagram of confirming and factoring financing portfolio

The operating mechanism can be depicted as follows: the core upstream suppliers sign purchase contracts with borrowers, while the banks sign confirming storage contracts with both of them as third party. The borrowers store the first deposit in bank as required and agree to provide their future rights of taking delivery of cargo as pledge. The banks issue the bank's acceptance bill and pay directly to the core upstream suppliers. After receiving the bank's acceptance bill, they organize the source of the goods and send out the goods according to bank's instruction. The borrowers, once receiving goods, deliver them instantly to core downstream buyers, who issue proof of receipt. The borrowers provide bank with invoices, proof of receipt and so on from upstream buyers, so that bank can handle factoring financing for them, which is to fulfill the exposure of returning confirmer wharf finance. Finally, the downstream buyers pay back loan into bank's special factoring account, which the bank later pay back to borrowers after tax. Thus the single business process of confirming and factoring financing portfolio is completed.

The combination of confirming and factoring financing has wide application in practice, as its operational process is relatively fixed and its business process specific and clear. Both supply and requisitioning parties should follow the regulations strictly during the process.

b) *Model Assumptions and the Meanings of Parameters*

 i. *Model assumptions*

- The release cycle of upstream enterprises is T_0.

- The core downstream enterprises require borrowers to provide goods before a specific time point and the accounting period is t.

- Confirming storage financing uses banker's acceptance bill, while factoring financing uses current loans.

- Borrowers file applications for factoring financing to banks with income generated by the first deposit before the due date of confirming storage financing.

- Banks should pay deposit interests to companies for the first deposit.

- To maximize their profits, borrowers use all their accounts receivable to apply for factoring financing.

- Risks are temporarily neglected (including market risks and credit risks).

 ii. *Definition of parameters*

Parameters and their meanings are stated as table 1-1.

Table 1-1 : Parameters and their meanings

Parameters	Meanings of Parameters
C	The amount of money of banker's acceptance bill
δ	Margin ratio
β	Ratio of commission charges for creating bills
P_1	Purchase price per unit (confirming storage)
P_0	Purchase price per unit (not confirming storage)
y	Average interest rate of bank loans (annualized)
y_0	Deposit interest rate of first deposit (annualized)
T	Time period of banker's acceptance bill
T_0	Release cycle of upstream suppliers (annualized)
P_2	Selling price
R	Loan rate
λ	Ratio of factoring financing
t	Repayment period of downstream buyers
π_B	Net profit of banks
π_C	Net profit of borrowers

c) *Cost-Profit Analysis of Banks*

Bank's profits mainly consist of two parts, one is the commission charges for banker's acceptance bill in confirming storage financing and the earnings of the deposit during the time period, the other is the earnings of current loans brought by factoring financing. Thus we can calculate the net profit of the bank as in Formula (1-1).

$$\pi_c = C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda (R - R_0)(T+t) + C \cdot \delta \left(\frac{P_2}{P_1} \cdot \lambda \right)^2 (R - R_0)(T - T_0 + t) + \cdots C \cdot \delta \left(\frac{P_2}{P_1} \cdot \lambda \right)^{\frac{r}{r_0}} (R - R_0)t$$

$$+ C \cdot \beta + C \cdot \delta (y - y_0)T + C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda \cdot y (T - T_0) + \cdots C \cdot \delta \left(\frac{P_2}{P_1} \cdot \lambda \right)^{\frac{r - r_0}{r_0}} \cdot y \cdot T_0 \qquad \text{Formula (1-1)}$$

Obviously, bank's loan profit depends on loan interest rate and borrowing time. Borrowing time is determined by the time that it takes downstream suppliers' to sell on credit and to deliver their goods. The longer the time of delivery is, the lower the profits; the longer the time of the credit sales is, the higher the profits. Profits from deposit are determined by the occupied time of money and its rate difference. The occupied time of money is determined by delivery period. The longer the time of delivery is, the fewer the profits. In order to maximize its benefits, the bank hopes to shorten the delivery period and raise the loan rate.

d) *Cost-benefit analysis of money-borrowing companies*

In the confirming storage and factoring financing portfolio, the cost of borrowers mainly depends on costs of loans paid to banks for factoring financing and the cost of issuing the banker's acceptance bills. The profits come from loans of sales on credit after time t since the delivery of goods. Thus the net profits of money-borrowing companies can be calculated as Formula (1-2).

$$\pi_C = \frac{P_2}{P_1} \cdot C - C - C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda \cdot R(t + T_0) - (1 - \delta) C \cdot \frac{P_2}{P_1} \cdot \lambda \cdot R \cdot t - C \cdot \beta$$
$$+ C \cdot \delta \cdot y_0 \cdot T \qquad \text{Formula (1-2)}$$

Obviously, the net profit of money-borrowing companies mainly depends on the price difference of buy and sell and the interests paid to banks. The bigger the price difference is, the bigger the profits. The amount of interests paid to banks is determined by time period of credit sales and the delivery cycle. As borrowers, both of these factors are expected to be longer, which means fewer interests and more benefits.

e) *Game analysis of banks and companies in the combination of confirming storage & factoring financing and single product selection*

i. *Comparing the difference between different financing methods*

This part compares the method of combination of confirming storage and factoring financing with the method of single factoring financing product, in order to discuss the difference between different financing products and their influential factors.

This part compares the difference between confirming storage and factoring financing with single factoring financing instead of comparing the difference between portfolio financing and single factoring financing, because in reality, factoring financing usually takes the form of banker's acceptance bills, with fewer costs and benefits. In the meantime, if only confirming storage financing is used, the company must wait time t after the delivery of goods to get the loans. The holding time of money is so long that it is no longer consistent with the rule of maximization of profits, thus it happens rarely.

Comparing bank's net profits

To compare bank's net profits between the two business processes during the same period of time:

- According to Formula (1-1) in 1.1.3, the net profits of banks using confirming storage and factoring financing portfolio is:

- the net profits of banks if using single factoring financing is depicted in Formula (1-3):

$$\pi_B (singleness) = \frac{P_2}{P_1} \cdot C \cdot \lambda (R - R_0) \cdot t \qquad \text{Formula (1-3)}$$

Simplify (pi B) to Formula (1-4):

$$\pi_B (portofilo) = C \cdot \frac{P_2}{P_1} \cdot \lambda (R - R_0)(t + \delta \cdot T_0) + C \cdot \delta \cdot y \cdot T + C \cdot \beta \qquad \text{Formula (1-4)}$$

Their difference is:

$$\Delta \pi_B = C \cdot \frac{P_2}{P_1} \cdot \lambda (R - R_0) \cdot \delta \cdot T_0 + C \cdot \delta \cdot y \cdot T + C \cdot \beta$$

Apparently, ignoring the redundant time period T_0, the exceeding profits generated by banks mainly come from the benefits brought by companies' deposit money in confirming storage financing. B is small, thus its profits is relatively low comparing to benefits of deposit money. Thus, $\pi_B (portofilo) > \pi_B (single)$ which leads to the conclusion that banks have higher benefits with confirming storage and factoring financing portfolio than with single factoring financing. Banks will enhance portfolio financing more positively.

Comparing the return on equity of borrowing companies.

To compare the difference between financing methods, it is essential to select a proper indicator. The fact that borrowers invest different capital in single factoring financing and confirming storage and factoring financing makes it inappropriate to compare net profits only. By contrast, comparing return on equity (ROE) can fully reflect the input-output conditions. The formula to calculate return on equity is: ROE=net profits/input capital.

- Return on equity of money-borrowing companies using confirming storage and factoring financing portfolio is depicted in Formula (1-5):

$$ROE (portofilo) = \frac{\frac{P_2 \cdot C}{P_1} - C - C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda (t + T_0) - (1 - \delta) C \cdot \frac{P_2}{P_1} \cdot \lambda \cdot R \cdot t - C \cdot \beta + C \cdot \delta \cdot y_0 \cdot T}{C \cdot \delta + \left[(1 - \delta) C - C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda \right]} \qquad \text{Formula (1-5)}$$

- Return on equity of money-borrowing companies using single factoring financing is depicted in Formula (1-6):

$$ROE(singleness) = \frac{\dfrac{P_2}{P_1} \cdot C - \dfrac{P_0}{P_1} \cdot C - \dfrac{P_2}{P_1} \cdot C \cdot \lambda \cdot R \cdot t}{\dfrac{P_0}{P_1} \cdot C}$$

Formula (1-6)

Simplify ROE (portfolio) to Formula (1-7):

$$ROE(portofilo) = \frac{P_2 - P_1(1 + \beta) - P_2 \cdot \lambda \cdot R(t + \delta \cdot T_0) + \delta \cdot y_0 \cdot T}{P_1 - P_2 \cdot \lambda \cdot \delta}$$

Formula (1-7)

Simplify ROE (Single) to Formula (1-8):

$$ROE(singleness) = \frac{P_2 - P_0 - P_2 \cdot \lambda \cdot R \cdot t}{P_0}$$

Formula (1-8)

β (the rate of commission charges of banker's acceptance bill) usually is 0.0005, which is approximately zero, so it's negligible. Confirming storage financing requires volume purchases in advance, thus its price per unit is relatively low comparing to purchase in batches, thus $P_0 > P_1$. Assume $P_0 > P_1$, the numerator of ROE (portfolio) is short of $P_2 * \lambda * R * \delta * T_0$ comparing to ROE (single), while the denominator is short of $P_2 * \lambda * \delta - y_0 * T * \delta$. Because $P_2 * \lambda * \delta >> P_2 * \lambda * R * \delta * T_0$ and P0>P1, ROE (portfolio)>ROE (single)>1, i.e. ROE (portfolio)>ROE (single).

By strict mathematical proof, we can conclude that ROE in confirming storage and factoring financing portfolio is larger than that in single factoring financing, which means portfolio financing uses money more efficiently than single supply chain financing products, with stronger lever amplification and more profits.

According to Formula (1-7), only parameter δ can be determined by companies, while the others depend solely on banks and the market, thus δ is the only variable. We calculate the derivative of it in Formula (1-9) to obtain the maximal value:

$$\frac{\partial(portfolio)}{\partial \delta} = \frac{(y_0 \cdot T - P_2 \cdot \lambda \cdot R \cdot T_0)(P_1 - P_2 \cdot \lambda \cdot \delta) + \lambda \cdot P_2 \left[P_2 - P_1(1 + \beta) - P_2 \cdot \lambda \cdot R(t + \delta \cdot T_0) + \delta \cdot y_0 \cdot T \right]}{(P_1 - P_2 \cdot \lambda \cdot \delta)^2}$$

$$\frac{\partial(portfolio)}{\partial \delta} = \frac{P_2^2 \cdot \lambda(1 + \lambda \cdot R \cdot t) - P_1 \cdot P_2 \cdot \lambda(T_0 \cdot R + 1 + \beta) + y_0 \cdot T \cdot P_1}{(P_1 - P_2 \cdot \lambda \cdot \delta)^2}$$

Formula (1-9)

Because $\lambda * R * T$ 、 $R * T_0$ 、 β are negligible and P2>P1, the derivative is constantly greater than zero, which means that as δ increases, the ROE of money-borrowing companies will go up until factoring financing fill up the rest amount of confirming storage financing. However, as δ increases, financial pressure of the companies also becomes higher. As a result, for strong distributers, banks can increase the ratio of their first deposit.

ii. *Dynamic game analysis of banks and companies*

a. *Model Assumptions*

- In this model, the design of supply-chain financial products takes core companies' credit into consideration, which provides endorsement for

borrowers, making the default risk is relatively low. As a result, the game model of banks and companies has completely information symmetry and we neglect the credit risk.

- The model is dynamic, and companies choose form single factoring financing and confirming storage financing portfolio at first, then the bank decides whether to provide loan or not.

b. *Model analysis*

This model is a complete-information dynamic game. The money-borrowing companies make the first decision between single factoring financing and portfolio financing. The amount of capital that money-borrowing companies store is different in single factoring financing and confirming storage & factoring financing, making it

more appropriate to compare ROE instead of net profits as stated above.

The second step is banks' decision, no matter it is single factoring financing or the combination of confirming storage and factoring financing, they can

decide whether to provide loans or not based on the profitability of these products. The dynamic game process between money-borrowing companies and banks construct the tree structure as diagram (1-2):
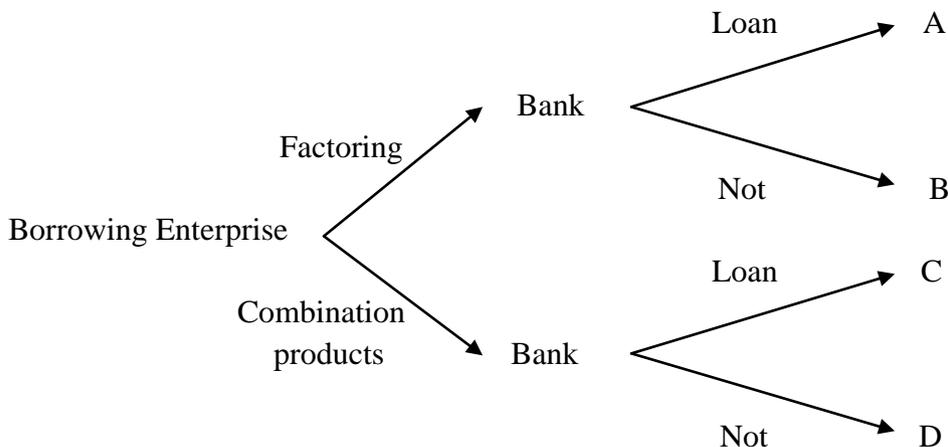

diagram (1-2)

The money-borrowing companies have two choices, one is single factoring financing, and the other is confirming storage and factoring financing portfolio. The banks also have two choices, one is to provide the loans, and the other is not to. Thus four results are produced and we illustrate the situations with the choice of products first and then the decision of whether to provide the loans.

By using the backward induction, we analyze from the banks. In the factoring process in cooperation with supply chain enterprises, the credit risk of banks is perfectly reduced due to the endorsement of core companies, making the default risk negligible. Thus what makes the bank loan or not is the ROE comparing to other loans instead of its credit risk. The ROE of factoring financing is not low in bank's loan products for two reasons: banks provide loans mainly for medium and small companies, thus its interest rate is high; banks may enter into business relationships with core enterprises in the process of supply-chain financing, making the upstream and downstream companies its potential clients, thus the total profits are high in the long run. So banks are willing to loan money to companies using factoring financing. In the process of confirming storage and factoring financing, the ROE is much higher than single factoring financing, because the profits come from not only factoring financing, but also confirming storage financing. Thus banks are willing to provide loans to confirming storage and factoring financing clients as well.

Whether money-borrowing companies choose single factoring financing or the combination of confirming storage and factoring financing mainly depends on profits. Although in terms of absolute profits, single factoring financing is better than

confirming storage and factoring financing, we shouldn't neglect the fact that they need different initial capital which decreases their comparability. ROE (combination) > ROE (single) thus illustrates that confirming storage and factoring financing has greater profitability and higher leverage ratio comparing to single factoring storage, meaning that the investment is more efficient.

Comparing to single supply chain product, portfolio product brings more profits to both the bank and borrowers, leading to a Pareto improvement. As a result, companies will choose confirming storage and factoring financing portfolio without hesitation instead of single factoring financing, while

Banks will provide loans positively to get returns. The equilibrium position is point C, and two parties achieve mutual benefits.

III. Multiple-Cycle Analysis of Confirming Storage and Factoring Financing Portfolio

We consider using the accounts receivable after goods delivery to fulfill the exposure of confirming storage financing, the rest of which will be paid once with in a specific time period by borrowers. Now we consider the multiple cycles of factoring financing and confirming storage financing: goods delivery, financing, repayment, goods delivery again, financing again, repayment again, multiple cycles.

a) *Introduction of Multiple-Cycle Financing Business Process*

The multiple-cycle financing process flowchart of confirming storage and factoring financing portfolio is depicted as diagram (2-1):

①sign a purchase agreement
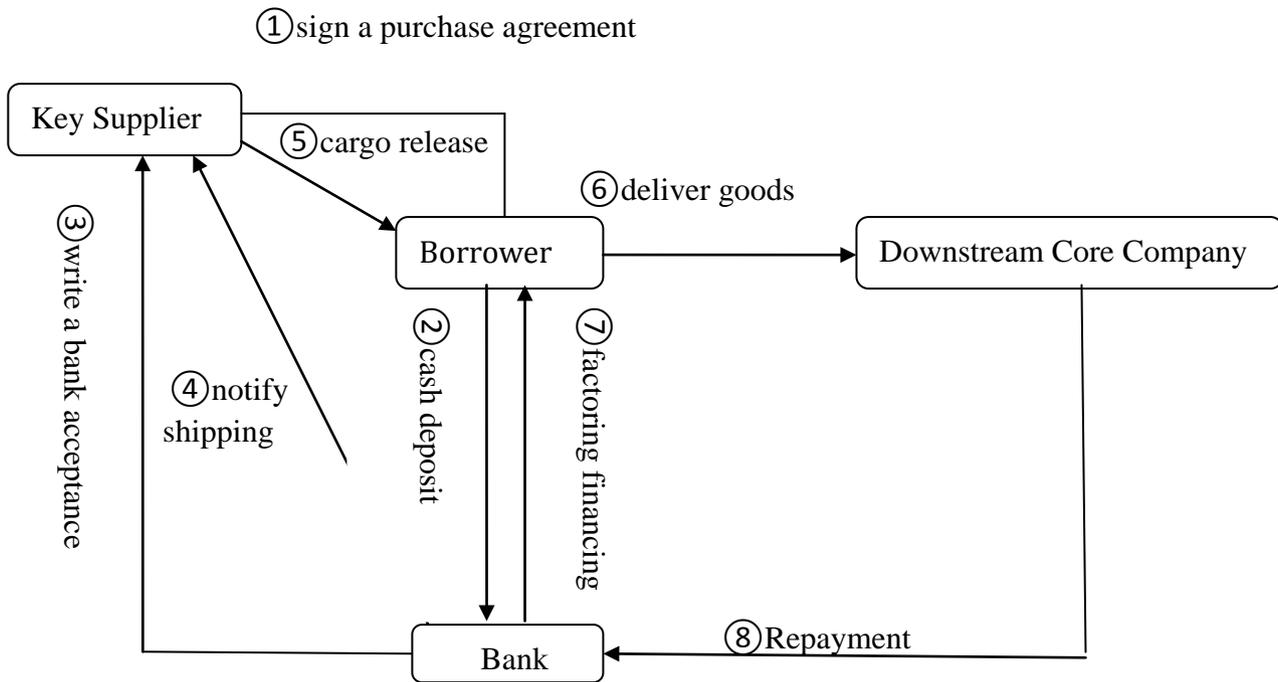
Diagram (2-1) Confirmation warehouse and factoring financial multiple cycle flow chart

The specific process of the multiple cycles of confirming storage and factoring financing can be described as follows:

The borrowers save the first deposit in banks, agreeing to use their future right of taking goods as pledge. Banks sign banker's acceptance bill for borrowers and hand directly to upstream suppliers. Suppliers, after organizing the source of the goods, send out delivery to borrowers, who sell immediately to downstream large buyers. The borrowers apply for factoring financing with the invoice provided by downstream buyers and certificate of receipt. After the borrowers use the money from factoring financing to fulfill the exposure of confirming storage financing for the first time, suppliers send out delivery again and the borrowers sell them to downstream buyers again. The borrowers apply for factoring financing again with the invoice provided by downstream buyers and certificate of receipt. Repayment, delivery, supply, financing and repayment again and again until banks pay back their banker's acceptance bill within the scheduled time and finish the supply of goods. Finally, the downstream buyers remit the loans to the bank account specific for factoring within scheduled time. After taking out the interests, banks will return the rest to borrowers, thus complete the multiple cycles of confirming storage and factoring financing.

b) *Model Assumptions and the meanings of Parameters*
  i. *Model assumptions*
- Save the first deposit, apply for factoring financing after the delivery of goods, use the money of financing to repay the exposure of confirming

storage financing, delivery, financing, repayment, again and again until the exposure is closed.

- During the time period of portfolio financing, the time cycle of delivery remains stable, thus ensures the stability of time cycle of factoring financing, making the time cycle of repaying the exposure of confirming storage financing stable.

- The confirming storage financing is provided in the form of banker's bills, while factoring financing is provided in the form of current assets.

- Banks should pay deposit interests to companies for the first deposit.

- Risks are temporarily neglected (including market risks and credit risks).

Table 2-1 : Parameters and their meanings

Parameters	Meanings of Parameters
C	The amount of money of banker's acceptance bill
δ	Margin ratio
β	Ratio of commission charges for creating bills
P_1	Purchase price per unit (confirming storage)
P_0	Purchase price per unit (not confirming storage)
y	Average interest rate of bank loans (annualized)
y_0	Deposit interest rate of first deposit (annualized)
T	Time period of banker's acceptance bill
T_0	Release cycle of upstream suppliers (annualized)
K_1	The final exposure of deposit (outstanding exposure)
N	The exposure after N times repayment (paid exposure)
K_2	Residue after N times repayment
R	Loan rate
λ	Ratio of factoring financing
t	Repayment period of downstream buyers
π_B	Net profit of banks
π_C	Net profit of borrowers

c)   *Cost-Benefit Analysis of Banks*

Bank's profits mainly consist of two parts, one is the commission charges for banker's acceptance bill in confirming storage financing and the earnings of the deposit during the time period, the other is the earnings of current loans brought by factoring financing.

Two possible conditions exist, one is the money from factoring financing cannot fulfill the exposure of confirming storage financing, which means that money-borrowing companies need to repay the financial gap K before the expired date of banker's acceptance bill. The other condition is that the money from factoring

financing is enough to fulfill the exposure. Assume that exposure is paid up after N times of factoring financing.

Exposure not fulfilled

If $\quad C\cdot\delta+C\cdot\delta\cdot\dfrac{P_2}{P_1}\cdot\lambda+\cdots+C\cdot\delta\left(\dfrac{P_2}{P_1}\cdot\lambda\right)^{\frac{T-T_0}{T_0}}<C$,   the

borrowers need to fulfill the exposure K before the deadline, the net profits of banks can be depicted as Formula (5-10):

Simplify it to Formula (2-1):

$$\pi_B = \sum_{i=1}^{\frac{T}{T_0}} C\cdot\delta\left(\frac{P_2}{P_1}\cdot\lambda\right)^{i}(R-R_0)\left[T-(i-1)T_0+t\right]+C\cdot\beta$$

$$\sum_{i=1}^{\frac{r}{r_0}} C\cdot\delta\cdot y\left(\frac{P_2}{P_1}\cdot\lambda\right)^{i-1}\cdot\left[T-(i-1)T_0\right]-C\cdot\delta\cdot y_0\cdot T \qquad \text{Formula (2-1)}$$

Exposure fulfilled

If $C \cdot \delta + C \cdot \delta \cdot \dfrac{P_2}{P_1} \cdot \lambda + \cdots + C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^{\frac{T-T_0}{T_0}} > C$, assume borrowers completely repay the banker's

acceptance bill after N times of factoring financing, the net profits of banks can be depicted as Formula (2-2):

$$\pi_B = C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^i (R - R_0)(T + t) + \cdots + C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^N (R - R_0)\left[T - (N-1)T_0 + t \right] + c \cdot \beta + C \cdot \delta \cdot (y - y_0)T$$

$$C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right) \cdot y(T - T_0) + \cdots C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^{N-1} \cdot y\left[T - (N-1)T_0 + t \right] + K_2 \cdot y(T - NT_0) \qquad \text{Formula (2-2)}$$

Simplify it to Formula(2-3):

$$\pi_B = \sum_{i=1}^{N} C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^i \cdot R\left[(T - (i-1)T_0) + t \right] + c \cdot \beta + \sum_{i=1}^{N-1} C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^{i-1} \cdot y\left[T - (i-1)T_0 \right]$$

$$+ K_2 \cdot y(T - NT_0) - C \cdot \delta \cdot y_0 \cdot T \qquad \text{Formula(2-3)}$$

Apparently, no matter repay the exposure in time or not, bank's profit from loans is determined by loan interest rate and borrowing time. Borrowing time depends on the time of sales on credit and delivery time, while the loan profits depend on saving time and its saving-loan rate spread. The saving time of loans is determined by goods delivery cycle. The longer the cycle is, the fewer the profits.

To maximize its profits, banks would prefer shorter delivery cycles and high loan interest rate.

IV. Cost-Benefit Analysis of Money-Borrowing Companies

In the confirming storage and factoring financing portfolio, the cost of borrowers mainly consist of the loan interests paid to banks for factoring financing and the commission charges for the banker's acceptance bill. Its earnings come from the loans of sales on credit after time t since the delivery of goods. We deduce separately from the two possible situations stated above and produce the net profits of money-borrowing companies accordingly.

a) Exposure not Fulfilled

If the exposure is not fulfilled, money-borrowing companies should repay the residue to banks before the expired date of confirming storage financing. The benefit of money-borrowing companies in the whole process is depicted in Formula (1-14):

$$\pi_C = \dfrac{C}{P_1} \cdot P_2 - C - \sum_{i=1}^{\frac{T}{T_0}} C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^i \cdot R\left[(T - (i-1)T_0) + t \right] - c \cdot \beta + C \cdot \delta \cdot y_0 \cdot T \qquad \text{Formula (2-4)}$$

b) Exposure Fulfilled

Because the money-borrowing companies fulfill the exposure after N times of factoring financing, thus the money-borrowing banks can gain more from the amount of factoring financing minus the residue of confirming storage financing. Due to the fact that factoring financing is in the Nth step, the amount is relatively small, with the deduction of residue from confirming storage financing, this term is negligible. For the convenience of our study and simplification of the formula, the expected return from this amount of money is not considered. The net profits of the money-borrowing companies are depicted in Formula (1-15):

$$\pi_C = \dfrac{C}{P_1} \cdot P_2 - C - \sum_{i=1}^{N} C \cdot \delta \left(\dfrac{P_2}{P_1} \cdot \lambda \right)^i \cdot R\left[(T - (i-1)T_0) + t \right] - c \cdot \beta + C \cdot \delta \cdot y_0 \cdot T \qquad \text{Formula(2-5)}$$

Apparently, the net profits of money-borrowing companies mainly depend on the bid-ask spread and the interests paid to banks. The bigger the spread is, the more the profits are. The interests paid to banks are determined by the borrowing time and the goods delivery cycle. As borrowers, the companies would

prefer a longer borrowing time and longer delivery cycle, which means fewer interests and more profits.

During the process of confirming storage and factoring financing, situation where the money-borrowing companies invest less and gain less may exist. In the meantime, the ROE can be either big or small; companies should choose the frequency and each amount of the multiple cycles based on their conditions.

V. Empirical Analysis

a) Case Background

i. Introduction of the company

We study the case of one of Beijing's largest dealer of cement H.

Company H is founded in Jan, 2001, with 20 million yuan as registered capital, in which the legal representative invest 75% (15 million yuan) and other individual shareholders takes up 25%. The company is a company with limited liabilities. Its main business is sales of construction materials, especially cement and wood materials. It also engages in cement transport, sand and gravel transport, etc. The company holds controlling interest of three logistics companies. Its sales volume yearly is above 500 million yuan and more than 400 employees.

The company has a board of shareholders and has not a board of directors. It has one executive director, who can fulfill his obligations according to articles of the company, make development plan and perfect the rules according to the needs of the company. Management has rich experience in relative industries and advanced operation philosophy, the operating system is sound and the operating behaviors are reliable.

ii. The state of production and operation of the company

Cement selling is the pillar business of the company. With the help of two leader companies of cement production in North China, Hebei Jidong Cement Incorporated Company and Beijing Jinyu Cement Incorporated Company, it developed several downstream clients around Beijing, Tianjin, Langfang, Chengde, Zhangjiakou and other places. The company has more than 30 large and medium mixing stations that provide stable cement supply, with its sales volume amount to 1.6 million ton. As high-quality agency for Hebei Jidong Cement Incorporated Company and Beijing Jinyu Cement Incorporated Company, its sales income exceeds 500 million yuan, with enormous potentiality and great market reputation.

As for the state of cooperation with upstream and downstream companies, this company has excellent background and attracts a great deal of companies as members of the supply chain. Its products enjoy high market shares, with its good cooperation with other companies, both parties have the intention to further and wider their current business cooperation. The downstream companies include large real estate agencies, Beijing Subway, China Urban Construction Company and several large secondary distributors of cement.

The financial standing of the company is stable, with sufficient amount of cash flow, large profitability, reasonable assets and liabilities, and security for the repayment of accounts receivable.

iii. Introduction of the state of cooperation of banks and the company

Bank G has specialty in conducting supply chain financing business in Beijing, attracting a great deal of supply chain companies. The state of cooperation of bank G and company H is as follows: company H conducted business in bank G in 2008, with 70 million credit line, among which the credit line for confirming storage 20 million, 30% cash deposit. Beijing Jinyu Cement Incorporated Company provided repurchase for the residue and the company juridical person provided personal joint liability guaranty. From 2013 to date, the company can realize bills amount to 120 million yuan in a year, with daily average 42 million yuan in saving accounts.

iv. State of confirming storage and factoring financing of Company H

a. State of contract signing between Company H and upstream and downstream companies.

- State of contract signing between Company H and downstream companies

Company H has signed a supply contract with Beijing Jinyu Cement Incorporated Company in Feb. 1st, 2014, promised to provide 45 thousand tons of bulk cement labeled 42.5R from March to September in 2014. The agreed price is P2 (300 yuan/ton), the total price is 13.5 million yuan and the date of payment is Feb. 1st, 2015.

- State of contract signing between Company H and upstream companies

Company H has signed a contract with Hebei Jidong Cement Incorporated Company in Feb. 15th, 2014, promised to purchase 45 thousand tons of bulk cement labeled 42.5R from March to September in 2014. The agreed price is P1 (260 yuan/ton), the total price is C (11.7 million yuan), and the type of payment is advance payment.

b. Financing contract between banks and companies

- Hebei Jidong Cement Incorporated Company is a large company directly controlled by the central authorities, an A-share company, the largest cement processing company in North China. Its own power is strong, and the company is an essential client of Bank G, thus Bank G provides confirming storage financing for Company H.

Company H and Bank g signed a confirming storage contract. Because Hebei Jidong Cement Incorporated Company is a strong upstream company, Company H needs advance payment for picking up the delivery of goods. Bank G and Company H signed a confirming storage financing contract, with the ratio of first deposit δ no fewer than 30%, which was issued in the form of banker's acceptance bill and the duration T was half a year. Hebei Jidong Cement Incorporated Company would provide the repurchase warrant for the residue legal representative would provide individual joint liability guaranty.

- Beijing Jinyu Cement Incorporated Company is a wholly-owned subsidiary of BBMG Corporation, one of top 50 real estate companies in China and one of top 10 real estate companies in Beijing, and it has strong power. Beijing has brisk demand for real estate industry as the bellwether of China's first-tier cities and has relatively low operation risks. Jinyu Jiaye Incorporated Company is one of the essential clients of Bank G. Thus Bank G provides factoring financing for Company H.

Bank G and Company H signed a factoring financing contract. Because real estate industry has lone development cycle, the payback period of accounts receivable of Company H is long, but the payback is guaranteed. To get the payback more quickly, the company signed a factoring financing contract with the bank, which ruled that the ratio of financing could be no more than 70% of the accounts receivable, loan interest R was 8%, and the duration could be no longer than a year.

c. *Assignment to parameters*

Parameters and their meanings are as diagram 4-1

Parameter	Meaning of Parameter	value
C	The amount of money on the banker's acceptance bill	11.7 million
δ	The ratio of the first deposit	0.4
β	The ratio of commission charges	0.0005
P_1	Purchasing Price (confirming storage, yuan/ton)	260
P_0	Purchasing price (not confirming price, yuan/ton)	270
y	The loan average revenue rate	6%
y_0	The fixed deposit revenue rate of the first deposit (annualized)	2.5%
T	The time cycle of the banker's acceptance bill (annualized)	1/2
T_0	The delivery time cycle of upstream suppliers (annualized)	0.5/12
P_2	Selling price	300
R_0	Interests of bank savings	2.9%
R	Loan interests (annualized)	8%
λ	The ratio of factoring financing	0.7
t	The payback time cycle of downstream buyers	1/2

Source of material: the Credit Report of Company H, the 2014 annual report of Bank G

d. Cost-benefit analysis of banks and companies

- *Cost-benefit analysis of Bank G*

Calculate bank's net profit as Formula (4-1):

$$\pi_B = C \cdot \delta \frac{P_2}{P_1} \cdot \lambda \left(R - R_0\right)\left(t + T_0\right) + C\left(1 - \delta\right) \cdot \frac{P_2}{P_1} \cdot \lambda \left(R - R_0\right)t + C \cdot \delta \left(y - y_0\right)T + C \cdot \beta$$

$$\pi_B = 1170 \cdot 0.4 \cdot \frac{300}{260} \cdot 0.7\left(8\% - 2.9\%\right)\left(\frac{0.5}{12} + \frac{1}{2}\right) + 1170 \cdot 0.6 \cdot \frac{300}{260} \cdot 0.7\left(8\% - 2.9\%\right) \cdot \frac{1}{2}$$

$$+ 1170 \cdot 0.4 \cdot \left(6\% - 2.5\%\right) \cdot \frac{1}{2} + 1170 \cdot \frac{5}{10000}$$

$$= 34.358 万元 \qquad \text{Formula (4-1)}$$

- *Cost-benefit analysis of Company H*

Calculate the net profits of money-borrowing company H as Formula (4-2).

$$\pi_C = \frac{P_2}{P_1} \cdot C - C - C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda \cdot R\left(t + T_0\right) - \left(1 - \delta\right)C \cdot \frac{P_2}{P_1} \cdot \lambda \cdot R \cdot t - C \cdot \beta + C \cdot \delta \cdot y_0 \cdot T$$

$$\pi_C = \frac{300}{260} \cdot 1170 - 1170 - 1170 \cdot 0.4 \cdot \frac{300}{260} \cdot 0.7 \cdot 8\% \left(\frac{0.5}{12} + \frac{1}{2}\right) - 0.6 \cdot 1170 \cdot \frac{300}{260} \cdot 0.7 \cdot 8\% \cdot \frac{1}{2}$$

$$- 1170 \cdot \frac{5}{10000} + 1170 \cdot 0.4 \cdot 2.5\% \cdot \frac{1}{2}$$

$$= 139.185 万元 \qquad \text{Formula (4-2)}$$

e. Game equilibrium analysis of Bank G and Company H

- *Contrast the different profit of Bank G*

We contrast the different profit of Bank G in the same time period.

$$\pi_B\left(single\right) = \frac{P_2}{P_1} \cdot C \cdot \lambda \left(R - R_0\right)t$$

$$\pi_B\left(single\right) = \frac{300}{280} \cdot 1170 \cdot 0.7\left(8\% - 2.9\%\right) \cdot \frac{1}{2} \qquad \text{Formula (4-3)}$$

$$= 24.098 万元$$

While $\pi_B\left(portfolio\right) = 343.58$ thousand yuan, we can conclude that the profit from confirming storage financing is higher than single factoring financing in the past. The main difference lie in the fact that the bank could acquire deposit interest of the first deposit and commission charges of banker's

According to Formula (5-3), we can calculate the net profits of money-borrowing companies adopting the method of single factoring financing as Formula (4-3):

acceptance bill in confirming storage financing, which constitute the major part of bank's profit in confirming storage financing.

- *Contrast the different ROE of Company H*

We calculate the ROE of borrowers and simplify the result as Formula (4-4):

$$ROE(combination) = \frac{\pi_C}{C \cdot \delta + \left[\left(1 - \delta\right) \cdot C - C \cdot \delta \cdot \frac{P_2}{P_1} \cdot \lambda\right]} = \frac{139.185}{792}$$

$$= 17.57\% \qquad \text{Formula (4-4)}$$

In the past Company H adopted dingle supply chain financial product for financing (i.e. factoring financing). We calculate the ROE of borrowers as Formula (4-5):

$$ROE(single) = \frac{P_2 - P_0 - P_2 \cdot \lambda \cdot R \cdot t}{P_0}$$

$$ROE(single) = \frac{300 - 270 - 300 \cdot 0.7 \cdot 0.08 \cdot \frac{1}{2}}{270} = \frac{21.6}{270} \qquad \text{Formula (4-5)}$$

$$= 8\%$$

Apparently, borrower's ROE adopting confirming storage financing is far more than that adopting single factoring financing, which is consistent with our theoretical implication.

- *Dynamic game analysis*

According to the dynamic game model under the assumptions and model analysis in a complete information market, we construct the tree structure of bank and company as diagram (4-1) (company chooses first, then bank chooses):
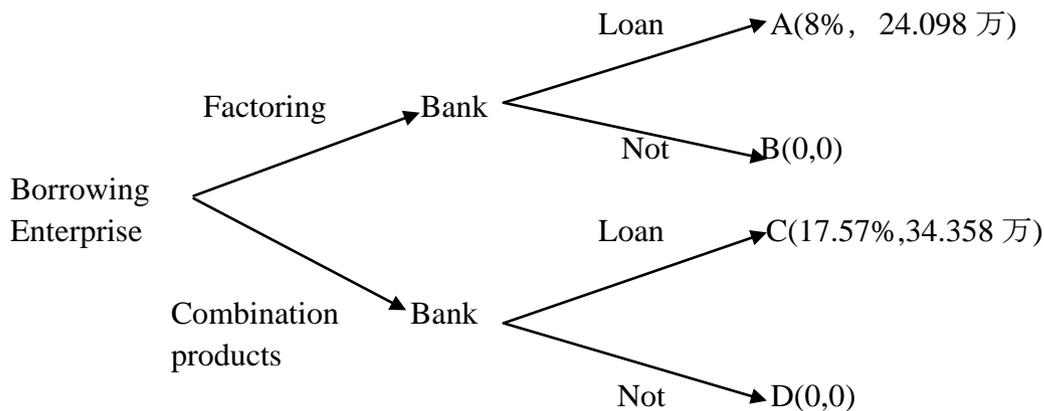

Diagram (4-1) Tree structures of dynamic game between bank and company

We use backward induction and start our analysis from Bank G. Whether the bank loan the money or not is based on the comparison between loan products. Supply chain financing has two outstanding advantages: one is that the risk is comparatively low, the other is that the bank could develop upstream and downstream clients through this core company, which means great potential profits. Thus Bank G will choose to loan. In the meantime, we find out that the bank profit more in portfolio financing, i.e.343.58 thousand yuan>240.98 thousand yuan.

The choice between single factoring financing and confirming storage financing of money-borrowing company H mainly depends on which brings more profit according to the maximization principle of personal interests. Because the initial capital invested is different, the comparison of ROE is more appropriate. After strict mathematical proof and actual computations, ROE(portfolio)>ROE(single), i.e. 17.57%>8%. It illustrates the fact that confirming storage and factoring financing has stronger profitability, higher leverage ratio and higher efficiency comparing to single factoring financing.

As a result, comparing to single supply chain product, the portfolio achieves a Pareto improvement for both the Bank G and the money-borrowing company H increase their profits. Thus Company H will choose confirming storage financing instead of single factoring financing, while the bank will loan its money happily and obtain the expected return. The equilibrium point is C, which is a win-win situation.

VI. SUMMARY

We analyze the single cycle and multiple cycles of confirming storage and factoring financing portfolio and introduce their business process. Then from the perspective of banks and medium and small companies, we construct the model of cost-benefit analysis to figure out the influential factors of the cost and benefit of both parties. Next we compare the ROE of both parties in the single supply chain financial product with that in the portfolio based on the single

cycle of the portfolio. Finally we apply the dynamic game theory to produce the equilibrium point to assist decision making. This study shows that the net profits of both the banks and money-borrowing companies are better in the confirming storage and factoring financing portfolio comparing to single factoring financing, which indicates a Pareto improvement. The ROE of money-borrowing companies increase as the ratio of first deposit increases.

In this chapter, we plug in the statistics of supply chain financial product portfolio in a specific case into the model in chapter 4, 5 and 6. By analyzing the real situation of Company H, we find it highly identical to theoretical results. In the real case of confirming storage and factoring financing, both the bank and the borrower have more net profits than in that of single factoring financing. In the real case of confirming storage and factoring financing, the ROE of the bank and the money-borrowing company are also higher than single factoring financing. Thus the equilibrium point of the bank and the company is: the money-borrowing company chooses the portfolio and the bank chooses to provide the loan.

VII. Acknowledgements

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The Relationship between IT Investment Levels and Bank Performance: The Case of Jordanian Banking Sector

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Abstract- The objective of this research is to examine the association between IT resources and profit performance in the Jordanian Banking Sector.

The researchers chose survey methods. The advantage of using surveys is the ability to calculate non-parameter variables; and this method is considered the most appropriate for this study. Three variables are explored. The dependent variable is bank performance. The independent variable is IT resources (levels), and the control variable is bank assets and IT size.

The results of this study were classified according to the sequence of questions and assumptions as follows: There is positive and statistical significance at the level ($\alpha = 0.05$) between the performance of Jordanian banks and each IT level. There were statistically significant differences at the level ($\alpha = 0.05$) between the mean responses of a sample study on the application of IT in Jordanian banks, attributed to variable size (assets) and in favour of assets (large). There were statistically significant differences at the level of ($\alpha = 0.05$), between the mean responses of the study sample, attributable to the asset size variable and in favour of large assets. There are significant differences at the level of ($\alpha = 0.05$) between the mean responses of the study sample, attributed to the variable ITI and the proportion of ITI.

THERELATIONSHIPBETWEENITINVESTMENTLEVELSANDBANKPERFORMANCETHECASEOFJORDANIANBANKINGSECTOR

Strictly as per the compliance and regulations of:

The Relationship between IT Investment Levels and Bank Performance: The Case of Jordanian Banking Sector

Hussam-Eldin Daoud [α], Torki M. Al-Fawwaz [σ] & Yaser Arabyat [ρ]

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This analysis seemingly demonstrates that Staff developing should be in line with the development and modernisation of technology. All technological means that enhance the service experience of customers should be adopted because they raise the level of satisfaction with banking services. Updating IT infrastructure in banks will reflect positively on performance.

I. Introduction

As the world economy continues to globalise and competition increases, the key challenges of today's banks are both how to respond more quickly to challenges and how to handle uncertainty. Today, most banks use IT not only to manage their business, but also to keep in contact with world markets (Peppard & Ward, 2004).

Information technology (IT) applications have created new opportunities and challenges that have changed business operations. Most successful companies have adopted IT to interact with their customers and business partners, to increase their efficiency and improve their services (Mann, 2002).

The growing number of theoretical studies on IT led-performance through the use of IT suggests a positive correlation between IT capital intensity and performance scores (Daoud, 2010). Acharya et al. (2007) estimate online banking intensity and bank performance indices using a combination of primary and secondary data. An empirical profit function of a non-standard Fourier flexible form is estimated using banks' financial data to derive a theoretically consistent performance measure. The results indicate that the increasing use of the internet as an additional way to market banking services significantly improves the financial performance (FP) of community banks.

Empirical evidence indicates that a relationship exists between IT project success and conducting a ROI evaluation before and after project completion, as well as "organisational" attributes of policy, procedures, and leadership (Czerwinski, 2008). To establish a relationship between investments in information and communication technology, Beccalli (2006) considers whether investment in IT (software, hardware and other services) affects the performance of banks. The examination of bank performance is assessed using traditional financial profitability measures. The investigation covers a sample of 737 commercial banks located in five European countries (France, Germany, Italy, Spain and the UK) over the period 1995–2000, and covering a total of 3456 observations. The author finds that there is a positive and statistically significant correlation between profit efficiency and ROA, and a negative and statistically significant correlation between cost efficiency and both ROA and ROE. The correlations between profit efficiency and IT investment have been found negative and statistically significant. Another study by Gunsel et al. (2011) tests whether the IT ability of a bank can create economic value and competitive advantage. Based on a sample of 15 banking sectors in Turkey, the authors find that human capital support contributes directly to the performance of banking sectors. Similarly, Kim (2004) examines the effect of IT investment on Korean sector performance in 1996–2000. The author finds that IT investment enhances

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productivity by growing value added and saving ordinary capital and labour. He also finds that the installed IT capital is estimated in the financial market to be worth about 6.8 times its acquisition price, and concludes that IT investment accompanies the creation of intangible assets. Considering this, the contribution of IT investment to aggregate economic growth would be much greater than the figures provided by conventional growth accounting. Gideon et al. (2011) study the extensive panel dataset of 15 banks from the Ghanaian banking industry over the period 1998 – 2007and find that banks which maintain high levels of investments in IT increase both ROA and ROE.

Sangjoon (2008) estimates the profitability equation to measure the effects of IT investment by domestic banks on their management performance in Korea, using panel regression. The study exploits annual panel data in the financial statements of individual firms of the Korean Information Service, and financial information data from the Bank of Korea. The data used in his study spans 1991 to 2001, and come from 26 domestic banks comprising 16 city and 10 local banks. The results indicate that IT investment by large banks shows a stronger positive influence on bank returns than that of small banks. In addition, the IT investment of wholesale banks specialising in corporate loans produces greater positive effects on bank profitability than that of retail banks. Similarly, Luca and Giorgio (2007) analyse the effects of investment in IT in the financial sector using micro-data from a panel of 600 Italian banks over the period 1989–2000. The results indicate that both cost and profit frontier shifts are strongly correlated with (IT) capital accumulation; in addition, banks adopting IT capital-intensive techniques are more efficient. They also find a positive correlation between IT capital intensity and both frontier shifts and efficiency scores. The IT investment to growth ratio of the Italian banking industry can be estimated between 1.3% and 1.8% per year.

A number of studies have examined the impact of online banking intensity on the financial performance of banks. According to Acharya et al. (2008), the actual impact of online banking on performance is measured by regressing the profit efficiency index against a number of correlates, including online banking intensity measures. Jallath et al. (2001) analyse the implementation of an electronic inter-bank payment network adopted by all Mexican commercial banks. They find that early adopters of the electronic network, with a low ratio of electronic to overall operations, experienced growing opportunity and penalty costs, but that as more banks join the network, the ratio of electronic operations increases, and costs decrease. When all banks had adopted the electronic network, they found a reduction equivalent to 9.9% in each bank's opportunity and penalty costs; the aggregated savings for all banks equalled $5.3 million in the next six months. They conclude that the electronic inter-bank payment network provides a significant positive net present value, findings that support the network externalities theory. Similarly, Acharya et al. (2008) find that the increasing use of the internet as an additional channel of marketing banking services has significantly improved the financial performance of community banks. They argue that online banking improves financial performance, and community banks should be encouraged to adopt new ITs and offer targeted online services. This study utilises the estimated index in measuring the impact of internet banking intensity on bank performance.

Berger (2003) examines technological progress and its effects in the banking industry. The results suggest that improvements in costs and lending capacity are due to improvements in "back-office" technologies, as well as consumer benefits derived from improved "front-office" technologies. The results suggest significant overall productivity increases in terms of improved quality and variety of banking services. In addition, the research indicates that technological progress likely helps facilitate consolidation of the industry. Bradley et al. (2002) investigate the drivers and inhibitors of adoption of internet banking and the future level of adoption In Delhi. The study finds that external factors are the most important drivers in the overall decision to adopt. These include competitive forces, consumer demand, and technological availability. The factors affecting the decision to adopt are new revenue potential, cost reduction, and access through other distribution channels. They also find that the key inhibitors are mainly internal issues such as lack of enhanced ability to deal with customers, resistance to change, negative attitudes within the bank to technical innovation, the resources available, and the existing legacy system. Costs also became a strong inhibitor, especially when retail banks feel that returns are not evident and consumer demand is not sufficient.

In Jordan the banking industry has shown great interest in modern technical applications. It is one of the economic sectors that has benefited from the rapid changes in the field of information technology. One such innovation is a system that connects the ATMs of licensed banks through a network (JONET) which enables customers to receive banking services at any time. Some Jordanian banks provide banking services via a number of e-channels, including home banking and phone and mobile banking. Other banks provide banking and financial services through a number of automated banks and internet banking. The application of IT has made it possible to provide more rapid responses to variations in demand, and more efficient alignment of resources to prepare for uncertainty. Not only has IT made global markets more accessible, it

also allows banks to provide better services that meet customer needs.

This research attempts to find to what extent IT investment (ITI) is expected to enhance a bank's performance. The research problem lies in answering the following main question: "Do IT resources (levels) increase banks' performance in Jordan?"

The objective of this research is to examine the association between IT resources and profit performance in the Jordanian Banking Sector. IT in this study includes (a) IT infrastructure, (b) IT human resources, (c) IT technological knowledge, and (d) customer relationship.

Based on the above discussion, this research focuses on the following questions:

- What is the degree of the application of IT levels in Jordanian banks from the viewpoint of the study sample?
- What is the level of performance of Jordanian banks according to the sample study?

Within the previously described framework, three variables are explored. The dependent variable is bank performance. The independent variable is IT resources (levels), and the control variable is bank assets and IT size. The variables are measured on a Likert-type scale with 1 = strongly disagree and 5 = strongly agree.

Dependent Variable: Bank Performance

We proposed a bank performance measure with three components: Financial performance (FP), strategic performance, and satisfaction with ventures. The FP includes profit and cost; strategic performance includes competitiveness, positions, and branches; satisfaction with customers includes satisfaction and meeting expectations. Banks performances were measured on a 25-item scale.

Independent Variable: IT Resources (Levels)

IT resources were measured on four levels: IT infrastructure, IT human resources, IT technological knowledge, and customer relationships. IT resources were measured on a 44-item scale; 18 of the items were related to IT infrastructure, 6 to IT human resources, 12 to IT technological knowledge, and 8 to the customer relationship.

Control Variable: Bank Size

Bank size is often related to performance success (Daoud, 2010). A number of studies use size alone to predict business performance. This study measured a bank's size by the size of its assets[1] and its IT ratio[2].

As discussed above, banks may compete effectively by using IT resources that generate sustainable performance advantages that have an impact on efficiency and profit. This study, therefore, posits 4 hypotheses:

H_{01}: There is no statistically significant correlation at the level ($\alpha \leq 0.05$) between the performance of Jordanian banks and each level of IT[3].

H_{02}: There will be no statistically significant effect at the level ($\alpha \leq 0.05$) for IT level on the performance of Jordanian banks.

H_{03}: There is no statistically significant difference at the level of ($\alpha \leq 0.05$), between the mean responses of the sample study on the application IT levels in Jordanian banks, caused to the variable asset size, and to ITI ratio.

H_{04}: There is no statistically significant difference at the level ($\alpha \leq 0.05$), between the mean responses of a sample study on their assessment of the performance of Jordanian banks that can be attributed to the variables of asset size and ITI ratio.

---

[1] The alternative hypothesis suggests that the large-asset bank has more resources, technical expertise, and capital to achieve greater performance success. Studies have argued that most small- and medium-sized enterprises "lack technical expertise, lack adequate capital to undertake technical enhancements, lack adequate bank *planning, and have a limited service range available to customers"* (Barry & Milner, 2002).

[2] The alternative hypothesis suggests that the ITI ratio (high or low) significantly influences a bank's cost and profitability performance. Banks with high ITI ratios have better resources, greater technical expertise, and more capital to achieve efficiency success. Sangjoon (2006) argues that the ITI of large banks shows a stronger positive influence on improving bank returns than that of small banks.

[3] The alternative hypothesis there is a positive relationship between IT resources and performance. When a bank improves its IT infrastructure and IT finances, these will have a positive influence on its performance (Duncan, 1995).

Proposed Research Model[4]
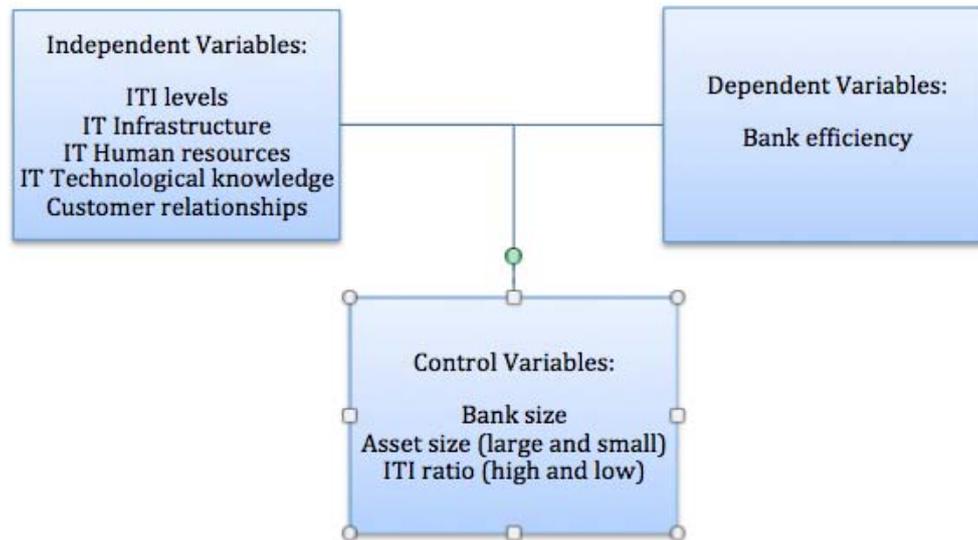
II. Methodology

The researcher chose survey methods. The advantage of using surveys is the ability to calculate non-parameter variables; and this method is considered the most appropriate for this study.

This study focused on Jordan's bank sector, the nations' fastest growing IT market segment (Alhawary, 2004). The sample for this study was restricted to 22 banks (16 national banks and 6 international banks), representing a large proportion of the total banks (22/26).

A questionnaire with 69 questions was designed to examine IT resources. The estimated time for completing the questionnaire was 15–20 minutes. Anticipating difficulty in obtaining responses from managers, the questions were framed as 5-point Likert scale items in order to minimise response time and encourage a reply (Fowler, 1993). On the Likert scale, 1 indicated strongly disagree and 5 strongly agree.

Traditionally, bank performance has been measured by three components: cost and profit performance, strategic IT performance, and satisfaction with customers and meeting expectations (Daoud, 2010).

Survey data was collect from Jordan's banking sector. As this study used surveys, the G-Power program was used to determine the number of responses required to obtain an acceptable response. The degree of correlation with the effect size of 0.20, alpha at 5%, power 0.80, shows the total sample size should be 240. Based on the results of the G-Power, 240 samples were selected; of these, 232 surveys are included in this study.

Using SPSS analysis, each item's measurement was examined by comparing the structures, loadings, and inter-item correlations. In order to simplify the overall model being tested and to reduce the potential for bias associated with multicollinearity, statistical analysis was conducted. In addition, descriptive statistics including the percentage, mean, median, and standard deviation for each item were employed. The multiple stepwise regression analysis was used as it was expected to predict the relationship between the independent (IT resources and capabilities) and the dependent variables (bank performance).

To test the study's hypotheses, multiple stepwise regression analyses were conducted to predict relationships between the independent variables and the dependent variable. It was predicted that all four levels of IT would have a significant influence on bank performance and be positively related; and that bank size would influence performance. The data from the questionnaire was analysed using SPSS. The initial part of the analysis focused on the descriptions of the respondents. Path analysis was used to test the hypotheses.

III. Results

This section presents the study population, study tool, validity, the reliability of the statistical process, and conclusions related to the research hypotheses.

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[4] This model is taken from Wong (2007).

Table 1 : Characteristics of the study sample

No.	Variables	Classes	Frequency	Percentage%
1	Sex	Male	184	79. 3
		Female	48	20. 7
2	Age	Less than 30	36	15. 5
		30 – 40	80	34. 5
		40 – 50	84	36. 2
		and more☐50	32	13. 8
3	Experience	Less than 5	19	8. 2
		5 – 10	52	22. 4
		10 – 15	75	32. 3
		15 and more	86	37. 1
4	Qualification	Diploma	12	5. 2
		Bachelor	120	51. 7
		Master	85	36. 6
		Ph.D.	15	6. 5
5	Functional Level	Manager	95	41. 0
		Dep. President	98	42. 2
		Employee	39	16. 8
6	Asset Size	Small	90	38. 8
		Large	142	61. 2
7	ITI Ratio	Low	51	22. 0
		High	181	78. 0

a) Study Population and its Sample

As shown in Table1, the respondents were 79.3% male and 20.7% female. Their ages were categorised as less than 30, between 30 and 40, between 40 and 50, and above 50. 'Experience' was defined as less than 5 years, between 5 and 10 years, between 10 and 15 years, and above 15 years. Qualifications were Diploma, Bachelor, Master, and PhD. Functional levels were manager, president, and employee. Control variables were, first, small- and large-asset banks; second, low- and high-IT ratio.

b) Study Tool

To achieve the objectives of this research, and after reviewing to the literature concerning the possible use of information technology, we devised a tool to measure the impact of IT on the efficiency of banks in Jordan. The tool consisted of three parts: personal information, public (sex, age, and years of experience, qualifications, and the functional level, the size of assets, and the percentage of ITI). The second part dealt with IT levels with 69 items distributed over four levels: 18 relating to infrastructure, 6 to human resources, 11 to technological knowledge, and 8 to customer relationships. The third variable, efficiency of banks, consisted of 26 items. A five-stage Likert-scale was adopted to measure the level of application of IT and of bank efficiency. This latter was divided into three levels, with cut-off calculated by dividing the difference between the highest value of the scale (5) and least value (1) at three levels: i.e., the cut-off grade is {(5-1)/3 = 1.33}.

Thus, the three levels as follows:

- Low-grade application (1–2.33)
- Medium degree of application (2.34–3.67)
- High degree of application (3.68–5).

This was subsequently validated as a measurement tool and its reliability tested as follows:

c) Tool Validity

To test the validity of the measurement tool, it was tested on a separate group of experts and arbitrators with expertise in the field of IT in Jordanian universities. This enabled us to validate both the linguistically formulation of items, and the applicability of the items to the variables in the study. The observations of these experts and arbitrators were taken into consideration, with some items reworded some items and others deleted.

d) Tool Reliability

To check the reliability of the questionnaire, we calculated the coefficient of reliability of the tool (measuring the internal consistency of the items) using Cronbach's Alpha. The total reliability coefficient of the tool overall (0.947) is shown in Table 2.

Table 2 : Test of study tool reliability

Variables	No. of items	Cronbach's Alpha
Infrastructure	18	0. 881
Human resources	6	0. 822
Technological knowledge	11	0. 804
Customer relationship	8	0. 842
Banks performance	26	0. 876
Total items	69	0. 947

e) Statistical Process

After completion of the data insertion in the computer software of SPSS, descriptive and analytical statistical methods were used, in order to answer the study questions and test the hypotheses. The statistical methods used for the purposes of statistical analysis of the data are: Cronbach's alpha coefficient, Frequencies and percentages, Arithmetic mean and standard deviation, Spearman correlation coefficient, Variance inflation factors test (VIF), Multiple linear stepwise regression analysis and One-way analysis of variance.

f) Statistical Analysis

This section presents the results of the statistical analysis of the data derived from the subjects' responses to the questionnaire, reached through the use of SPSS. The results were classified according to the sequence of questions and assumptions contained, as follows:

i. *Question One*

What is the degree of the application of IT levels in Jordanian banks from the viewpoint of the study sample?

Table 3 : Means and standard deviations for IT levels Application

No.	Levels	Mean	Standard deviation	Rank	Application Degree
1	Infrastructure	4. 20	0. 34	2	High
2	Human resources	3. 97	0. 49	4	High
3	Technological knowledge	4.13	0. 30	3	High
4	Customer relationship	4. 23	0. 39	1	High
-	Information technology	4.13	0. 31	-	High

To answer this question, means and standard deviations were calculated to assess the study sample on each IT level. Table 3 indicates the results of analysis of responses of a sample study on the degree of application of IT in Jordanian banks. The table includes the means for all levels in order to determine the level of intensity of answers in each part, and standard deviations for the purpose of diagnosis of the dispersal of the answers to arithmetic means.

Table 3 illustrates a tendency in all means for the IT level to rise from the viewpoint of the sample study, comparing the means of the standard (4.20, 3.97, 4.13, 4.23 respectively), all greater than the standard 3 out of 5 on the Likert scale. These results indicate that members of the study sample possess clear vision about every level of information technology, indicating that their evaluation of the application of IT in Jordanian banks was positive. This in turn means that Jordanian banks apply a high level of IT, from the viewpoint of the sample. The customer relationships fell on the first rung of the ladder of priorities for members of the study sample, followed by infrastructure, then technological knowledge, while human resources came in the fourth rank.

ii. *Question Two*

What is the level of performance of Jordanian banks according to the sample study?
To answer the second question, averages and standard deviations were calculated to assess the responses of the study sample to each section of the variable efficiency.

Table 4 : Means and standard deviations for items of bank performance

No.	Items	Mean	Standard deviation	Rank	Evaluation Level
1	Q_1	4. 10	0. 87	26	High
2	Q_2	4. 25	0. 55	19	High
3	Q_3	4. 39	0. 52	7	High
4	Q_4	4. 35	0. 50	9	High
5	Q_5	4. 17	0. 42	21	High
6	Q_6	4. 34	0. 51	11	High
7	Q_7	4.12	0. 49	25	High
8	Q_8	4. 15	0. 48	23	High
9	Q_9	4. 14	0. 35	24	High
10	Q_{10}	4. 22	0. 47	20	High
11	Q_{11}	4. 31	0. 48	14	High
12	Q_{12}	4. 16	0. 39	22	High
13	Q_{13}	4. 25	0. 52	18	High
14	Q_{14}	4. 41	0. 50	5	High
15	Q_{15}	4. 42	0. 55	4	High
16	Q_{16}	4. 27	0. 47	16	High
17	Q_{17}	4. 40	0. 53	6	High
18	Q_{18}	4. 28	0. 50	15	High
19	Q_{19}	4. 34	0. 50	10	High
20	Q_{20}	4. 32	0. 51	13	High
21	Q_{21}	4. 43	0. 52	3	High
22	Q_{22}	4. 45	0. 53	1	High
23	Q_{23}	4. 37	0. 51	8	High
24	Q_{24}	4. 26	0. 54	17	High
25	Q_{25}	4. 34	0. 58	12	High
26	Q_{26}	4. 44	0. 59	2	High
-	Bank performance	4. 30	0. 26	-	High

Table 4 presents the results of responses from the sample study on the items of the variable performance of Jordanian banks. It displays a high arithmetic mean of the variable efficiency of the performance of Jordanian banks, at 4.30, standard deviation 0.26: greater than the standard test of 3 out of 5 on the Likert Scale. This finding suggests the members of the study sample possess a clear understanding of the efficiency of Jordanian banks, which indicates that the assessment of the efficiency variable by members of the study sample was positive; and this means that the performance appraisal high degree with respect to each portion of the variable (the performance of Jordanian banks). The results show that item 22, "Investment in IT leads to increased accuracy in work", took first place on the ladder of priorities with an arithmetic mean of 4.45 and a standard deviation of 0.53. Item 1, "Current technology is less than the return Achieved lies 26th place, last on the ladder, with an average arithmetic mean of 4.10, and a standard deviation of 0.87. This means that banks perform their services to a high degree from the viewpoint of the study sample.

iii. *Study Hypotheses Test*

Before testing the hypotheses of the study, the researcher considered to verify the absence of the Multicollinearity between the independent variables of IT levels. As shown in the Table 5).

Table 5 : Test of multicollinearity between IT levels Multicollinearity Variables

Variables	Multicollinearity	
	Tolerance	VIF
Infrastructure	0.525	1.906
Human Resources	0.511	1.956
Technological Knowledge	0.458	2.183
Customer Relationship	0.632	1.582

Results in Table (5) illustrate, the previously the absence of (Multicollinearity) between (the IT level) which (infrastructure, human resources, technological knowledge, and the customer relationship), this is confirmed by the values of innumerable test (VIF) calculated with the criteria mentioned, and all these values are less than the critical value of the test (5). To make sure there is no (Multicollinearity) between levels, it has become possible to test hypotheses concerning the statistical assumptions (correlation analysis, regression analysis, and measuring the differences). And the hypotheses of the study will test by using the (correlation coefficient for the (Spearman), multiple linear stepwise regression, and Analysis of Variance (ANOVA)), respectively. The following is a detailed explanation of the results of hypothesis testing:

a. The First Main Hypothesis Test

H_{01}: There is no statistically significant correlation at the level ($\alpha \leq 0.05$) between the performance of Jordanian banks and each level of IT.

To test this hypothesis, the Spearman correlation coefficient was used, as shown in Table 6.

Table 6 : The correlation between bank performance and IT level

Variables	Infrastructure	Human Resources	Technological Knowledge	Customer Relationship
Bank performance	0. 587 **	0. 477 **	0. 570 **	0. 677 **
Sig.	0. 000	0. 000	0. 000	0. 000

Results in Table 6 illustrate a positive and statistically significant relationship at level ($\alpha = 0.05$) between the performance of Jordanian banks and each IT level. This is supported by the values of statistical significance (Sig.) for calculated correlation coefficients, all less than the significance level ($\alpha \leq 0.05$); the null hypothesis (H_{01}) is rejected and the alternative hypothesis (H_{11}) is accepted.

b. The Second Main Hypothesis Test

H_{02}: There will be no statistically significant effect at the level ($\alpha \leq 0.05$) for IT level on the performance of Jordanian banks.

This was tested using the multiple linear regression method. Prior to the test the validity of the model was verified, as shown in Table 7.

Table 7 : Model summary of multiple linear regressions

R	R Square	Std Error of Estimate	F- test	Sig.
0.733	0. 537	0.177	65. 895	0. 000

The value of (F) is tabulated for the degree of freedom for the numerator and denominator (4, 227) of the level ($\alpha = 0.05$) = 2. 37.

Results in Table 7 illustrate the following:

- The value of (F) calculated (65.895) is greater than the value of (F) tabulated (2.37). As well, the value of statistical significance (Sig.) (0.000) is less than the significance level ($\alpha = 0.05$). This rejects the null hypothesis (H_{02}), which means evidence of the validity of multiple linear regression model, and therefore there is no impact on IT level in the efficiency of Jordanian banks.

- The value of coefficient of Determinant (R2) (0.537) indicates that IT levels (infrastructure, human resources, technological knowledge, and customer relationships) show a change of 53.7% in the efficiency performance of Jordanian banks, with the remainder amounting to 46.3%, attributable to variables not included in the multiple linear regression model.

Given the above results, it is now possible to use the linear regression stepwise method to measure the impact of IT in the performance of Jordanian banks.

Table 8 : Results of stepwise multiple linear regression (coefficients)

Variables	Coefficients (β)	Standardised coefficients (BETA)	t – test	Sig.
Constant($β_0$)	1. 578	-	8.788	0. 000
Customer relationships	0. 326	0. 487	8. 586	0. 000
Infrastructure	0. 199	0. 264	4. 232	0. 000
Technological knowledge	0. 210	0. 242	3. 623	0. 000
Human resources	0. 091	0. 175	2. 764	0. 006

Table 8 illustrates the following:

- There are statistically significant regression coefficients (B) for all levels of IT (infrastructure, human resources, technological knowledge, and customer relationships), with significant impact at the level ($α = 0.05$) in the efficiency of the banks. This is supported by the values of (t) calculated as 4.232, 2.764, 3.623, and 8.586 respectively, as well as the values of statistical significance (Sig.) of the levels listed below level (a = 0.05); in light of previous results, the null hypothesis (H_{02}) will be rejected.

- The values of the standardised coefficient (BETA) calculated for all levels at 0.264, 0.175, 0.242, and 0.487 respectively, indicating that an increased interest in each of level by one standard deviation will improve the performance of the banks, reached 48.7%, 24.2%, 17.2%, and 26.4% respectively.

c. The Third Main Hypothesis Test

H_{03}: There is no statistically significant difference at the level of ($α ≤ 0.05$), between the mean responses of the sample study on the application IT levels in Jordanian banks, caused to the variable asset size, and to ITI ratio.

To test this hypothesis, we use analysis of variance (ANOVA), and the means and standard deviations for both asset size and the ITI ratio. As shown in Table 9, the value of (F) is tabulated at the degree of freedom of the numerator and denominator (1,230), at the level (($α = 0.05$)) = 3.84.

Table 9 : Analysis of variance (ANOVA) to test differences between the responses of the study sample about the application of IT levels

Variables	Source of variation	Sum of squares	df.	Mean squares	F-test	Sig.
Asset size	B. levels	0. 450	1	0. 450	4.737	0. 031
	Error	21. 911	230	0. 095		
	Total	22. 361	231	-		
ITI ratio	B. levels	0. 056	1	0. 056	0. 577	0. 447
	Error	22. 305	230	0. 097		
	Total	22. 361	231	-		

Comparison of the calculated means and standard deviations of the variables asset size and ITI ratio is shown in Table 10.

Table 10 : Means and standard deviations for asset size and ITI ratio)

Variables		N	Mean	Std deviation
Asset size	Small	90	4. 08	0. 24
	Large	142	4. 17	0. 34
ITI ratio	Low	51	4. 10	0. 27
	High	181	4. 14	0. 32

Table 10 illustrates the following:

- There are statistically significant differences at the level ($\alpha = 0.05$) between the mean responses of the sample study on the application of IT in Jordanian banks. These are attributed to variable size (assets), in favour of assets (large), with an arithmetic mean of 4.17. The value of (F) calculated as 4.737 is greater than the tabulated value (3.84), while the value of statistical significance (Sig.) of 0.031 is less than the significance level ($\alpha = 0.05$). The null hypothesis (H_{03}) will be rejected.

- There is no statistically significant difference at the level ($\alpha = 0.05$) that can be attributed to the variable of the ITI ratio. The value of (F), calculated as 0.577, is less than the tabulated value of 3.84. The value of statistical significance (Sig.) of 0.447 is greater than

the significance level ($\alpha = 0.05$). And it will not be reject (accept) the null hypothesis of (H_{03}).

d. The Fourth Main Hypothesis Test

H_{04}: There is no statistically significant difference at the level ($\alpha \leq 0.05$), between the mean responses of a sample study on their assessment of the performance of Jordanian banks that can be attributed to the variables of asset size and ITI ratio.

To test this hypothesis, we use analysis of variance (ANOVA) and the means and standard deviations for both asset size and ITI ratio, as shown in Tables 11 and 12. The Value of (F) is tabulated at the degree of freedom of the numerator and denominator (1,230) at the level of ($(a = 0.05)$)= 3.84.

Table 11 : Analysis of variance (ANOVA) to test differences in the responses of the study sample about the evaluation of Jordanian bank performance

Variables	Source of variation	Sum of squares	df.	Mean squares	F-test	Sig.
Asset size	B. levels	2. 811	1	2. 811	52. 056	0. 000
	Error	12. 499	230	0. 054		
	Total	15. 310	231	-		
ITI ratio	B. levels	0. 564	1	0. 564	8. 813	0. 003
	Error	14. 746	230	0. 064		
	Total	15. 310	231	-		

The comparison of the calculated means and standard deviations of the variables asset size, and ITI ratio are shown in Table 12:

Table 12 : Means and standard deviations for asset size and ITI ratio

Variables		N	Mean	Std deviation
Asset size	Small	90	4. 16	0. 24
	Large	142	4. 38	0. 23
ITI ratio	Low	51	4. 20	0. 27
	High	181	4. 32	0. 25

The results in Tables (11and 12) illustrate:

- There were statistically significant differences at the level ($\alpha = 0.05$) between the mean responses of the study sample on their assessment of the performance of Jordanian banks, attributed to the asset size variable, and in favour of large assets (large). The arithmetic mean is 4.38; the value of (F) calculated as 52.056 is greater than the tabulated value of 3.84. The value of statistical significance (Sig.) at 0.000 is less than the significance level ($\alpha = 0.05$). The null hypothesis (H04) will be rejected.

- There are significant differences at the level of ($\alpha = 0.05$) between the mean responses of study sample on their assessment of the performance of Jordanian banks, attributed to the variable ITI and the proportion of high ITI, with a mean of 4.32. This

supports the value of (F), calculated as 8.813 and greater than the tabulated value (3.84). The value of statistical significance (Sig.) equals 0.003, less than the significance level ($\alpha = 0.05$). The null hypothesis (H_{04}) will be rejected.

IV. CONCLUSION

The results of this study show that IT levels strongly affect bank performance. Four major levels of IT: IT infrastructure, IT human resources, IT technical knowledge, and customer relationships, strongly influence a bank's performance.

The results of this study were classified according to the sequence of questions and assumptions as follows:

a) The members of the study sample possess a clear vision about the variable efficiency of the performance of Jordanian banks across every variable.

b) There is positive and statistical significance at the level (α = 0.05) between the performance of Jordanian banks and each IT level.

c) There exist statistically significant regression coefficients (B) for all levels of IT (infrastructure, human resources, technological knowledge, and customer relationships), with significant impact at the level (α = 0.05) to the level mentioned in the efficiency of performance of Jordanian banks.

d) There were statistically significant differences at the level (α = 0.05) between the mean responses of a sample study on the application of IT in Jordanian banks, attributed to variable size (assets) and in favour of assets (large).

e) There were statistically significant differences at the level of (α = 0.05), between the mean responses of the study sample, attributable to the asset size variable and in favour of large assets.

f) There are significant differences at the level of (α = 0.05) between the mean responses of the study sample, attributed to the variable ITI and the proportion of ITI.

This analysis seemingly demonstrates that:

a) Staff developing should be in line with the development and modernisation of technology.

b) All technological means that enhance the service experience of customers should be adopted because they raise the level of satisfaction with banking services.

c) Updating IT infrastructure in banks will reflect positively on performance.

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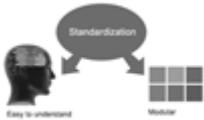
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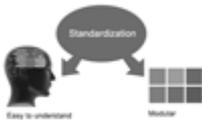
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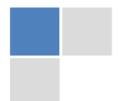
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1. General,

2. Ethical Guidelines,

3. Submission of Manuscripts,

4. Manuscript's Category,

5. Structure and Format of Manuscript,

6. After Acceptance.

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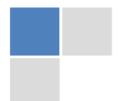
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Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including <u>definite statistics</u> - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

Procedures (Methods and Materials):

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content
- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from
- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.

- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach
- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables
- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
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- In spite of position, each table must be titled, numbered one after the other and complete with heading
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- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.
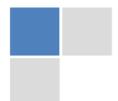
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Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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