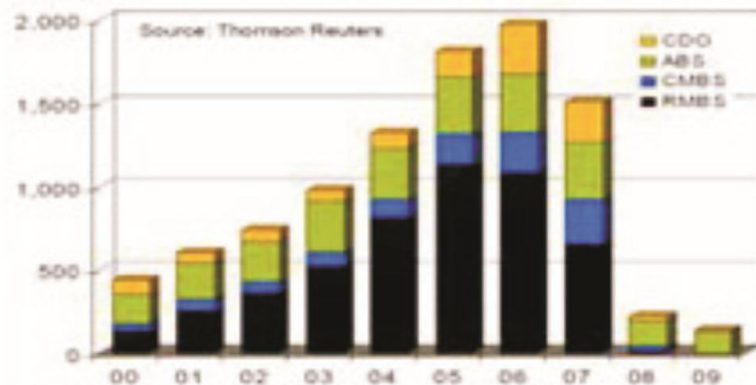


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SR. NO.	PARTICULAR	PAGE NO.	DOI NUMBER
1.	DEVELOPMENT OF OPTIMIZATION MODELS AND METHODS FOR THEIR SOLUTION FOR ASSET MANAGEMENT OF COMMERCIAL BANKS IN UZBEKISTAN Abdullaev Altinbek Yangibaevich	1-15	10.5958/2319-1422.2022.00011.X
2.	WORK LIFE BALANCING IN BANKING SECTOR: PERCEIVED GENDER DISCRIMINATION Dr. Arti Pandit Dhawan, Anu Maher	16-24	10.5958/2319-1422.2022.00013.3
3.	INVESTMENT DECISIONS AND CHALLENGES OF WORKING WOMEN POLICYHOLDER TOWARDS LIFE INSURANCE CORPORATION IN CHENNAI CITY Ms. S. Pradeepa, Dr. A.A. Ananth	25-30	10.5958/2319-1422.2022.00014.5
4.	PROBLEMS RELATED TO MARKETING OF MANGOES IN SRINIVASPUR TALUK AND ITS ADVERSE IMPACT ON SALES AND REVENUE Manjunatha N	31-49	10.5958/2319-1422.2022.00015.7
5.	PROJECT MANAGEMENT OFFICE IN ORGANIZATIONS Nomonova Yulduz Soyibnozori qizi	50-61	10.5958/2319-1422.2022.00016.9
6.	PORTFOLIO MANAGEMENT OF ASSETS AND LIABILITIES IN COMMERCIAL BANKS OF UZBEKISTAN Abdullaev Altinbek Yangibaevich	62-82	10.5958/2319-1422.2022.00012.1

DEVELOPMENT OF OPTIMIZATION MODELS AND METHODS FOR THEIR SOLUTION FOR ASSET MANAGEMENT OF COMMERCIAL BANKS IN UZBEKISTAN

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ABSTRACT

Need to study system analysis of modern models of banking activity, including bank asset management, and determination of the most promising areas for the application of economic and mathematical methods of multi-criteria optimization based raising the level financial stability jar. The purpose of the article is to increase the efficiency of a commercial bank based on the development and testing of optimization models and methods for their solution for managing bank assets. The article explores mathematical model of the problem of multi-criteria optimization of the structure of assets of a commercial bank, considering the structure of liabilities as an exogenous factor according to criteria reflecting various aspects of the bank's stability, taking into account the restrictions of the Central Bank of the Republic of Uzbekistan, using an extended classification of assets by risk and liquidity to adequately model the state of the bank's balance sheet and a method for solving a multi criteria optimization problem based on the synthesis of concessions and Pareto optimal set methods by constructing an optimal set at each Pareto step, formulating the concession value according to less important criteria and transferring them to the category of restrictions. The method makes it possible to effectively synthesize the possibilities of machine optimization and take into account the knowledge that is difficult to formalize. The conducted research allows to significantly speed up the process of developing management decisions in the bank and increase their efficiency.

KEYWORDS: *System Analysis, Bank Asset Management, Development And Testing Of Optimization Models, Decision Maker, Method For Solving The Problem Of Multi Objective Optimization, The Role Of The Banking System*

INTRODUCTION

The role of the banking system in the economy dictates special attention to ensuring their sustainable development. In this case, asset management of commercial banks plays a special role. This thesis is confirmed by a 1988 study of the causes of failures of large US commercial banks. The results of the analysis show that the main reason for the decline of troubled banks continues to be poor asset quality (98% of bankruptcies), which eventually depletes the bank's capital, and weaknesses in planning and management (90%). Insufficient attention to asset

quality management and maintaining liquidity at the proper level was the main cause of the crisis in the banking system of Uzbekistan in 1998. The existing theories of asset management of commercial banks are aimed at managing certain types of assets or are built on a one-to-one correspondence between assets and liabilities, grouped by terms and type. As a rule, the need to maintain sufficient liquidity and stability of the bank entails a "reinsurance" asset structure, characterized by low profitability, which significantly limits the bank's ability to develop.

The problem of asset management in its importance and relevance is one of the main ones in banking management. It is necessary to develop new evidence-based approaches that correspond to the goals of ensuring high profitability of banking activities in compliance with the requirements of financial stability.

In this regard, the refinement of the theoretical foundations and the justification of specific practical recommendations for the development of methods and tools for managing the assets of a commercial bank in modern conditions are important tasks of economic research. At the same time, like any process, they require constant improvement, since the problem of eliminating a certain gap between theoretical research and the main procedures for their practical application is extremely acute.

Obviously, the traditional mechanisms of bank management do not provide effective ways to achieve the optimum between the return on assets and the stability of commercial banks. The solution of this problem is possible only with the use of economic and mathematical methods, which determines the relevance and practical significance of studying the features of the functioning of commercial banks in modern conditions and issues of increasing the efficiency of managing their assets.

An urgent need is to develop the theory and practice of optimal management of commercial banking assets, using the achievements of mathematical management theory, which will ensure the stability of banks through more efficient use of available resources.

Literature review

Theoretical problems related to the influence of bank assets on its liquidity, stability and reliability are considered in a large number of works, the most fundamental of which are the works of E. Reed, R. Kotter, E. J. Dolan, J. F. Sinki, O.I. Lavrushina, V.M. Usoskin, M.B. Dichenko, Z.T. Tomaeva, Kh. Rakhmatova, M. Muminova and other authors.

Chadin S. V. (2004) formulated the characteristic features of financial management in commercial banks, identified the main directions of its development. In the study generalized the basic principles of building a modern effective management system for a commercial bank; the concept of asset management of a commercial bank has been clarified, the author's definition of centralized asset management has been given, the role and place of the treasury in the management system of a commercial bank has been determined; the main factors influencing the effectiveness of the centralized asset management of a commercial bank have been identified and systematized; a system of centralized asset management of a commercial bank was developed and a scheme and algorithm for managing each of its elements were proposed; formulated methodological foundations for optimizing the asset management processes of a commercial bank.

Kolesnikov Yu.M. (2000) adapted the theory of diversification of the investment portfolio of Markowitz to the portfolio of banking assets in general and the loan portfolio in particular. At the

same time, the necessary diversification of the portfolio is determined by the low degree of correlation between individual types of assets, types of loans, borrowers (issuers), etc.; it is proved that the Savings Bank, due to its special status, is both an economic entity and an economic management body; from this point of view, an assessment was made of the implementation of the theoretical provisions identified by the research in the practice of managing the assets of the Savings Bank; methods for assessing the risk of bankruptcy of enterprises were tested (Z - Altman model, Chesser loan supervision model, Irkutsk R - model and coefficient of loss (recovery) of solvency) and appropriate recommendations are given to improve the assessment of the creditworthiness of legal entities, banks, authorities of subjects and municipalities, individuals based on them; a new approach is given to assessing the financial position of the authorities of the subject, as one of the main borrowers of the Savings Bank, based on determining the consolidated credit rating of the borrower, taking into account the values of the borrower's credit ratings calculated according to the methods of Sberbank's own methodology and according to the methodology of the rating agency "EA - Rating", as well as the value of the indicator of economic development of the region.

Rybin S.V. (2007) gave the author's interpretation of the optimal composition of banking assets, based on achieving an acceptable ratio of risk and return, taking into account the specifics of their formation in modern Russian conditions. The work carried out a classification of external and internal factors that limit the process of profit maximization in the course of managing a portfolio of banking assets, from the standpoint of consistency, the relationship between them was clarified; the use of simulation modeling as a tool for optimizing the structure of a portfolio of assets of a commercial bank is proposed as the most effective method of multivariate analysis of the behavior of the object under study at relatively low costs; a mathematical model was built for choosing optimal solutions for balancing assets and liabilities of a commercial bank, taking into account the complex influence of factor criteria, which, in addition, allows solving forecast and strategic problems, and the algorithm for its implementation is substantiated; directions have been developed to improve the methods of managing the assets of commercial banks, contributing to timely decision-making on optimizing their structure with checking sensitivity to changes in the economic situation or errors in forecasts.

Selimov T.R. (2011) clarified the methodological bases for determining the main directions for assessing the quality of asset management of commercial banks of the Republic of Dagestan, aimed at identifying the effectiveness of loans and other funds placed. The study proposes a system of methodological support for the analysis of the financial condition of commercial banks as part of an asset management strategy, which allows the use of certain indicators, methods and techniques of analysis to assess the effectiveness of bank management; the methodological provisions for analyzing the composition, structure and dynamics of loan assets are substantiated, the author's version of optimizing the structure of loan assets under the conditions of crisis phenomena is proposed; proposed measures to improve the methodology for analyzing factors affecting the quality of bank asset management:

These studies are of great theoretical and practical importance. However, there are still a number of unresolved problems, in particular, the relationship between the fundamental concepts of liquidity, solvency, reliability, stability of a commercial bank is interpreted differently; due to the extreme complexity, the problem of building a general model of a bank that combines the management of assets, liabilities and equity capital has not been solved. In the field of private models that describe one aspect of bank management, asset management models have become

widespread, scalarizing a multi criteria optimization problem according to profitability and sustainability criteria based on an explicitly or implicitly given utility function of a decision maker (DM).

Since the task of formalizing the utility function is extremely complex, the optimization models built using it have not been widely used in practice due to a significant discrepancy between the optimization results and the decision maker's expectations. Thus, the task of developing such a banking asset management model that allows more flexibility to take into account the need for a compromise between criteria with interactive consideration of the preferences of the decision maker seems to be relevant.

The main purpose of the study is to improve the efficiency of a commercial bank based on the development and testing of optimization models and methods for their solution for managing bank assets.

Methodology

The study is based on the postulates of system analysis. In the process of research and development, the main provisions and methods of mathematical economics were used: the theory of multi criteria optimization (in particular, the methods of concessions, the main criterion, normalization of criteria, convolution of additive and multiplicative types, various methods for constructing the Pareto set); elements of game theory (maximum convolution); method of multidimensional data visualization; elements of the theory and tools for designing economic information systems.

In the long-term (strategic) aspect, the goal of each business entity is survival and sustainable development. The analysis of the relationship between the concepts of "stability" and "reliability" showed that in the most typical word usage "reliability" means the ability of an object to perform specified functions, while maintaining its main characteristics within the established limits, stability is considered as the ability to resist forces that can unbalance, t .e. stability on the development trajectory. Most often, stability is used as a characteristic of complex dynamic systems that are influenced by a large number of factors, including those with random characteristics, which include commercial banks in the market environment. Unlike resilience, reliability is a more static category.

In addition, states of stagnation and stability should be distinguished. Stagnation, in contrast to sustainability, is such a state of the bank, in which the preservation of its reliability is achieved at the cost of losing the ability to develop, to self-reform. Obviously, in a strategic perspective, such a commercial bank has no chance. Thus, the logical-terminological analysis shows that sustainability is the most fundamental goal of the bank's development. At the same time, stability as a state of dynamic equilibrium in motion is made up of current reliability and the ability to develop. The bank's ability to develop directly depends on its profitability, which allows it to expand its activities and improve the quality of work. Thus, it can be concluded

The concept of reliability needs a special study. It can be quantified in two different ways: empirical-statistical and a priori-theoretical. The first approach involves the statistical classification of banks into reliable and unreliable (by means of expert assessment or consideration of data in a time context) and the identification of quantitative indicators of any nature (individual balance sheet items, various ratios, etc.) that most adequately reflect this division. This approach leads to the construction of reliability ratings as integral indicators

reflecting the overall reliability of the bank. The paper considers both the use of standard rating methods (Kromonov, Russov, Katugin), and the methodology for constructing your own ratings, which allow you to set your own reliability criteria,

The second approach is an analytical consideration of the concept of "reliability" in order to identify its main components that have a direct quantitative assessment. To determine these parameters, a synthesis of the historical-genetic and structural-functional approaches was applied.

The historical-genetic approach implies an analysis of the evolution of the concept and sustainability factors in the development of banking. The study led to the following conclusions: the problem of maintaining the reliability of banks arose simultaneously with their appearance. Since even the first banks (change shops) issued loans from funds deposited for storage, the problem of maintaining liquidity in order to pay off current liabilities arose. Thus, at the beginning of the existence of banking activity, the reliability of banks depended on their liquidity, and liquidity was reduced to a sufficient supply of absolutely liquid assets - gold coins.

Therefore, the main method of regulating banking reliability was asset quality management - the riskiness of lending and the absolute liquidity ratio (according to modern terminology). In the 19th century, the problem of maintaining liquidity became more acute due to the transition of banks to the issuance of banknotes (bank bills at sight). Therefore, the leading banks tried to maintain the absolute liquidity ratio (the ratio of cash on hand to the total amount of banknotes issued) at a fairly high level.

The first factor of reliability is the bank's liquidity. The study showed that in practice it is sufficient to use the relevant standards of the Central Bank of the Republic of Uzbekistan (*H2-H3, H14*) as liquidity indicators, since they are based on accounting for internal reporting data and, therefore, are much more accurate than those operating only with open balance sheet liquidity indicators of Kromonov and similar rating systems.

In the 20th century, capital adequacy also gained particular importance. Sufficient capital forms a reserve that allows the bank to remain solvent and continue operations despite unforeseen losses, etc.; however, an overcapitalized bank is usually inefficient (low leverage) and non-competitive in the capital and credit markets. Therefore, it is necessary to optimize the value of this indicator at a certain average level. Two groups of coefficients were used as indicators of sufficiency:

- the first group is built on the basis of the ratio of capital funds (in various composition) to total deposits (deposits);
- the second group is based on the ratio of capital (in various modifications) and assets (of various composition).

The ratio of equity to deposits is based on the consideration of capital as a means of protecting creditors.

In the second third of the 20th century, the prevailing opinion became that the need for capital does not depend on deposits, but on assets: capital adequacy should indicate what losses a bank can incur without prejudice to the interests of depositors and other creditors. Capital came to be viewed primarily as a shock absorber to help overcome the fall in the real value of assets.

The conducted studies confirm the correctness of this approach. If losses occur as a result of the active operations of the bank, which the latter conducts mainly on its own behalf and at its own expense, the losses are covered not from the attracted resources, but from its own funds.

At present, the standard approach to capital adequacy analysis has been developed by the Basel Committee on Banking Supervision and Regulation, which represents the point of view of the Central Banks of the world's leading countries. According to him, the preferred method for assessing capital adequacy is the ratio based on risk-weighted assets.

In domestic practice, the use of capital adequacy indicators began in August 1992. In the instruction of the Central Bank of the Republic of Uzbekistan No. 10 "On the procedure for regulating the activities of commercial banks", the capital adequacy of a commercial bank was determined by the minimum allowable size of the authorized capital of the bank and the maximum ratio of the total capital and the amount of assets, taking into account their riskiness. It was proposed to measure capital adequacy using the ratio of the bank's capital and the total volume of risk-weighted assets (*HI*). In all subsequent changes and additions to this Instruction, including the new Instruction of the Central Bank of the Republic of Uzbekistan "On the procedure for regulating the activities of commercial banks", which came into force in August 1997.

The study of the influence of asset quality on the stability of the bank made it possible to formulate a holistic concept of asset management in order to achieve the main goals of the bank and to identify the dialectical relationship between qualitative goals and quantitative criteria. The main goal of banking - the sustainable development of commercial banks - depends on profitability and reliability. Reliability can be described in terms of liquidity, capital adequacy, or through the use of special rating systems. At present, the main factor of capital adequacy is recognized as the structure of assets according to the degree of risk, and liquidity - the presence of a reserve of highly liquid assets and the compliance of assets and liabilities by maturity.

Effective asset management of a commercial bank requires the development of adequate quantitative models of banking activities. The bank is a complex modeling object that requires, first of all, an integrated approach. It is rather difficult to create an integrated model of a bank that would simultaneously cover liquidity management, a portfolio of assets, and the choice of the optimal structure of the resource base. Therefore, private models describing one of the aspects of the bank's activities have become widespread. When choosing conceptual provisions for building a model for ensuring the sustainable development of the bank, the main modern approaches were analyzed. One of them is liability modeling, which considers the credit market as little dependent on banking activity; the main attention is concentrated on the market of deposits and factors, leading to their attraction. In the case of perfect competition, the interest rate on deposits is considered as an argument of the fund supply function, and the bank is considered as a buyer of cash deposits, which acquires them at the advertised price; at the same time, rate variation is considered an effective tool for attracting savings from the population.

However, a study of the functioning of domestic banks showed that the prerequisites for this model in Uzbekistan are not fulfilled at all due to the low controllability of the deposit market: the bank accepts cash deposits, the total flow of which depends on the economic situation as a whole, the welfare of the population, etc., i.e. . from those factors that are outside the bank's competence and therefore should be considered as given exogenously. Private depositors traditionally prefer the People's Bank of the Republic of Uzbekistan as the most reliable and

essential correlation between the interest on deposits and the amount of funds raised: too high a percentage is perceived as a signal of the bank's dishonest intentions. Thus, the operational management of the resource base is practically impossible, and the structure of liabilities can be considered as a constant.

$X = \{x_i, \overline{1, N}\}$ - let be a vector of model variables; x_i - the amount of temporarily free funds invested in a particular type of assets; N - the total number of investment directions, the vector of variables belongs to the space of N - dimensional vectors $X \in R^N$ (the space of model variables).

Since the physical meaning of the vector of variables is temporarily free funds invested in one or another type of asset, the vector of variables is not negative: $X \geq 0$.

The functioning of the bank is aimed at fulfilling certain goals, which are reflected by the vector of criteria, functionally related to the vector of variables $f_k(X)$, $k = \overline{1, K}$, where is the set of indices of criteria K , the set of criteria $K, k \in K$ can be represented as a vector – functions

$$F(X) = \{f_k(X), k = \overline{1, K}\}$$

In our case, each component of the vector criterion is aimed at maximizing its value, the optimization problem is written as

$$\max F(X) = \{f_k(X), k = \overline{1, K}\}, \quad X \geq 0$$

This imposes a mandatory restriction

$$\sum_i x_i = S; \quad i = \overline{1, n}$$

where S is the sum of the bank's free resources at the beginning of the trading day (determined by experts). The meaning of this restriction is that the bank does not attract resources from outside, but redistributes temporarily free funds.

Mandatory restrictions according to the instructions of the Central Bank of the Republic of Uzbekistan are defined as follows:

$$H_1(\bar{X}) \geq 10\%; \quad H_2(\bar{X}) \geq 20\%; \quad H_3(\bar{X}) \geq 30\%$$

where H_1 - capital adequacy ratio, %; H_2 - instant liquidity ratio, %; H_3 - current liquidity ratio, %.

The components of the vector of criteria are indicators reflecting the hierarchical structure of the bank's goals. As a capital adequacy criterion, the relevant standard of the Central Bank of the Republic of Uzbekistan H_1 is applied. The most significant indicators of liquidity are the norms H_2, H_3 .

In addition to these standards, the values of bank reliability ratings can serve as criteria. The paper provides a comparative analysis of the ratings of Kromonov, Russov and Katugin. As a criterion for the profitability of the bank, the weighted return on assets is used

$$BD = \sum_i x_i d_i : A_b,$$

where x_i - the volume of investments in asset i ; d_i - average return on investment in an asset; A_b - balance currency.

It should be noted that the model is a static optimization problem and is designed for short-term management of investments of temporarily free funds in various types of assets.

RESULTS AND DISCUSSIONS

The paper analyzes traditional methods for solving this problem and shows that their application in banking is difficult due to the simplification of the multi criteria nature of the problem, insufficient consideration of the knowledge of the person making the decision in the subject area. In terms of the degree of involvement of the decision maker, the methods can be classified into interactive and fully automatic.

Fully automatic methods for solving multi objective optimization problems include the main criterion method and various convolutions of criteria. They are united by the fact that the decision maker sets his preferences once, when setting the problem, and then the only solution is given after the automated procedure for solving a single-criteria optimization problem.

The simplest and most frequently used method of reducing a multi criteria problem to a single-criteria one is to single out one criterion as the main one and transfer the remaining criteria to the category of restrictions by formulating additional restrictions on the values of these criteria. This method has a number of fundamental disadvantages. First of all, this method greatly simplifies the structure of the original problem, does not take into account the difference in the values of the criteria, transferred to the category of restrictions. In addition, it is quite difficult to formulate restrictions on the values of less important criteria.

If you set limits that are too low, then the resulting point will not necessarily be Pareto-optimal (if the objective function has several extrema), and if it is too high, then the value of the objective function (main criterion) at the obtained point will be too low compared to its absolutely achievable maximum (without taking into account restrictions on other criteria).

Criteria convolution is another popular technique. There are a large number of different types of convolutions. Theoretically, all of them are based on the approach associated with the concept of the utility function of the decision maker. This approach assumes that the decision maker always has a utility function, whether or not he can specify it explicitly. This function maps the criteria vectors onto the real line so that the larger value on this line corresponds to the more preferred criteria vector. The meaning of different convolutions is to obtain one "quality factor" (combined criterion) from several criteria, thus approximately modeling the unknown (not explicitly specified) utility function of the decision maker.

However, the study showed that the main drawback of all criteria convolutions is the following: the implicit utility function of the decision maker is usually non-linear, so the "true" weights of the criteria (i.e., those weights for which the gradient of the weighted objective function coincides in direction with utility function gradient) will vary from point to point, so we can only talk about locally appropriate weights; moreover, often the decision maker cannot set the weighting coefficients at all. This is a particularly big disadvantage in relation to the banking sector, for example: according to the instant liquidity ratio, the Central Bank of the Republic of Uzbekistan has set a limit of more than 10%. From the point of view of the stability of the bank, the usefulness of the value of this criterion, equal to 20%, one and a half times (or 50%) higher than the usefulness of the criterion value equal to 10%. However, the usefulness of the value $H2 = 100\%$ cannot be estimated one and a half times (or 50%) greater than the value $H2 = 65\%$, since the value $H2 = 65\%$ is already quite high in terms of providing liquidity. Depending

on the situation in the economy, the degree of confidence in the banking system, etc. we can decide that the utility of the value $H2 = 100\%$ is higher than the utility of the value $H2 = 65\%$ not by 50%, but by about 25 ... 30%. Obviously, the utility of the value $H2 = 400\%$ is exactly the same as the utility of the value $H2 = 200\%$, since both of these values mean the absolute liquidity of the bank, and a further increase in the value will not lead to a noticeable increase in stability. The usefulness of increasing the value of liquidity ratios gradually decreases as the absolute values of these ratios grow and drops sharply after overcoming the threshold of 100%. Thus, the main disadvantage of all methods for solving problems of multi criteria optimization, which led to their small distribution in practice, is the insufficient consideration of the preferences of the person making the decision regarding the ranking of criteria by importance that are difficult to formalize and change with the receipt of additional information.

Therefore, it is advisable to use interactive methods of finding a solution, in which the decision maker constantly consults with the data of the program, choosing the most appropriate option. The most obvious and frequently used method in this case is the construction of the Pareto set with subsequent expert selection of the best point on it. However, the scope of the method is seriously limited by the impossibility of visualizing the Pareto set by the number of criteria greater than three.

An example of an interactive technique for finding an acceptable solution is the method of successive concessions (also called the method of optimization by successively applied criteria), which is a "softened" version of lexicographic optimization. Its essence is as follows: an analysis of the relative importance of the criteria is carried out and the criteria are arranged and numbered in descending order of importance; optimization is carried out according to the first criterion and its largest value is determined f_1^* . Next, the expert evaluates the value of the allowable reduction (concession) of this criterion Δf_1 , formulates a constraint $f_1 \geq (f_1^* - \Delta f_1)$, and searches for the optimum of the second most important criterion, etc. After optimizing the last most important criterion $k = \overline{1, K}$, provided that the value of each criterion must not be less than $(f_1^* - \Delta f_1, k = \overline{1, K})$, the resulting solutions are considered optimal.

However, the analyzed method is limited to taking into account only the pairwise relationship of the criteria to each other, hence the complexity of choosing and justifying the values of concessions for individual criteria, since the values of concessions are not commensurate with each other due to the different economic essence of different criteria. The second disadvantage is that at each step the set of Pareto optimal points is truncated; hence, in the general case, the resulting solution is not Pareto optimal.

We have proposed a modified version of this method, devoid of these disadvantages.

Since the economic meaning and units of measurement of different criteria (which are the norms of the Central Bank of the Republic of Uzbekistan *H1-H3* and profitability) are different, it is impossible to compare the criteria by numerical values. Therefore, in this case, the procedure for solving a multi-criteria problem includes a preliminary stage - the normalization of criteria.

After normalizing the criteria, the three most important ones are selected and a set of Pareto-optimal solutions is built. To build it, it is possible to use various algorithms, we chose the Sobol - Statnikov method (*LP τ* - search) due to the simplicity of its implementation and the ability to vary the accuracy of calculations. The resulting approximate Pareto set is visualized on a three-dimensional graph.

In this graph, the decision maker clearly sees the possibility of a compromise between these criteria. He selects criteria with a sufficiently high value, transfers them to the category of restrictions, and with these restrictions, the problem of constructing the Pareto set is again solved according to the other three criteria. After several cycles of such a procedure, the decision maker has sufficient information about the trade-off possibilities between the criteria and can choose the most suitable option. To do this, he chooses as criteria three indicators, the most important, or whose values vary the most or are close to critical, he imposes restrictions on the rest, based on the information of the previous stages; the problem of constructing the Pareto set is solved and the decision maker chooses the best point. In this way,

This procedure, obtained by synthesizing two methods for solving multi criteria problems - the method of concessions and the Pareto method - has the following positive features: unlike the method of constructing and visualizing the Pareto set, it allows you to work with a number of criteria greater than three, while visualization of four or more dimensional Pareto sets is practically impossible. Unlike the concession method, the proposed procedure significantly reduces the number of steps, allows you to evaluate the possibility of a compromise between several criteria at each step, in addition, the final decision will be Pareto-optimal according to the three criteria recognized by the decision maker as the most important. Thus, the technique is devoid of both disadvantages of the concession method and, at the same time, is more universal than the construction of the Pareto set itself.

The proposed model is a model of operational management and is built into the system of operational decision-making. The developed decision-making process functions as follows: experts analyze the balance at the beginning of the day and determine the minimum required balances on cash and correspondent accounts in other banks. Data can be obtained from the analysis of the planned outflow of funds. Thus, the amount of temporarily free funds to be distributed is determined. Further, options for investing funds (issuing loans, buying securities, etc.) are considered. Received applications for loans are analyzed and unacceptable risk options are filtered out. In the practice of regional banks, the principle of "risk premium" is almost not applied, since a borrower who has the intention not to repay a loan will more easily accept a higher interest rate. Thus, it will not be possible to compensate for losses on some of the high-risk loans with the increased yield of others, therefore loans are issued only to obviously reliable borrowers with a long credit history and/or high-quality collateral, while the interest rate on loans of one maturity group is almost the same. However, the developed model is easily adapted to the situation of issuing loans of varying degrees of risk. To do this, it is enough to assign quantitative risk assessments to loans, enter the parameter of the bank's weighted average credit risk and use it as a constraint or criterion in the multiobjective optimization problem. at the same time, the interest rate on loans of the same maturity group is practically the same. However, the developed model is easily adapted to the situation of issuing loans of varying degrees of risk. To do this, it is enough to assign quantitative risk assessments to loans, enter the parameter of the bank's weighted average credit risk and use it as a constraint or criterion in the multi objective optimization problem. at the same time, the interest rate on loans of the same maturity group is practically the same. However, the developed model is easily adapted to the situation of issuing loans of varying degrees of risk. To do this, it is enough to assign quantitative risk assessments to loans, enter the parameter of the bank's weighted average credit risk and use it as a constraint or criterion in the multi objective optimization problem.

Further, the possibilities of investing in securities are analyzed. To take into account specific risks for each type of securities, it is possible to use specialized methods that give some quantitative assessment of the risk of securities (for example, their β -coefficient), which is used as a criterion for their risk in the optimization problem.

Restrictions on investments in loans are determined by the volume of acceptable loan applications, restrictions on investments in other types of assets may be determined by an expert or by limiting the total amount of risk for these assets. After the constraints are formulated, the data is entered into the optimization program, three indicators are selected as criteria, constraints are imposed on others, and the optimization process is started. Thus, the developed optimization model is quite universal and extensible, which allows it to adapt to the specifics of taking into account the risk of certain types of assets.

It is obvious that the use of this model in the operational management of bank assets is impossible without its automation. For this purpose, a C++ program has been developed. This program is interfaced with the banking accounting system of JSCB "Agrobank". The program automatically imports balance data from JSCB "Agrobank" in dbf format. Next, optimization criteria are selected, calculation parameters are set, the program builds a Pareto - optimal set according to the selected criteria and visualizes it in three-dimensional space.

The results of the calculation are given in text form, which reports the number of found Pareto - optimal points, the minimum and maximum values of all criteria, as well as the coordinates of the conditional center of the Pareto set. The program also builds a graph that is interactive and allows consideration from different points of view. When any point is selected, the value of all criteria in it and the corresponding distribution of funds across accounts are shown.

Approbation of this model took place in the commercial bank JSCB "Agrobank". Practice has shown the advantage of the proposed optimization method in comparison with others. Thus, the points proposed as optimal according to the method of additive convolution of criteria did not satisfy the decision maker in more than 75% of cases. The application of the developed program revealed the following indicators characterizing the possibility of operational application: the average time of generating the Pareto set from ten seconds to several minutes, depending on the number of possible directions for investing funds and the required accuracy, the average number of cycles of building the Pareto set and adjusting the list of criteria and restrictions (in the task with a total number of criteria 5-6) - 4-8 cycles, the time required to analyze one Pareto set is several minutes,

The analytical capabilities of the method made it possible to model the consequences of large investments of funds in terms of their impact on the subsequent set of possibilities for a compromise between the criteria, which led to the possibility of an active credit policy and increased the average return over the period of using the program by an average of 2%, while all the values of the standards significantly exceeded the minimum required, but did not exceed the optimal reliability limits: for example, the H_2 standard ranged from 30...45%, H_3 - 90...100%. The results of testing the provisions of the study and the proposed method for optimizing the assets of a commercial bank confirm their practical feasibility in managing the distribution of banking resources

CONCLUSIONS

The study covers a number of issues, the solution of which, in the author's opinion, should contribute to improving the efficiency of commercial bank management. In general, the study developed a new model of asset management for a commercial bank and developed a methodology for its automation and implementation. Summarizing the results of the study, the following conclusions can be drawn:

1. A systematic study of the role and place of assets in achieving the bank's goals has established the following: the bank's goal is sustainable development. Sustainability as a long-term category depends on the reliability and profitability of the bank, the ability to accumulate funds necessary for self-development. An analysis of the history and modern practice of banking reliability regulation has shown that reliability is determined by capital adequacy and liquidity, while the quality of assets plays a decisive role. Capital adequacy is the ability of the bank to continue to provide the same volume of traditional set and standard quality banking services, regardless of possible losses of one kind or another on active operations. Currently, the prevailing opinion is that the need for capital does not depend on deposits, but on assets: capital adequacy should indicate what losses the bank can incur without prejudice to the interests of depositors and other creditors. Capital is seen primarily as a shock absorber to help overcome the fall in the real value of assets. The generally accepted today is the general formula, according to which the bank's own capital is correlated with the sum of assets, weighted by risk. The same formula underlies the method for calculating capital adequacy (norm *HI*) of the Central Bank of the Republic of Uzbekistan. The bank's liquidity also strongly depends on such indicators of asset quality as the compliance of active operations with passive ones in terms of maturity, the structure of assets by the degree of liquidity, the riskiness of assets, and the return on assets. Capital is seen primarily as a shock absorber to help overcome the fall in the real value of assets. The generally accepted today is the general formula, according to which the bank's own capital is correlated with the sum of assets, weighted by risk. The same formula underlies the method for calculating capital adequacy (norm *HI*) of the Central Bank of the Republic of Uzbekistan. The bank's liquidity also strongly depends on such indicators of asset quality as the compliance of active operations with passive ones in terms of maturity, the structure of assets by the degree of liquidity, the riskiness of assets, and the return on assets. Capital is seen primarily as a shock absorber to help overcome the fall in the real value of assets. The generally accepted today is the general formula, according to which the bank's own capital is correlated with the sum of assets, weighted by risk. The same formula underlies the method for calculating capital adequacy (norm *HI*) of the Central Bank of the Republic of Uzbekistan. The bank's liquidity also strongly depends on such indicators of asset quality as the compliance of active operations with passive ones in terms of maturity, the structure of assets by the degree of liquidity, the riskiness of assets, and the return on assets. Capital is seen primarily as a shock absorber to help overcome the fall in the real value of assets. The generally accepted today is the general formula, according to which the bank's own capital is correlated with the sum of assets, weighted by risk. The same formula underlies the method for calculating capital adequacy (norm *HI*) of the Central Bank of the Republic of Uzbekistan. The bank's liquidity also strongly depends on such indicators of asset quality as the compliance of active operations with passive ones in terms of maturity, the structure of assets by the degree of liquidity, the riskiness of assets, and the return on assets.

2. A scientific approach to bank management requires the construction of models that allow describing the processes taking place in the bank and choosing the best solution for bank management issues. Models are divided into general and private (liability and asset management models). A comparative analysis of the models showed that in general models it is rather difficult to formulate an optimization problem, the applicability of the liability management model by varying the interest rate is quite narrow, in addition, the bank does not have the ability to directly manage the structure of its deposits in the short term, and due to the underdevelopment of the interbank loan market, poorly developed infrastructure (dealing, branch networks to attract resources) and poor awareness, Uzbek banks, especially small ones, have limited opportunities for prompt mobilization of funds from external sources.

3. A multi-criteria asset management model for a commercial bank was built, which fully complies with the legislation of Uzbekistan. Consideration of methods for solving multicriteria problems revealed the low suitability of the methods of the main criterion, additive and multiplicative convolutions, since the implicit utility function of the decision maker is usually non-linear, therefore the "true" weights of the criteria (that is, those weights for which the gradient of the weighted objective function coincides direction in the gradient of the utility function) will vary from point to point. In the case of a small number of criteria (up to 3 inclusive), the best way to solve is to build a Pareto set - optimal points, allowing decision maker visually see all the options for a compromise between the criteria and choose a point based on an expert assessment, taking into account their considerations about the significance of the criteria at a given point. In the case of a larger number of criteria, the visualization of the Pareto set is impossible. Since the number of criteria in our model is 7-8 or more, a special algorithm was developed based on the application of the concession method in a three-dimensional space of criteria.

4. The developed model of multicriteria optimization of commercial bank assets and the original algorithm for its solution made it possible to create the Elite program. The program makes it possible to analyze the possibilities of a compromise between profitability and reliability and choose the most suitable option, combining the advantages of machine optimization and interactive accounting of preferences that are difficult to formalize as a decision maker.

The conducted research allows to significantly speed up the process of developing management decisions in the bank and increase their efficiency.

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WORK LIFE BALANCING IN BANKING SECTOR: PERCEIVED GENDER DISCRIMINATION

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ABSTRACT

In India, it is assumed that activities related to earning of living are solely the entitlement of males while domestic work, child bearing and child rearing are the lone employments of women. Traditionally, women in India have not enjoyed a good standing in workplace settings whether in administrative or operational roles. Women have been loaded with work of all sorts all through their lives. Among fast growing developing countries, India is characterized for the role of the service sector. Going by the same theme, this study has been undertaken focusing on women employees of service sector. The idea was simply to examine if gender based perceived discrimination takes place when it comes to work life balancing. A sample of 410 employees working in banking sector was selected including 197 male and 213 female respondents. Their responses on various aspects of work life balancing were collected and tested for discrimination with the help of chi square test. Results have indicated a clear discrimination with some of the aspects of work life balancing like Job Autonomy, Job Demands, Job Time, Job Security, Job Stress, Personal Financial Strain, and Organization Commitment.

KEYWORDS: *Work Life Balancing, Gender Discrimination, Job Demands*

INTRODUCTION

The balance between private and professional life is one of the essential ingredients of well-being and job satisfaction. Nevertheless, this balance is sometimes difficult to find. An important aspect of the balance between work and private life is the time spent at work. Data shows that heavy schedules can affect the health, jeopardize the safety and increase stress. At nearly 13%, the average number of employees working 50 hours or more per week is not very high in all of the OECD. Turkey is by far the country where the percentage of employees working very long hours, with 39%, the highest; It is followed by Mexico, with nearly 28%, and Israel, with one sixth of employees. Overall, there are more men working very long hours than women, and the percentage of employees working very long hours in the OECD countries reached 17% among men, against 8% in women¹. In addition, more a person works, the less it spends time in other activities, whether leisure or time for oneself. The amount and quality of leisure time are important factors of general well-being of an individual and can provide additional benefits in

terms of physical and mental health. Devoting fewer hours in paid work does not necessarily mean for women they have more leisure, because men and women devote approximately the same time in twenty OECD countries studied².

Among the difficulties encountered by employees, balancing work and personal life regularly comes first. The social surveys and barometers carried out by the employers are unanimous on this point and, obviously, the days of RTT (Reduction in Total Work Time) are not always enough to find a good balance. While working time has been on an upward trend for more than a century, the Indian worker's sleeping time is also shrinking, as is the number of children in couples, how is it that the equilibrium between work and personal life is particularly problematic today? First of all, the official working time does not always correspond to the actual working time. Even when the latter is precisely measured, an employee cannot badge if he carries work at home at night or on weekends. In addition, some say they do not have time to take all their days off and RTT.

Then, work has intensified since the 1990s due to productivity imperatives, pressure from customers who are increasingly impatient, the need to be hyper-reactive to market changes and, finally, new technologies. Thus, time seems to be accelerating. There is less and less "time out" since employees can now, for the most part, work everywhere and all the time. Finally, the share of the labor force working at non-standard working hours is steadily increasing.

Particularly in case of women employees, we should not forget the effect of family changes. To this must be added the social pressure which demands, for example, that a woman be both an excellent mother with her children, an excellent wife with her spouse, an excellent daughter with her parents, an excellent employee, an excellent friend etc. The growth of divorces, single-parent families and blended families generally makes it even more difficult to balance work and personal life. Moreover, this conciliation is complex, because our ambition is extremely high: we want everything right away.

Problem Definition

This study has been organized and designed with the specific objective of how male and female employees in banking sector perceive various aspects of work life balancing. An effort has been made to examine if male and female employees differ on their perceptions related to aspects of work life balancing.

Review of Literature

Work-life balance is well-defined as workers' perception that numerous domains of personal time, household care, and work are sustained and cohesive with a minimum of role conflict (Clark, 2000; Ungerson & Yeandle, 2005). Work-family balance reveals an individual's positioning across diverse life roles, an inter-role phenomenon (Marks and MacDermid, 1996). Work-life balance is a crucial issue in all types of occupation as dual-career families have become common and extraordinary work demands with long operational hours have become the custom. The prominence of assisting employees achieve a balance between the burdens of their work and their home lives has been highlighted. Demographic changes as seen in the amassed number of women in the workstation and dual career families have caused an increasingly diverse workforce and a larger need of employees to balance their work and non-work lives (Bharat, 2003; Komarraju, 1997; Rajadhyaksha & Bhatnagar, 2000; Ramu, 1989; Sekharan, 1992).

The knowledge economy has shaped greater access for women together with factors such as changes in marital patterns and smaller families. This has headed to an upsurge in the number of working women and, hence, working mothers (Grossman, 1981). The gift of this knowledge era for women is job-related opportunity and flexibility. But this gift has turned into a great challenge for the working women of today as they are not only uncovered to the same working environment as men but in turn are also exposed to the pressures created by the multiple role demands and conflicting expectations. “By fulfilling their financial needs, employment has no doubt made women self-regulating with arecognizable social status but it has also made them to disguise into two main domains of lifework and family. They have paced into work place but the role tasks of women still remain the same, i.e., women may be a top executive, still the “fostering” or “care giving” roles are considered much a part of feminine roles.” (Sunita Malhotra & Sapna Sachdeva, 2005). Several women today are wearing multiple hats in their efforts to balance both profession and home/family responsibilities.

Apprehension about family can restrict with work to a great extent and worries about work problems can also be revealed in the family front. The study by Francene Sussner Rodgers (1992) with the sample consisting of workers of 20 Fortune 500 companies; 28 percent of the men and 53 percent of the women reported that work-family stress affected their ability to quintessence at work hence illuminating that more than half the women and almost a third of the men reported that work/family stress affected their ability to concentrate on the job. Life at work seems so difficult for working women. Pleck’s (1977) research suggests that family-to-work spill-over is stronger for women and the work-to-family spill-over is stronger for men. Research suggests that female respondents in all parts of the world are pressured for time, rarely have time to relax and feel stressed and overworked most of the time, but women in emerging countries feel the strain even more so than women in developed countries.

Women in India (87%) are most stressed/pressured for time (Nielsen Survey, June 2011). Several studies have explained the effect of work-life conflict on the health of working women. ASSOCHAM’s study based on the survey of 103 corporate female employees from 72 various companies/organizations across 11 broad sectors of the economy focused on the issues of corporate female employees. One of their significant finding is that high psychological job demands like long working hours, working under deadlines, without clear direction leads 75 percent of the working females suffer depression or general anxiety disorder than those women with lowest level of psychological job demands (Nusrat Ahmad, March 2009).

Striking a perfect balance between personal life and professional life is becoming near to impossible. There is real balance only when the individual feels that she has done justice to all her roles and is satisfied about it. Work-life balance problems can be really serious and needs to be addressed in due time. In the renowned book, ‘Work and Family: Allies or Enemies’, Friedman and Greenhaus (2000) argue that conflict between work and family has real consequences. It significantly affects the quality of family life and career attainment of both men and women. The consequences for women may include serious constraints on career choices, limited opportunity for career advancement and success in their work-role, and the need to choose between two apparent opposites—an active and satisfying career, or marriage, children, and a happy family life.

Work and family balance, in a way, deals with the role balance of an individual both at home and work. Work-Life Balance Programs (WLBPs) developed by employee friendly organizations can

be a good solution to solve the problems of work-life balance. WLBP's have been found to increase employee control over time and place of work (Thomas & Ganster, 1995) and reduced workfamily conflict (Kossek & Ozeki, 1998) and stress (Thompson & Prottas, 2006). Kirchmeyer (2000) views living a balanced life as "achieving satisfying experiences in all life domains, and to do so requires personal resources such as energy, time, and commitment to be well distributed across domains". The purpose of striving very hard both at home and work at the cost of her individual health and well-being for every married working woman is to have a good quality of life. But this quality of life that she craves for is often influenced by worklife balance.

Any imbalance in the work and family of an individual can hamper the quality of life thoroughly for the individual. Kofodimos (1993) suggests that imbalance—in particular work imbalance—arouses high levels of stress, detracts from quality of life, and ultimately reduces individuals' effectiveness at work. Jeffrey H. Greenhaus, Karen M. Collins & Jason D. Shaw (2003) suggested that an equally high investment of time and involvement in work and family would reduce work–family conflict and stress thereby enhancing an individual's quality of life. And so it goes without saying that married working women of this era can have a healthy quality of life only when work-life balance is maintained making the topic of work life balance for working women, the need of the hour.

Main Objective

Main objective with which this study has been undertaken is to find the difference with regards to perceived work life balance of male and female employees. Hence, the study has been focused on assessing work life balancing among employees working in various banks with their current employment and finally the significance of difference in perceptions.

Hypotheses

- *Null hypothesis for the present study has been set to be assuming no difference of perceived work life balancing of men and women employees.*
- *Alternative hypothesis will assume a significant difference in perceived work life balancing of men and women employees.*

Research Design

The scope of this study has been kept limited to service sector only as the manufacturing sector has altogether different characteristics from service sector. Banking sector has been selected as the representative for service sector. A total of 410 employees from selected banks were taken as sample following judgmental sampling assuring about equal participation from private and public sector banks. The sample included 197 male and 213 female employees.

All the respondents were distributed scaled questionnaire having various questions related to different aspects of work life balancing. Their responses have been collectively analyzed. Chi square test has been employed to find any significant association between gender of employees and their perceived levels of work life balance. For this analysis, eighteen selected predictors of work life balancing include Job Demands, Job Autonomy, Job Involvement, Job Time, Job Security, Job Stress, Household Demands, Family support, Family to work spillover, Attitude towards Gender role, Personal Financial Strain, Life Satisfaction, Work to Family Role Spillover, Support from Colleagues, Support from Superior, Organizational work life support, Opportunity for advancement and Organization Communication.

Analysis and Discussion

At first stage, a pilot sample of 50 banking sector employees was distributed scaled questionnaires covering all the eighteen dimensions of work life balancing. Reliability analysis was carried out with the help of Cronbach Alpha. The alpha values have been found to be more than 0.70 in all cases. Hence, the questionnaires for distributed at mass level. A total of 500 respondents were finalized for the study. However, only 410 respondents responded completely. So their responses have been collected, compiled and analyzed. The whole discussion has been divided in three segments viz. job related aspects of work life balancing, family or personal life related aspects, and finally organization related aspects of work life balancing. A discussion of the results divided in three segments is as below.

Table-1 shows results related to various job related aspects and their perceived association with gender of employees. Six such aspects have been covered viz. Job Autonomy, Job Demands, Job Involvement, Job Time, Job Security, and Job Stress. In case of job demands, male respondents largely perceive high level of job demands whereas in case of female employees, the responses are normally distributed. For job autonomy, again, male respondents perceive high level of job autonomy and female respondents are normally distributed. Similar are the results of other four dimensions too.

TABLE-1: JOB RELATED ASPECTS OF WORK LIFE BALANCING

		Gender				Chi-Square Test
		Male		Female		
		Count	Percentage	Count	Percentage	
Job Demands	Low	28	14%	55	26%	$\chi^2 = 9.831$ df = 2 Sig. =.007*
	Medium	85	43%	103	48%	
	High	84	43%	55	26%	
Job Autonomy	Low	31	16%	57	27%	$\chi^2 = 15.957$ df = 2 Sig. =.000*
	Medium	90	46%	98	46%	
	High	76	39%	58	27%	
Job Involvement	Low	54	27%	57	27%	$\chi^2 = .090$ df = 2 Sig. =.956
	Medium	91	46%	97	46%	
	High	52	26%	59	28%	
Job Time	Low	26	13%	59	28%	$\chi^2 = 15.515$ df = 2 Sig. =.000*
	Medium	92	47%	96	45%	
	High	79	40%	58	27%	
Job Security	Low	107	54%	55	26%	$\chi^2 = 69.205$ df = 2 Sig. =.000*
	Medium	88	45%	100	47%	
	High	2	1%	58	27%	
Job Stress	Low	24	12%	59	28%	$\chi^2 = 18.053$ df = 2 Sig. =.000*
	Medium	92	47%	96	45%	
	High	81	41%	58	27%	

Male respondents are into medium to high levels whereas female employees perceive a normally distributed pattern. Thus, it seems that male employees perceive job demands, job time and job

stress at medium to high levels. But they also enjoy high levels of job autonomy and job involvement. However, their perceived level of job security is extremely low. Chi square test has been employed for testing the significance of association. Null hypothesis has been that there is no significant association between gender and perceived level of job related work life balance.

Chi square values have been found to be significantly high in case of all aspects of job with the only exception of job involvement. Hence, null hypothesis stands rejected. It can be said that male employees perceive higher levels of job times, job stress and job demands. But at the same time, they also seem to enjoy high level of job autonomy and job involvement too. The only concern with male employees is the perceived lower level of job security. However, in case of female employees, most of the female employees are into medium level of all the job related aspects of work life balancing.

Table-2 shows various results related to family related aspects and their perceived association with gender of employees. Five such aspects have been covered viz. Household Demands, Family support, Family to work spillover, Attitude towards Gender role and Personal Financial Strain. In case of first four aspects for both the male and female employees, the responses are normally distributed. It means that largely, irrespective of gender, average response for most of them is medium level. However, in case of personal financial strain, the responses are different. Male employees feel personal financial strain to be medium to high level. It means that male employees perceive financial income to be extremely responsible for working. Female employees are again normally distributed.

Chi square test has been employed for testing the significance of association. Null hypothesis has been that there is no significant association between gender and perceived level of family related work life balance. Chi square values have been found to be significantly low in case of all aspects of family with the only exception of personal financial strain. Hence, null hypothesis stands largely accepted. It can be said that irrespective of gender, both the female and male employees perceive similar levels of work life balance for all the four aspects viz. Household Demands, Family support, Family to work spillover, and Attitude towards Gender role. In case of personal financial strain, male employees perceive higher level. However, in case of female employees, most of the female employees are into medium level of all the family related aspects of work life balancing.

TABLE-2: FAMILY RELATED ASPECTS OF WORK LIFE BALANCING

		Gender				Chi-Square Test
		Male		Female		
		Count	Percentage	Count	Percentage	
Household Demands	Low	56	28%	55	26%	$\chi^2 = 1.119$ df = 2 Sig. =.572
	Medium	85	43%	103	48%	
	High	56	28%	55	26%	
Family support	Low	56	28%	55	26%	$\chi^2 = .455$ df = 2 Sig. =.796
	Medium	90	46%	98	46%	
	High	51	26%	60	28%	
Family to work spillover	Low	55	28%	56	26%	$\chi^2 = .167$ df = 2 Sig. =.920
	Medium	90	46%	98	46%	
	High	52	26%	59	28%	
Attitude	Low	52	26%	59	28%	$\chi^2 = .128$

towards Gender role	Medium	92	47%	96	45%	df = 2 Sig. =.938
	High	53	27%	58	27%	
Personal Financial Strain	Low	22	11%	59	28%	$\chi^2 = 20.826$ df = 2 Sig. =.000*
	Medium	92	47%	96	45%	
	High	83	42%	58	27%	

Table-3 shows results related to various organization related aspects and their perceived association with gender of employees. Six such aspects have been covered viz. Support from Colleagues, Support from Superior, Organizational work life support, Opportunity for advancement, Organization Communication, and Organization Commitment. In case of organizational communication, male respondents largely perceive high level whereas in case of female employees, the responses are normally distributed. For organizational commitment, again, male respondents perceive high level and female respondents are normally distributed.

For the remaining four aspects, the results are different. In these cases, looking at both the male and female employees, the responses are normally distributed. It means that largely, irrespective of gender, average response for most of them is medium level. Chi square test has been employed for testing the significance of association. Null hypothesis has been that there is no significant association between gender and perceived level of organization related work life balance.

TABLE-3: ORGANIZATION RELATED ASPECTS OF WORK LIFE BALANCE

		Gender				Chi-Square Test
		Male		Female		
		Count	Percentage	Count	Percentage	
Support from Colleagues	Low	51	26%	60	28%	$\chi^2 = 1.098$ df = 2 Sig. =.577
	Medium	88	45%	100	47%	
	High	58	29%	53	25%	
Support from Superior	Low	52	26%	59	28%	$\chi^2 = .167$ df = 2 Sig. =.920
	Medium	90	46%	98	46%	
	High	55	28%	56	26%	
Organizational work life support	Low	35	18%	58	27%	$\chi^2 = 5.722$ df = 2 Sig. =.057
	Medium	93	47%	95	45%	
	High	69	35%	60	28%	
Opportunity for advancement	Low	53	27%	58	27%	$\chi^2 = .376$ df = 2 Sig. =.828
	Medium	88	45%	100	47%	
	High	56	28%	55	26%	
Organization Communication	Low	33	17%	58	27%	$\chi^2 = 10.392$ df = 2 Sig. =.006*
	Medium	88	45%	100	47%	
	High	76	39%	55	26%	
Organization Commitment	Low	33	17%	56	26%	$\chi^2 = 6.324$ df = 2 Sig. =.042*
	Medium	92	47%	96	45%	
	High	72	37%	61	29%	

Chi square values have been found to be significantly high in case of Organization Communication and Organization Commitment. Hence, null hypothesis stands rejected for these two aspects. It can be said that male employees perceive higher levels of Organization Communication and Organization Commitment. But at the same time, in case of remaining four aspects, both the male and female employees are mostly into medium level of the organization related aspects of work life balancing.

CONCLUSION

The study has put forth some interesting findings related to work life balancing. The three main dimensions related to work life balance viz. job related, family related and organization related were analyzed from the responses of bank employees. It came out that job related aspects like job demands, job time and job stress has been quite high for male employees. However male employees also feel lower job security. But job involvement and job autonomy is also high for male employees as compared to female employees. It shows that male members are expected to do higher tasks, be meant for complex tasks and also enjoy high degree of autonomy. The same level of commitment is not expected from female employees. Family related issues are largely similar for both the male and female employees which is quite contradictory as we generally believe female employees to be overburdened by domestic and professional tasks. Finally, organizational support and policies do not seem to be differentiating on the gender basis.

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**INVESTMENT DECISIONS AND CHALLENGES OF WORKING
WOMEN POLICYHOLDER TOWARDS LIFE INSURANCE
CORPORATION IN CHENNAI CITY**

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ABSTRACT

Indian Life insurance sector is growing at a faster rate. The contribution of this industry becomes a tremendous change in economic growth and employment. The great extent of importance realized after it has opened to the private players in the post liberalization period. With many players in business, the insurance regulatory and development authority came with innovative and constructive guidelines for both products and services. It was a period where companies were getting major revenue out of their flagship Unit linked policies. During that time, both technology and investment knowledge were the key to success. Not only it was tough to convert from traditional to Unit linked products but also it was a challenge to keep the profitability. Policy holder preference, attitude, investment decision, problems and challenges are acting as catalyst with the Life insurance. The policy is procured through advisors; internal marketing and motivation to them cannot be avoided. This paper studies the investment decision and challenges of working women towards the life insurance corporation of India in Chennai city so that to overcome this issue. The suggestion and recommendation will help both academicians and industry personnel to revamp their thought in life insurance sector.

KEYWORDS: *Life insurance policies, Investment decision, Policyholder.*

INTRODUCTION

Insurance is one of the demanding financial products in India. Its basic motto is to protect the family of any uncertainty in life. It is a long term investment so the policy holder should have knowledge about the pros and cons of Life insurance before them investing in it. In the post liberalization era, insurance has attracted many private players from different parts of the country to start business in India. India as a country has potential for growth of this business. With the upcoming of regulator in the year 2000, the business in India became more streamlined. Large players along with customer choice results severe competition. Life Insurance Corporation of India in one end Product innovation, profitable growth, multi channel distribution and ethical practices in business are few factors to be considered. This study investigates the certain variable

like Demographic profile of insured women, Decision making behaviour on Investment and Problems faced by women towards Life Insurance Corporation.

LITERATURE REVIEW:

Prof. Prashanta Athama and Prof. Ravikumar (2007) in their study identified the factors which the consumers take into consideration before selecting the life insurance products. They classified those factors into product attributes and non-product attributes. They found that urban policy holders and product attributes like product features, risk coverage, product flexibility, surrender of policy, loan against policy, revival of lapsed policy, grace period, and maturity period, are positively associated. So they suggested that insurer should concentrate on improving the product attributes to have more penetration in urban areas. On the other hand, they found that rural policy holders and non-product attributes like agents and company are positively associated. So they suggested that insurer should concentrate on improving the non-product attributes to have more penetration in rural areas.

G. Gopalkrishna in his article narrates that the basic policy of settling a claim of time is to give the client benefits as early as possible; and to serve the purpose for which they bought the insurance product. He says a repeat business from a deceased policy holder's family goes to prove the faith the people have in life insurance, sales efficiency of the agent and the alertness of the office.

G. V. Rao in his article has opined that insurance is a mind game and exercising imagination to scale new heights in customer service is a must. Seamless service to customers, without fragmenting the company's convenience, increases the productivity and the innovative ways of doing the current work. Customers should be asked how they perceive their services. They can see what is wrong with the companies

STATEMENT OF THE PROBLEM

After reviewing the above literature, it is examined that there is no major study conducted on the Investment decision and challenges faced by women policy holder in life Insurance. This study signifies that briefly to analyze the challenges and investment decision of women policy holder in Life Insurance Corporation in Chennai with the selected number of sample size.

OBJECTIVES OF THE STUDY

1. To ascertain the socio-economic profile of women Policy holder in association with Life Insurance Corporation in Chennai.
2. To find out the investment decision making behaviour on life insurance by an insured women in Chennai
3. To identify the problem faced by selected women policy holder in Chennai

RESEARCH METHODOLOGY

The descriptive research design was used in this study. This study uses primary data. The primary data was collected from one hundred and ten sample respondents by using interview schedule method from Chennai. Samples were chosen by adopting simple random sampling method. The questionnaire has been prepared in such a way that the respondents are able to express their opinion freely in a written manner. A well structured questionnaire was framed with the help of the Research Supervisor, the research experts and the LIC agents in the study

area. It was the main tool used to collect the pertinent data from the selected sample respondents. The data collected from the research are classified and tabulated. Simple statistics such as frequency analysis and correlation techniques are adopted in the present study in explanations to bring out the point more clearly. The sampling target groups include various types of life insurance women Policy holder's in which important variables like age, income, education, occupation, no of policies and the problems faced by an insured women are taken in to consideration. Sample size taken for this study is 100 for the researcher convenience and the simple random sampling method was incorporated.

ANALYSIS AND INTERPRETATION

The detail analysis is done for knowing the status of socio – economic profile of women life insurance policy holder in Chennai by comparing with the of LIC policy holding, how long they associate with the LIC in Chennai, where women policy holders are working and investment contribution towards the LIC of India. The below mentioned table which meet out the need of first objective of this paper.

TABLE: 1 SOCIO ECONOMIC PROFILE ABOUT SELECTED WOMEN RESPONDENTS IN CHENNAI

CROSS TABLE ANALYSIS						
No of LIC Policy holding	Age	Income				Total
		<300000	300001-500000	500001-700000	>700001	
One policy	20-25	3	-	-	-	3
	26-35	6	15	-	-	21
	36-45	2	4	1	-	7
Two Policy	26-35	1	8	1	-	10
	36-45	5	7	17	-	29
	46-55	1	3	6	-	10
	above 55	1	-	-	-	1
More than two	26-35	-	-	1	-	1
	36-45	1	2	7	-	10
	46-55	-	1	5	1	7
	above 55	-	-	-	1	1
Total		20	40	38	2	100

INTERPRETATION:

The above table inferred that 300001- 500000 of women income holder mostly preferred to invest their amount with the LIC. And 36 to 45 aged women are holding two policies with the worth of 500001-700000.

TABLE: 2

CROSS TABLE ANALYSIS						
Association with LIC	Work Place	Investment				Total
		1-3 lakh	4-5 Lakh	8-11 lakh	above 12 lakh	
0-3 years	private org	14	4	-	-	18
	govt org	-	1	-	-	1
3.1-7 Years	private org	4	6	3	-	13
	govt org	4	3	5	-	12
	self employed	-	2	-	-	2
7.1-11 Years	private org	4	2	5	-	11
	govt org	-	4	8	-	12
	self employed	-	3	2	-	5
above 11 Years	private org	-	-	-	1	1
	govt org	1	5	10	3	19
	self employed	-	1	4	1	6
		27	31	37	5	100

INTERPRETATION:

The above table inferred that working in private organisation women are par with government employee in investing with LIC. And the 37% of women invested their amount in Rs. 8-11 lakh for their life coverage with LIC.

TABLE: 3

H0: There is no positive relationship between age and investment decision making behaviour on life insurance corporation policies.

H1: There is a positive relationship between age and investment decision making behaviour on life insurance corporation policies

RELATIONSHIP WITH AGE AND DECISION MAKING BEHAVIOURAL FACTORS								
Pearson correlation	Uncertainty about future	Financial support	Tax benefit	Retirement benefit	Loan assistance	Avoid capital loss	One of the avenue	Child future
	.086	.022	-.177	.008	.081	.031	-.041	.235
	Sig. .397 (2-tailed)	.829	.077	.940	.422	.757	.682	.018

INTERPRETATION:

The above correlation tool between age and decision making behavioural factors interpreted that there is a positive correlation between age and child future decision factor will be high and followed that uncertainty about future, loan assistance, avoid capital loss, financial support and

retirement benefit. There is no correlation between age and decision making behavioural factor in tax benefit and one of the avenue.

Most of the physiological study says that most of the women are always live their life for their dependencies. In this study also reveals the same that most of the insured women were investing their money for their child future.

TABLE: 4

Sl. No	PROBLEMS IN LIC	Frequency
1	Poor service	19
2	At the time of claim settlement	15
3	Lack of professionalism	13
4	Poor returns	4
5	False promise	2
	WOMEN INDIVIDUAL PROBLEM	
6	Investments done on their Dependency influences.	21
7	Problem in payment of premium in stipulated time by the various reason	14
8	Problem in acquiring their own survival benefit	12
Total		100

The insured women were facing the many problems with LIC services and their individual issues. In this study helped to find out that which problematic factor were highly associated with an insured women. The above table inferred that individual problem is more than the problem in LIC.

FINDINGS OF THE STUDY:

- 4% of the insured women getting annual income between Rs. 300001- 500000.
- 29% of 36-45 aged women are possessed two policies.
- 37% of the women policy holder invested their amount in Rs. 8-11 lakh for their life coverage with LIC.
- 18% of Private women employees were obtaining the LIC policy for the past 0-3 year.
- Government employees of women were highly associated with the LIC for their investments for more than 11 years.
- Correlation Statistical tool were applied to identify the relationship between age and investment decision making behavioural factor. In that research found that There is a positive correlation between age and child future decision factor will be far above the ground and followed that uncertainty about future, loan assistance, avoid capital loss and financial support. There is negative correlation between age and tax benefit and life insurance is the one of the avenue factor.
- The insured women are facing the many problems with the LIC and their individual issues. In this study found that individual problem is more than the problem in LIC.

SUGGESTIONS:

Life insurance Corporation of India says that the working women are par or equal with men and no way to undervalued them. The researcher also agrees the same but it is not applicable in all

the cases because women though they are working independently or equal with men still women are dependent with father, husband, and their children and with many relationships.

Though this study reveal that most of the women invest their money for their children but LIC shown in their annual report that children plan are for behind than the other plan. So LIC should concentrated much on the feature of children plan for the better investment choice by the policy holder.

Life Insurance Corporation of India should concentrate much than before in providing service or assist to policy holder especially in claiming time and claiming documentation formalities.

CONCLUSION:

The Investment purpose of women today is for securing their self or their children's future and this leads to an active role in the financial decision-making process within the family. The incidence of women investing in insurance rush forwarded to touch 60 percent in 2013. In India Nearly half (49%) of the female respondents cited their children's future as the main reason for investing in life insurance and 44 percent indicated that life insurance was important in case of untimely death. This shows how important it is for marketers and advertisers of life insurance products to actively involve and engage women in their communication. This study also reveals the same but need to give special attention to women, critically incident women and their survival benefit.

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PROBLEMS RELATED TO MARKETING OF MANGOES IN SRINIVASPUR TALUK AND ITS ADVERSE IMPACT ON SALES AND REVENUE

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ABSTRACT

This research paper focuses on the key problems associated with adverse impact on sales and revenue from the cultivation and marketing of mango fruit in Srinivaspur Taluk-Kolar district. The research has been conducted based on three key elements such as problems related to mango cultivation, distribution and problems related to marketing of mango growers. There are 326 villages under Srinivaspur taluk (Kolar District-Karnataka State), among them 82 villages were selected and 100 farmers were selected as respondents for the study based on the convenience of the research. Questionnaire and focus group discussion was the technique followed to gather required information. Regression analysis was used to find out whether any significant relationship between problems related to cultivation, distribution, marketing of mangoes and its adverse effect on sales and revenue. The results shows that non-availability of reliable varieties and plant material, lack of finance and credit, no insurance for mango trees, aged orchards, lack of transportation facility, lack of consultation before price fixation, demanding sample mango at free of cost, irregular market demand, excessive wastage during low marketing demand, bargaining method of sales and demand mangoes beyond actual weight are the key problems were identified which are adversely effecting sales and revenues from the cultivation and marketing of mangoes in Srinivaspur.

KEYWORDS: : *Mango, Problems, Cultivation, Distribution, Marketing, Sales and Revenue.*

INTRODUCTION

The mango fruit is inherent to the south Asia from where it was distributed across the world. Generally, Mango is produced in most frost free tropical and sub-tropical climates, more than 85 countries in the world cultivate mango (Kayier Guien Chay 2019). Mango, a tropical fruit of great economic importance, is generally harvested green and then commercialized after a period of storage (Mathieu Lechaudel and Jacques Joas.2007). Most of the varieties in mango fruit are tasty and highly nutritious. The mango fruit processing sector is rapidly being transformed into a high volume profit making industry. Supplying of mangos as a raw material for many food processing industries yield attractive revenue for the formers (Purushottam Bung, 2012).

Mango pulp is not generally consumed directly rather used as fillings for pastries, Juices, Fluids, Drinks, Jams, Fruit Cheese, Ice Cream as a delicious dessert. It can also be used in Sweets, Bakery items, and fruit meals for children, to add mango flavors for food industry, and also to make Yoghurt (Saeed Akhtar et al, 2010).Mango fruits are also utilized to make some other products like Chutney, Pickle, Mango powder, Beverage, etc. Ripe ones are used in making pulp, packed juice, syrup, squash etc (Mukonde Siafunda, 2019).

In India, mango is mainly produced in Andhra Pradesh, Maharashtra, Karnataka, Orissa, Tamil Nadu, West Bengal, Bihar, Gujarat, Madhya Pradesh, Haryana, Punjab, Rajasthan, Uttarakhand, and Uttar Pradesh, etc (Arvind Singh Yadav, 2016). Among these states Karnataka state also major producer of mangos especially from Srinivaspur taluk Kolar district. The following table shows the production of mangoes in Karnataka.

Production of mangoes in Karnataka from 2015 to 2017

Districts	2015-16		2016-17	
	Area in '000 Ha	Production in '000 MT	Area in '000 Ha	Production in '000 MT
Kolar	49.64	421.19	50.43	426.79
Ramanagara	22.72	228.01	23.09	230.90
Tumkur	15.67	167.91	15.67	167.91
Dharwad	12.50	107.43	12.54	107.22
Chikballapur	16.00	128.97	13.73	102.94
Mandya	6.50	74.43	6.50	74.43
Bangalore Rural	6.98	66.12	6.80	64.36
Belgaum	5.08	62.95	4.95	61.56

Source: Horticultural Statistics at A Glance 2018

From the above table it is understood that, Srinivaspur taluk is considered as a predominant location for producing mango compared to other locations in Karnataka (Viresh Kumargoud, 2017). Many people from this area are engaged in producing and marketing of mangos as they consider this as cash crop. Most of the growers were found to dispose the standing crop to the preharvest contractors because, farmers are not ready to accept challenges of national and international market (K.Venkat Reddy, 2015). Many of the farmers are selling their mangoes to agents at lower cost. Agents and middlemen are getting more profits and farmers are getting very less price for the mango crop they produce (Bhave Atul Vijay, 2017).

MARKETING OF MANGO FRUIT

It is common in Srinivaspur, that most of the mango producers sell their products at nearby local market. Most of the time mango producers sell their produce to consumers and sometimes to retailers because of the market fluctuation and lack of marketing infrastructures. The dealers and the farmers will have contract to deal with the final output of mango before its cultivation on the basis of forward price (H.S. Srikanth 2015). Mangoes which are ready to sell in the month of April are considered to be the more productive. Later in the second phase mangoes may regrow several times during the following months or may cease to grow anymore to attain blooming maturity and thus this becomes essential to determine pattern of growth (K. Usha Rani, 2018). In this situation the price of the fruit will get reduce and as a consequence of this farmer are forced

to sell their produce at the local market. Keeping these problems related cultivation, distribution and marketing in mind the following literature review has been carried out.

LITERATURE REVIEW

Mango growers finding adverse effect on sales and revenue of mangoes due to lack of suitable marketing avenues and channels decreases the margin for the mango growers. Mango growers sold their produce at farm gate and the reasons expressed by them were convenient to sell in the village, better price for produce, less risky compared to other type of sales, lack of labour, absence of marketing costs like harvesting, loading, unloading and commission charges, lack of proper transportation facilities, immediate cash requirements and lack of market information. (H.S. Srikanth 2015). Under current system there are number of intermediaries who add little value to the product, but increase price dramatically by commissions or trading margins. This all coupled with lack of integration of market leaves farmers and consumer vulnerable alike (Devang K. Nandola 2017).

In the study done by (Mesay Adugna Kassa, 2017) they found that, the yield is low as compared to other mango growing areas in Ethiopia. Most farmers are using poor harvest and post-harvest handling practices due to lack of awareness and lack post-harvest handling technologies. In addition, they are having limited access to central market. A study conducted by identified that anthracnose and stem- end rot are important post-harvest diseases in mango production. Generally, these problems in post-harvest handling and management practices can relate to lack of knowledge, skills and facilities in production and agronomic practices, harvesting, post-harvest handling and limited capacity in R&D and extension services to promote improved and marketable mango varieties introduction, prevalence of mango fruit diseases and pests.

In the research conducted by (Mukonde Siafunda, 2019) it is understood that, Mango trees are widely grown in the Zambia, however, there is a lot of wastage where they rot on the ground or buried because of lack of storage technology, lack or few fruit processing cottage industry and no value addition to the fruit. This is as a result of inadequate fruit processing technology knowledge amongst small scale farmers.

(Masbaul Islam 2017), says that, scarcity of better varieties, seedling, grafts, climate change and lack of modern technology were also three major problems faced by mango farmers in case of mango production. Inadequate transport facility, higher cost of transportation, preservation problem, lack of feeder roads, lack of shed in the market, post-harvest loss and strike, political unrest problems were identified for the farmers in mango marketing. Marketing problems for traders were unstable price, selling on credit, lack of capital, lack of market place, high transport cost, Lack of market information, lack of processing center, lack of processing plant etc.

Even though India occupies the prime position in the production of mango fruits in the world, still mango cultivars of India are facing grave challenges such as very small land holding, mango transportation and marketing problem, maximum orchards are 35-40 years old, providing low yield, lack of proper training on fertilizer application, irrigation, pest and diseases management, non-availability of good quality saplings, drying of branches, insect attack (mango hopper, mealy bug, fruit fly etc.), disease infestations (anthracnose, powdery mildew, mango malformation), middle man menace, lack of harvesting and post harvesting technology etc, (Barsha Sarkar, et al., 2018). The main reason for the decline in mango production is due to the lack of proper cultural management practices and general neglect. But this low yield may be

addressed to improve the productivity through the proper scientific agricultural management practices (Md.Jahangir Alam, et al., 2017).

Lack of infrastructure in rural areas and inadequate finance are also some of the other important problems encountered by the mango growers. The least considered problem was the irregular settlement of dues by the middlemen. The middlemen role was also responsible for the non-remunerative prices received by the mango growers. In Mango marketing too many middlemen do the mango grading unscientifically with mere eye judgment the growers are very often thrown to the receiving end. Insufficient marketing mechanism for mango marketing is the last problem of mango marketing (A. Sulthan Mohideen 2016). But what is lacking is the link between demand and supply in the marketing side and good post-harvest practices in the production side. In today's market structure, in order to realize more prices, there is a need to shift from mere "marketing" to "supply chain management". In the supply chain, growers, contractors, traders, processors, exporters and supermarket owners are the important stakeholders, involved in successful trading of mangoes (Sarada Gopalakrishnan, 2013).

Mango production continues to be affected by poor marketing linkages, lack of crop insurance cover and climate change impacts often compelling the growers for distress sales at throwaway prices (S. K. Chaudhari and A. Singh 2019). In the research article by (Yigzaw Dessalegn, 2014), it is understood that, most mango farms in Ethiopia are owned by aged farmers. This could be since the youth group lack adequate capital and land to grow fruit crops like mango which naturally has long unproductive or juvenile period. It could also be since the youth group are educated and preferred to be engaged in off-farm activities. Moreover, this could be since aged farmers prefer less labor intensive agricultural activities such as fruit crops production.

Orchards on terraces with soils of poor WHC clearly suffered from water stress during flushes and fruit bearing. The lack of water at periods when it is most needed make soils less fit for orchard establishment (C.A.J.M. de Bie 2000). The probable reason might be for marketing of mangoes due to easy accessible of pre harvest contractor, easy to farmers to sell with less risk, lack of regulated markets, lack of knowledge about market information, lack of storage facility in the area and low keeping quality of the fruit the farmers simply lease out their orchards (Manjunath et, al.,2017).

Mango cultivators are facing multiple problems with regard to get successful mango yield. The challenges such as small cultivation land hold, non-availability of hybrid seeds, post harvesting loss due to storage problems, exploitation of middlemen, lack of support from government and local bodies, un organized and con cooperative efforts, low profit etc. he suggested that there is a need for turnaround strategies in this industry. the industry should address problems and constraints faced in the field of mango cultivation by developing integrated research model (Purushottam Bung (2015).

The success of mango output is adversely influenced by the factors such as volatility in the natural conditions, fluctuations in the market price, non-availability of labors, lack of market information etc (SA Dhenge., et al 2018). As per the examination made by (Sharad Yadav, 2018) marketing elements of mango in the study area. The marketing aspects includes market intermediaries, channels of mango distribution, cost of marketing and its revenue. Theresearch revealed that the share of middlemen in consumer's rupee is higher compared to other cost marketing of mangoes. Arvind Singh Yadav,(2016), This research article highlights the

geographic variations and soil quality leading to profitable mango yield. He also finds that the geographical area is supporting to cultivate mangos in a larger quantity.

The research article published by (A.Sulthan Mohideen,2017), the key objective of this article is to analyze income from Mango cultivation with the help of applying Cost-Volume-Profit analysis in Theni District. Simple tabular analysis and marginal costing techniques concepts were used to work out cost of cultivation of mango. At over all basis per hectare cost of cultivation (variable cost) and cost of establishment (fixed cost) were Rs.24746 and Rs.39611 respectively. The study revealed that the profit was Rs.11318. The selling price of mango was worked out to Rs.155.03 per qtl. The profit from sale of mango mainly goes to growers, which use it for their socio –economic development activities.

In the research conducted by (Madhuri Saripalle, 2019), The mango value chain is analysed in-depth to understand the market choices of farmers and the role of market intermediaries and is based on data collected from a primary survey of 131 farmers. The results show that in addition to age and education, distance to markets and farming practices are significant factors influencing the profitability of mango cultivators.

In the research study by (Akurugu, G. K, 2016), From the study it is revealed that, the causes of postharvest losses in the Northern region among mango farmers and sellers were found to include poor harvesting practices, storage and packaging methods. The results also showed that anthracnose disease affected the matured fruits on the field especially Keitt, which led majority of the farmers to remove the plants from their fields. The study also revealed that, there is no proper storage facility for the market women and the farmers to store their produce after harvesting. This has created serious economic loses to all the actors in the supply chain of the fruits. This calls for proper storage facility in future for both growers and sellers in the region.

PROBLEM STATEMENT

Srinivaspur taluk is considered as one of the largest mango producers in India, being the highest contributing area in mangoes production there is a need for understanding what are the problems faced by the mango growers and what kind of solutions they need to sustain so has to make Srinivaspur as one of the major contributor of GDP of the country. After intensive literature review, there were no research articles related to the problems related to marketing of mangoes and prospective solutions. Through the preliminary interview method with the mango growers in Srinivaspur, it is understood that, the farmers are not able to export to other countries, not enjoying adequate revenue from the mango cultivation, their socio economic status is not improving since several years, the mango growers are not satisfied with the cultivation of mangoes, the farmers are not able to compete with world class mango growing regions in India, they are not able to achieve self-reliance in mango cultivation. Therefore, there is a need for immediate attainment of problems related to harvesting, distribution and marketing of mangoes in Srinivaspur, so that the farmers in this region may get handsome revenue through sale of mango produces.

RESEARCH OBJECTIVES

1. To study the problems related to cultivation of mangoes and its impact on sales and revenue.
2. To study problems related to distribution of mangoes and its impact on sales and revenue

3. To study problems related to marketing of mango growers and its impact on sales and revenue.
4. To find out the key problems which is adversely effecting on sales and revenue from the mango cultivation in Srinivaspur.

HYPOTHESIS

H1: There is a significant relationship between problem related to cultivation of mangoes and adverse effect on sales and revenue from mango cultivation.

H2: There is a significant relationship between problem related to distribution of mangoes and its adverse effect on sales and revenue from mango cultivation.

H3: There is a significant relationship between problems related to marketing of mango growers and its adverse effect on sales and revenue from mango cultivation.

METHODOLOGY

Descriptive research methodology was followed to study the present research because the facts and figures collected based on the descriptive information and information provided by the mango growers in Srinivaspur taluk. The research work is aimed to find out key problems that the mango growers are facing with respect to farming, distribution and marketing of mangoes which are leading to adverse impact on sales and revenue. Primary research involves collecting first-hand information directly from the mango cultivators through structured questionnaire and interview schedules. Once the data is collected, the processed information has been obtained by using MS-Excel and SPSS software packages.

DATA COLLECTION

Data collection was based on a survey of individual mango producers, sellers and stakeholders in the mango sector by using a structured questionnaire. The research therefore had a quantitative and qualitative approach on empirical basis and literature review. A detailed interview schedules were used to capture factual and in depth data of post-harvest; handling and marketing mango fruits. Questionnaires were administered to mango farmers and sellers who were selected based on their scale of production within Srinivaspur taluk to evaluate post-harvest problems of mango growers.

SAMPLING

There are 82 villages were selected from Srinivaspur by using convenience sampling technique and a sample of 100 respondents (Farmers) were selected from all villages based on the size of their agricultural land.

RESULTS & DISCUSSION

H1: There is a significant relationship between problem related to cultivation of mangoes and effect on sales and revenue in Srinivaspur.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.762 ^a	.581	.534	.80223

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.762 ^a	.581	.534	.80223		
a. Predictors: (Constant), Pest and Disease, Non-availability of reliable varieties and plant material , Costly Hired labour, Lack of finance and credit , Weather problems and fluctuation , High cost of establishment of mango orchards, Lack of knowledge about scientific cultivation practices, Long juvenile period i.e. unproductive period , No insurance for mango trees , Aged orchards.						
ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.473	10	7.947	12.349	.000 ^a
	Residual	57.277	89	.644		
	Total	136.750	99			
b. Dependent Variable: Adverse effect on sales and revenue from mango cultivation						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.191	.631		.303	.763
	<i>Non-availability of reliable varieties and plant material</i>	.239	.119	.248	2.016	.047*
	Lack of knowledge about scientific cultivation practices	.052	.066	.057	.791	.431
	Long juvenile period i.e. unproductive period	-.121	.106	-.132	-1.142	.256
	High cost of establishment of mango orchards	.014	.065	.016	.216	.829
	<i>Lack of finance and credit</i>	.254	.108	.268	2.345	.021*
	Costly Hired labour	-.046	.065	-.050	-.707	.481
	Weather problems and fluctuation	.022	.068	.023	.321	.749
	<i>No insurance for mango trees</i>	-.251	.115	-.269	-2.186	.031*
	<i>Aged Orchards</i>	.461	.211	.491	2.186	.031*
	Pest and Disease	.271	.211	.287	1.287	.201
a. Dependent Variable: Adverse effect on sales and revenue from mango cultivation						

Note: *p < 0.05 = 95 % Confidence level,

**p < 0.01= 99% Confidence level;

***p < 0.001= 99.9% Confidence level.

The regression analysis shows that, the value of “R” indicates the high degree of correlation coefficient (.762) between the problems related to cultivation of mangoes and adverse effect on sales and revenue from mango cultivation. R^2 measure the variation explained by the regression model is (.581) being high which indicates that the model fits the data well. The significant of F change is less than 0.05 which indicate that problems related to cultivation of mangoes have significant relationship with adverse effect on sales and revenue from mango cultivation. All the ten variables of problems related to cultivation of mangoes were used to predict adverse effect on sales and revenue from mango cultivation.

In this case problems related to cultivation of mangoes such as *non-availability of reliable varieties and plant material* ($t = 2.016$, $p = .047^*$), *lack of finance and credit* ($t = 2.345$, $p = .021^*$), *no insurance for mango trees* ($t = -2.186$, $p = .031^*$) and *aged orchards* ($t = 2.186$, $p = .031^*$) have significant relationship with adverse effect on sales and revenue from mango cultivation.

Regression model for adverse effect on sales and revenue from mango cultivation due to problems related to cultivation of mangoes is $Y = b_0 + b_1 \times 1 + b_2 \times 2 \dots + b_k \times k + n$

Adverse effect on sales and revenue from mango cultivation due to problems related to cultivation of mangoes = $.191 + (.239 \times \text{Non-availability of reliable varieties and plant material}) + (.052 \times \text{Lack of knowledge about scientific cultivation practices}) + (-.121 \times \text{Long juvenile period i.e. unproductive period}) + (.014 \times \text{High cost of establishment of mango orchards}) + (.254 \times \text{Lack of finance and credit}) + (-.046 \times \text{Costly Hired labour}) + (.022 \times \text{Weather problems and fluctuation}) + (-.251 \times \text{No insurance for mango trees}) + (.461 \times \text{Aged Orchards}) + (.271 \times \text{Pest and Disease})$.

Since the non-availability of reliable varieties and plant material, Lack of finance and credit, no insurance for mango trees and aged orchards significant values are < than p value of 0.05, therefore hypothesis statement of significant relationship between problem related to cultivation of mangoes and adverse effect on sales and revenue from mango cultivation is accepted.

Non-Availability of Reliable Varieties and Plant Material

Nursery planting material is not available according to the demand in the market so as to fetch good market price. Even if it is available also some of the plant varieties not suitable to climatic and soil conditions. The plant materials are not obtained from authorized and reliable nurseries. Low quality, stunted, diseased planting material are causing immense losses to the plantation. Non qualitative planting material do not produce a good and healthy orchard even after taking proper care and management. Most of the farmers buying plants at the time of planting an orchard avail lesser height of mango plants, stunted growth or premature plants which may adversely effect on sales in future. Such plants fail to establish and unable to produce quality yield. Taller plants indicate older plants; such plants may also face difficulty in establishment. Taller plants are also difficult for handling, transportation and plantation.

Lack of Finance and Credit

For mango cultivation a farmer needs finance. They arrange finance in different sources. The sources have been classified into four categories viz., own fund, money lender, borrowings from nationalized banks, borrowing from commission agent. The researcher has made an attempt to find out the sources of financial needs of a farmer and the method of fulfilling their needs is given in the following table in Srinivaspur taluk.

SL.No	Sources	No. of Respondents	Percentage
1	Own fund	43	43%
2	Money lender	20	20%
3	Borrowings from nationalized banks	12	12%
4	Borrowing from Commission agent	25	25%
	Total	100	100%

Source: Primary Data

Many of the farmers facing the financial problem to cultivate, distribute and marketing of mangoes in Srinivaspur as the table shows that 43% of farmer's dependent on own fund which is not sufficient for meeting the mango production cost.

No Insurance for Mango Trees

Like an insurance coverage for life and general insurance, there is no concept of insurance for mango trees. There will be a chances of getting diseases for the trees, less yield due to aged trees etc. This leading to affect adversely on sales of mango crops.

Aged Orchards

In general, 40-45 years old mango trees exhibit decline in fruit yield because of dense and overcrowded canopy. The trees do not get proper sunlight resulting in decreased production of shoots. New emerging shoots are weak and are unsuitable for flowering and fruiting. the population of insects and pests built up and the incidence of diseases increases in such orchards. Intermingling, diseased and dead branches are not removed. Thereafter undesirable branches of unproductive trees are not marked for the reproductive trees.

H2: There is a significant relationship between problem related to distribution of mangoes and adverse effect on sales and revenue from mango cultivation.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.904 ^a	.817	.801	.52416		
a. Predictors: (Constant), Demanding sample mango at free of cost, High commission charged by middlemen, Lack of consultation before price fixation, Lack of transportation facility, Lack of storage facility in the area , High dominance of market intermediaries , Inadequate and unreliable marketing channels , High cost of transportation of mango fruit.						
ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	111.748	8	13.969	50.842	.000 ^a
	Residual	25.002	91	.275		
	Total	136.750	99			
b. Dependent Variable: Adverse effect on sales and revenue from mango cultivation						
Coefficients ^a						
Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.	

	B	Std. Error	Beta		
1 (Constant)	.614	.219		2.802	.006
High cost of transportation of mango fruit	.056	.102	.060	.550	.584
Lack of storage facility in the area	.119	.106	.121	1.118	.266
High commission charged by middlemen	-.108	.087	-.092	-1.231	.221
Inadequate and unreliable marketing channels	-.070	.091	-.077	-.767	.445
Lack of transportation facility	-.155	.076	-.143	-2.053	.043*
High dominance of market intermediaries	.180	.100	.172	1.805	.074
Lack of consultation before price fixation	.367	.075	.357	4.865	.000***
Demanding sample mango at free of cost	.559	.066	.575	8.530	.000***

a. Dependent Variable: Adverse effect on sales and revenue from mango cultivation

Note: *p < 0.05 = 95 % Confidence level.

**p < 0.01 = 99% Confidence level.

***p < 0.001 = 99.9% Confidence level.

The regression analysis shows that, the value of “R” indicates the high degree of correlation coefficient (.904) between the relationship between problem related to distribution of mangoes and its adverse effect on sales and revenue from mango cultivation. R² measure the variation explained by the regression model is (.817) being high which indicates that the model fits the data well. The significant of F change is less than 0.05 which indicate that problem related to distribution of mangoes and its adverse effect on sales and revenue from mango cultivation. All the ten variables of problem related to distribution of mangoes were used to predict adverse effect on sales and revenue from mango cultivation.

In this case problem related to distribution of mangoes such as **Lack of transportation facility** (t = -2.053, p = .043*), **Lack of consultation before price fixation** (t = 4.865, p = .000***), **Demanding sample mango at free of cost** (t = 8.530, p = .000***) have significant relationship with adverse effect on sales and revenue from mango cultivation.

Regression model for adverse effect on sales and revenue from mango cultivation due to **problem related to distribution of mangoes** is $Y = b_0 + b_1 \times 1 + b_2 \times 2 \dots + b_k \times k + n$

Adverse effect on sales and revenue from mango cultivation due to problem related to distribution of mangoes = .614 + (.056 × High cost of transportation of mango fruit) + (.119 × Lack of storage facility in the area) + (-.108 × High commission charged by middlemen) + (-.070 × Inadequate and unreliable marketing channels) + (-.155 × **Lack of transportation facility**) + (.180 × High dominance of market intermediaries) + (.367 × **Lack of consultation before price fixation**) + (.559 × **Demanding sample mango at free of cost**).

Since the Lack of transportation facility, Lack of consultation before price fixation, demanding sample mango at free of cost significant values are $<$ than p value of 0.05, therefore hypothesis statement of significant relationship between problem related to distribution of mangoes and its adverse effect on sales and revenue from mango cultivation is accepted.

Lack of Transportation Facility

Most of the mango growers complained that they did not face problems regarding this issue. But situation was different for small land owners and about 40 percent they complained that they faced regarding problem. For these reasons, it was a major problem for mango marketing due to high transportation cost. According to 80% mango farmers revealed that transportation cost was a major problem. Most of them hire from others to transport their mango produces to mandi market. Due to perishable nature of mango they had to count a huge loss in this case. About 60% of mango growers faced it as an acute problem. Because they had to sell fresh mango and supply products to distant market, even in different district.

More than 90% of the fresh fruits from Srinivaspur taluk goes to the distant markets such as Mumbai, Delhi, Kolkata, Raipur. Long distance transportation in the region is carried out by trucks and trains, and no refrigeration is used for transporting mangoes. During the transit time of 3-4 days to reach these markets, the fruits touching the sides of the boxes and those on the bottom layer suffer damage (10-15%) during transport. The use of crates can considerably reduce these losses; however, the major problem is bringing back the crates from distant markets which will incur additional costs in transport.

Marketing cost is increasing due to increase in transportation cost. In cities also road condition is not proper and another problem is of traffic jam which effects on mango quality, on time delivery and smooth transportation. Shortage of labors especially in mango peak season for loading and unloading is the other problem these intermediaries have to face. Day by day the rates of packing material are increasing which increases mango marketing cost. Cold storage facility and ripening chambers are not available even with wholesalers and at APMCs to retain the mangoes for longer period.

Lack of Consultation Before Price Fixation

The assessment indicated that 90.5% of the farmers have reported as they don't negotiate on price to sell their produce; indicating this large number of producers are price takers. But 92.3 % of the farmers stated the term of payment is conducted through cash in hand system. The selling strategy of the farmers was open to any buyer. Thus, all producers sell their produce to anybody as far as they offer better price. Most of the respondents indicated that fruit price was set by demand and supply interaction. This means that buyers and sellers negotiate in the process and finally agree to exchange the products with the agreed up on price. In Srinivaspur taluk, most of the mango sellers fix price for local market after taking into consideration of price fixed by leading competitor in the local market. The fluctuations in mango prices are of an irregular pattern as shown below;

1. At the beginning of the season- less supply- high prices.
2. At the middle of the season-increased supply- prices declining gradually.
3. At the close of the season- less supply- high prices.

Mango production is seasonal and price is related with its supply. All mango farmers supply their produce only once in a year. The supply of mango occurs mainly from the month of January to July. Commission agents and wholesalers know that mango farmers do not have storage facility to retain mangoes hence they put pressure on mango farmers to sell at low price. Srinivaspur taluk mango farmers do not maintain adequate and required record of mango transactions and same is the case of pre-harvest contractors. There is no official record or publication about Srinivaspur taluk mango marketing which can show the prices and marketing cost of mangoes and the pattern for mango price quotations is also not uniform. In wholesale and retail trade the unit of sale varies from place to place. It causes great confusion for comparing prices in different markets.

Demanding Sample Mango at Free of Cost

Most of the middlemen exploit mango formers to supply free samples of mangos before purchasing of bulk mangoes in tones. The sample quantity of mangoes could be 10 KG’s or 20 KG’s. For this transactions the middlemen do not pay any consideration for the mango suppliers which leads to reducing of sales and revenue of the mango growers.

H3: There is a significant relationship between problem related to marketing practices of mango growers and effect on sales and revenue in Srinivaspur.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.701 ^a	.491	.440	.87958		
a. Predictors: (Constant), Demand mangoes beyond actual weight, Frequent Price fluctuations, Poor cooperative marketing network, Inadequate marketing system, Inadequate knowledge about marketing information, Excessive wastage during low marketing demand, Irregular marketing demand, Credit sales, Bargaining method of sales.						
ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.121	9	7.458	9.640	.000 ^a
	Residual	69.629	90	.774		
	Total	136.750	99			
b. Dependent Variable: Adverse effect on sales and revenue from mango cultivation						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.101	.468		-.217	.829
	Inadequate marketing system	.035	.087	.034	.404	.687
	Poor cooperative marketing network	.091	.080	.101	1.136	.259
	Inadequate knowledge about marketing information	.137	.083	.154	1.646	.103
	<i>Irregular market demand</i>	.180	.090	.184	1.999	.049*

Frequent Price fluctuations	.117	.095	.117	1.229	.222
Excessive wastage during low marketing demand	.237	.088	.256	2.678	.009**
Credit sales	-.142	.088	-.152	-1.618	.109
Bargaining method of sales	.235	.094	.264	2.507	.014**
Demand mangoes beyond actual weight	.189	.087	.194	2.185	.031*

a. Dependent Variable: Adverse effect on sales and revenue from mango cultivation

Note: *p < 0.05 = 95 % Confidence level.

**p < 0.01= 99% Confidence level.

***p < 0.001= 99.9% Confidence level.

The regression analysis shows that, the value of “R” indicates the high degree of correlation coefficient (.701) between the problems related to marketing of mango growers and its adverse effect on sales and revenue from mango cultivation.

R² measure the variation explained by the regression model is (.491) being high which indicates that the model fits the data well. The significant of F change is less than 0.05 which indicate that problems related to marketing of mango growers and its adverse effect on sales and revenue from mango cultivation. All the ten variables of problems related to marketing of mango growers were used to predict adverse effect on sales and revenue from mango cultivation.

In this case problems related to marketing of mango growers such as **Irregular market demand** (t = 1.999, p = .049*), **Excessive wastage during low marketing demand** (t = 2.678, p = .009**), **Bargaining method of sales** (t = 2.507, p = .014**) and **Demand mangoes beyond actual weight** (t = 2.185, p = .031*) have significant relationship with adverse effect on sales and revenue from mango cultivation.

Regression model for adverse effect on sales and revenue from mango cultivation due to problem related to distribution of mangoes is $Y=b_0+b_1 \times 1+b_2 \times 2 \dots + b_k \times k + n$

Adverse effect on sales and revenue from mango cultivation due to problems related to marketing of mango growers = $-.101 + (.035 \times \text{Inadequate marketing system}) + (.091 \times \text{Poor cooperative marketing network}) + (.137 \times \text{Inadequate knowledge about marketing information}) + (.180 \times \text{Irregular market demand}) + (.117 \times \text{Frequent Price fluctuations}) + (.237 \times \text{Excessive wastage during low marketing demand}) + (-.142 \times \text{Credit sales}) + (.235 \times \text{Bargaining method of sales}) + (.189 \times \text{Demand mangoes beyond actual weight})$.

Since the Irregular market demand, Excessive wastage during low marketing demand, bargaining method of sales and Demand mangoes beyond actual weight significant values are < than p value of 0.05, therefore hypothesis statement of significant relationship between problems related to marketing of mango growers and its adverse effect on sales and revenue from mango cultivation is accepted.

Irregular Market Demand

Overall, demand is well covered by supply. However, the seasonality of production, combined with trading habits, can affect demand. Demand may be turned by an early or late start to an

export campaign. Excessive prices, which prevent distributors from making their expected margins, can affect the demand level. Conversely, a product influx, leading to a considerable fall in prices, may temporarily refresh demand. The marketing periods can also have an influence. Customers prefer domestically or regionally grown fruits, which are generally abundant and cheap. Festive periods often lead to a consumption peak, such as the end-of-year holidays. Under-representation of a variety at a given period can explain a dip in demand or a switch to another variety. Demand can vary with size fruits too small or too large and quality (attractive or spotted fruits).

According to trade sources, during the months of March to May, supply exceeds demand in market which leads to decline in prices. Because of the excess supply, traders and farmers search for new markets for mangoes. Similarly, natural calamities like wind with high velocity' lead to drop in supply of mangoes during June to September and hence upward trend in price of Mango is witnessed.

Excessive Wastage During Low Marketing Demand

The wholesale market was the most critical stage with the highest postharvest losses followed by the transport and harvest stages with losses. Damaged fruits were scored based on incidences of microbial decay, mechanical injuries and softening. Incidence of mechanical injury was scored as the number of fruits with broken peel and or pulp whereas the incidence of microbial decay was scored as the number of fruits with decay symptoms. The causal agents of the fruit microbial decay were identified using a compendium of mango diseases and disorders. Decay due to fruit fly infestation was scored based on presence of larvae in the fruit pulp. Fruit softening was measured by punching the pulp with a penetrometer (David Bishop Instruments) and fruits with penetration pressure of less than 1.0 kg/cm² were considered to be soft.

Bargaining Method of Sales

The price of the mango fruit influenced by bargaining skills of the farmer and middleman, and the quality of the fruit. Better information can improve farmers' bargaining position, reduce search costs, and give them the choice to travel to farther markets if prices there are higher. Most of the smallholder farmers lack collective action in markets; individual marketing of small quantities of produce weakens the smallholder farmers' bargaining power and exposes them to price exploitation by traders. Collective action of groups also reduces transaction cost incurred by farmers in searching for markets and increases their bargaining power in setting prices. If a household belongs to a farmer group, then it is likely the household will shift from selling to brokers and probably target formal channels such as exporters.

Brokers often refused to sign contracts and were secretive, the price a farmer would receive from a broker would depend on several factors including; negotiation skills, bargaining power, among others. Farmers with few mango trees, poor quality and low quantity have low bargaining power and would accept the price offered by the buyer in fear that he/she may not get a better price before mangoes start ripening and rotting in the farms. Being in a group reduces transaction cost of both the buyer and the farmers hence raising farm gate prices, group also improves the bargaining power of sellers and thus they are able to obtain a better price. The direct market had a sizeable proportion of farmers who could decide price which could be attributed to the fact that these farmers transported their produce to the market where they had a broad choice of buyers. More than half of the farmers were not members of any mango marketing groups. This

shows a very disadvantaged situation of the farmers considering the importance of collective action in marketing by increasing farmers bargaining power, reducing transaction costs and improving information flows.

Demand Mangoes Beyond Actual Weight

In Srinivaspur taluk mango grading is not done on standardized basis. There is lack of grading facilities in Srinivaspur market. It is only informal grading based on size, freshness and appearance of mangoes. According to size mangoes are classified and packed in the boxes with/without cleaning. On the box of big size mangoes number one, middle size mangoes number two and low size mangoes number three are written for identification purpose. Size confirmation is just based on observation and not on actual weight of mangoes. Grading is based on size of mango but all the mango farmers/pre-harvest contractors do not follow actual weight basis.

SUGGESTIONS

1. All the nodal bodies, Government Departments, concerned Institutions should work on a common agenda of building required infrastructure.
2. There is an urgent need to train the farmers on scientific postharvest management techniques such as good agricultural practices such as harvesting at maturity, grading, pre-cooling, packaging and storage practices etc.
3. Financial assistance for small, marginal farmers must be available from various private, public sector institutions without much delay and at nominal charges of interest.
4. Community type pre-cooling and cold storage facilities need to be created at district and block level in the respective State.
5. Set up processing units at rural areas to avoid post-harvest losses.
6. Price forecasting information systems should be available at village levels so that farmers can directly contact the concerned in the market regarding the price.
7. Local mandis or regulated markets should be updated and upgraded with modern information systems as well as residential facilities.
8. Number of intermediaries and their commission should be reduced in the marketing channel.
9. Reduce transport cost by pooling method through the mango grower's association
10. Starting insurance scheme on mango trees. The Insurance herein is by way of indemnity against pecuniary loss suffered by the Insured in respect of the damages for the tree must be introduced.
11. Supply of good quality mango saplings.
12. Qualitative and healthy planting material is the key to successful and profitable mango orchard management.
13. Age of the plant is an important criterion in quality of nursery plants. Plants with appropriate age tend to acclimatize better in the field conditions and sustain transplantation shock. Proper age of plants also symbolizes sufficient time for union of graft and hardening process.

14. The Mango nursery plants from 6 to 12 months should be preferred. Young mango plant of less than 6 months may face mortality in the field conditions.
15. Planting material in the nursery should be produced under favorable climatic conditions.
16. These unproductive trees can be converted into productive ones by pruning with the technique developed at the agricultural research institute.
17. There is need for interventions aimed at assisting farmers to come up with new kinds of institutional arrangements such as collective action and contract farming to reduce cost and improve the bargaining power of farmers.

CONCLUSIONS

As agriculture plays a vital role in Indian economy, it is our duty to analyse the agricultural production and marketing system properly and try to resolve its problems. From the above discussion it can be seen that the mango growers of Srinivasapur taluk are facing certain problems related to marketing. From the study it is understood that the mango growers are not getting proper support for mango cultivation and extension management regarding production and marketing of the mango output. For solving these problems firstly, there is a need to identify the major problems. Government should take initiative to solve these problems otherwise it badly affects our economics in the places like Srinivasapur. Given the large potential for mango fruit production in the Karnataka, their contribution to the total output has been extremely low compared to other states. The most cited reasons include Non-availability of reliable varieties and plant material, lack of finance and credit, no insurance for mango trees, aged orchards, lack of transportation facility, lack of consultation before price fixation, demanding sample mango at free of cost, irregular market demand, excessive wastage during low marketing demand, bargaining method of sales and demand mangoes beyond actual weight. As a result, marketing of mango fruit needs due attention in any on-going or future development plan.

LIMITATIONS OF THE STUDY

1. The study is confined to mango producing sector only.
2. This research is conducted only in Srinivasapur, other mango producing districts in Karnataka are not covered in the study.
3. The sample were selected on the basis of size of the land possessed by the farmers and confined to only 100 mango growers.
4. The analysis part is consisting only regression but other statistical tools can also be used such as factor analysis, correlation, tabular analysis etc.
5. The study is limited to discuss only problems related to cultivation, distribution and marketing of mangoes only.

DIRECTION FOR THE FUTURE RESEARCH

Since the present study deals with only problems related to cultivation of mangoes, distribution and marketing of mangoes and its adverse effect on sales and revenue in Srinivasapur. Further research can be conducted for instance, factors influencing marketing of mangoes in the perspective of exports. The research contribution can be strengthened by selecting the samples across the major mango producing states in India and comparative analysis can be done.

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PROJECT MANAGEMENT OFFICE IN ORGANIZATIONS

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ABSTRACT

Nowadays, the importance and the number of PMOs (Project Management Office) are rising year by year. Many big organizations with simple or complex projects use PMOs in order to get successful results. However, for Uzbekistan it is new direction in organizations and before talk about its benefits it is important to know about PMO history and evolution, elaborating on what a PMO is and its categories according to its implementation. Each PMO model provides overall view about the projects and services across an organization or enterprise through a single or multiple office. It helps in decision making and delivery support for all business change within an organization.

KEYWORDS: *PMO, Multiple Offices, Project Management, Streamline, Automate Processes, Team Efficiency, Learning Curve, Strategic Support, KPI.*

INTRODUCTION

It is known that the producing any new type of the product, service and improvement of the existing product and type of service is carried out on the basis of a specific project. If the project is scientifically proven as successful, objectively designed and viable, hence achieving the goal is becoming more predictable. This situation requires in-depth analysis of any new project before its implementation. Otherwise, the expected result may fail.

At the current stage of development, project management is recognized as the most effective means of doing business in the world. The number of problems (finance, energy, environmental, resource, social) is constantly growing and can only be solved with the help of innovative technologies and management decisions. The organization of work according to the specific plan is getting common for many foreign companies, and project management is increasingly being introduced not only in business but also in government agencies.

In international practice, using project management is a tool for the implementation of innovative ideas and high-performance management technologies in rapidly evolving systems. This primarily applies to finance, tax, legislative, resource systems. By applying such a management system, it is possible to solve complex problems of industrial, scientific and social nature.

Taking into account the growing importance of Planning, the Decree of the President of the Republic of Uzbekistan Sh. Mirziyayev dated April 27, 2022 to ensure the effective and timely implementation of projects in conjunction with state and regional programs, in order to increase the responsibility of some government agencies in the management process, the National Agency for Prospective Projects of the Republic of Uzbekistan was established to optimize the digital

economy and quality project management, taking into account the priority development(The Decree of the President, 2022).

Some company executives use Project Management in specific areas of their business that require advancement of new technologies and products, or use them to solve individual practical tasks with a creative component.

Project management initially emerged and evolved in highly specialized networks. However, decades later, it was constantly evolving, proving its effectiveness and covering various areas of business(Dixon, 2000)

The standards and methods of project management available today certainly reflect the world experience accumulated over a decade of practical experience in project management. Morris P.U.G., Cleland D.I., Lundin R.A.'s Project Management Book is about the benefits and relevance of creating project management standards(Morris, 2004). Anshin V.M., Ilyina O.N. Anshin mentioned that a project management quality assurance system is necessary to ensure that the implementation of each project is guaranteed to meet the needs of all stakeholders and, above all, the client(Anshin V.M., Ilyina, 2010).

When Ilina O. N. told about the evolution of the Project Management Office, she have mentioned that PMO merger integrations which helps organizations to invest in the right set of initiatives to achieve maximum profit in terms of value and benefits(Ilina, 2011).

Aleshin A. V., Vasilyeva S. S., Ilyin N. I., Polkovnikov A. V., Popova E. V. in their article focused on PMO models and ways to implement them in practice, ways to use the experts of an outsourcing company and the most effective methods(Aleshin A. V., Vasilyeva S. S., Ilyin N. I., Polkovnikov A. V., Popova E. V. 2013).

Sooliatte A. Yumentioned about the ways to get a productive organization. It approaches portfolio management from a strategic perspective with expert tips(Sooliatte, 2017).

Elizabeth Harrin in her book named "Collaboration tools for project managers" mentioned about how to choose, set up and use collaboration tools with team. There is not about individual specific software tools but instead principles for being able to make appropriate choices for business, pilot software with relevant projects and onboard users for a streamlined implementation(Elizabeth, 2016).

On the other hand, I. I. Mazur, V. D. SHapiro, N. G. Olderogge in their collaborative article mentioned that Project is the set of management decisions and measures which includes physical objects, technological processes, technical and organizational documents related to them, material, financial, labor resources for successful implementation.

In general, project management as an independent field of professional activity has its own methodology, tools and standards. Different teams of professionals use different project management methodologies according to the basic conceptual model of their chosen project approach.

II.RESEARCH METHODOLOGY

The study considers responsibilities of PMO in Uzbekiston in current financial climate, including legislation and regulations in the field of optimizing planning and decision making process in organizations, in particular, by the Decree of the President of the Republic of Uzbekistan Sh.

Mirziyayev dated April 27, 2022 to ensure the effective and timely implementation of projects in conjunction with state and regional programs, increase the responsibility of some government agencies in the project management process optimization of the digital economy and quality project management taking into account priority development

Moreover, while analyzing different outsourcing models, we will try to look at closer to the risks involved with outsourcing PMO functions and pros of doing it. Looking through on both a global quantitative and qualitative approach, we will explain how outsourcing PMO functions can help organization operate more efficiently comparing to competitors, and provide more efficient services to customers.

III. ANALYSIS AND RESULTS

Actually, Project Management Office (“PMO”) can be very advantageous to large companies with many proceeding projects across various job sites. Studies show that there are organizations designed project management offices (PMOs) in a variety of setups.

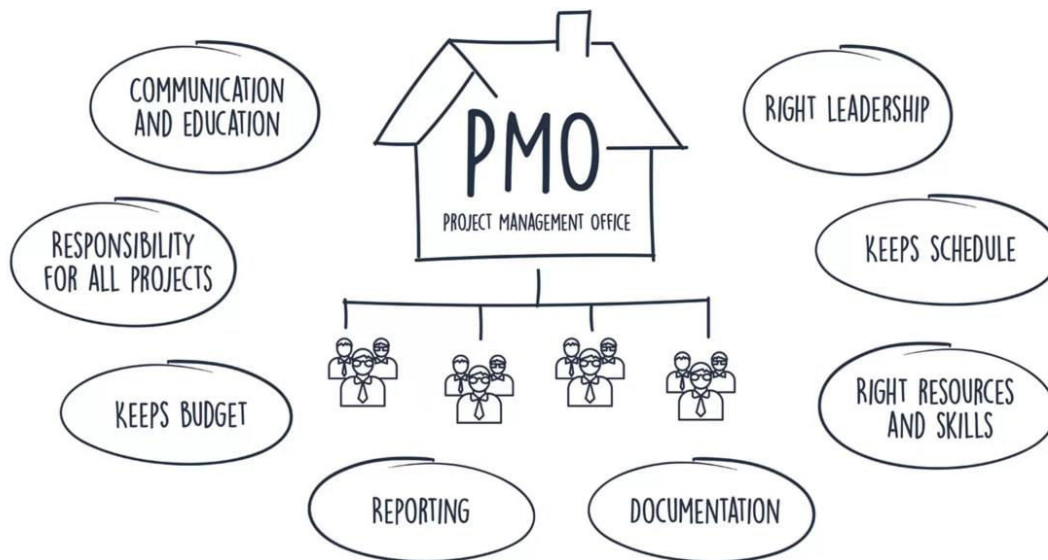
“In many large organizations we can see multiple PMOs, all of which is very different,” says Mbula Schoen, Senior Principal Analyst, Gartner. “This makes difficulties for program and portfolio management (PPM) leaders to determine the most suitable type of PMO for the organization.”

Overall the best PMO is one that is tailored to support organizational needs at a level the organization can hold and from which it can take benefit(Petty,2019).

The goal of project management is to produce a complete project that meets the client's goals. In most cases, the goal of project management is to formulate or refine the client's brief to address the client's objectives. Once the client's goals are clearly defined, they should influence all decisions made by other people involved in the project—for example, project managers, designers, contractors, and subcontractors. Poorly defined or too rigidly defined project management objectives are detrimental to decision making.

In many case the PMO functions and their prioritization depend on the type of project. The project management office (PMO) is look forward to rule in a multi-project environment. At the same time they also depend on the individual objectives(Saviom's Logo. (2021).

Core and the most important role of Project Management office is helping to the right leadership by putting all works in order and going through them step by step keeping in a good schedule. PMO keep all documentations, reports about strategy and goals of the organizations. Moreover PMO should take all responsibilities of long and short term projects and their budgets (Saviom's Logo. (2021), Pic. 1.)



Picture 1. Responsibilities of Project management office

PMO beater detailed governance roadmap to have a structured approach to manage the systems. It involves colorful stakeholders like platoon members, design directors, design guarantors, investors, guests, etc. These stakeholders have well- defined places, liabilities, and decision-making capacities. Purpose of governance structure is to be sure that.

- The systems are prioritized and aligned to short- term and long- term pretensions of the business;
- The right people should have access to the right information to make the right opinions;
- The systems are really staying within the planned time and budget;
- Enterprise coffers are using in the most effective manner;
- There are ongoing threat assessment across all systems

One of the core liabilities of a PMO is to polarize information and deliver it to the right stakeholders. It's to insure that the operation makes informed and timely opinions for the success of the design. Following are some of the exemplifications of operation reporting:

- Overall progress and health of systems
- Status of mileposts and deliverables across the portfolio
- fiscal information about the budget, cast, actuals, perimeters, etc.
- Project pitfalls and progress on mollifying these pitfalls
- functional effectiveness and design performance
- Effective operation a of enterprise coffers

Setting up right functional and strategic objects is a critical part of unborn business planning. They're crucial to short- and long- term business success. These objects are achieved with the

help of colorful programs and portfolios conforming of systems. PMO plays a pivotal part in this process and carries the following liabilities:

- Insure that the programs and portfolios are aligned to functional and strategic objects;
- systems are named and prioritized as per these business pretensions;
- Enterprise coffers are allocated as per business pretensions;
- Design and track colorful program and portfolio performance KPIs.

Plan and Schedule Resource Efficiently

Resource planning and scheduling are one of the most critical liabilities of a successful PMO. This process ensures that the right coffers are allocated to the right design at the right time. These are some highlights of effective resource planning and scheduling:

- Eliminate silos of spreadsheets with a single resource plan;
- produce visibility of resource capacity, faculty, and vacuity for all stakeholders;
- Establish a real- time resource scheduling to accommodate the fast- changing ground reality;
- Track all types of work as design work, non-project work, holiday , etc;
- Establish multi-dimensional viewing and overcome challenges of matrix structure.

Forecast and Enable Resource Capacity Planning

In a stoutly changing business terrain, it's critical for a PMO to read and get real- time foresight into design resourcing. So that the PMO can take corrective conduct ahead of time. Many exemplifications of resource soothsaying are:

- Forecast capacity vs. demand to identify space or surpluses of the coffers;
- Forecast people on the bench and design vacuities to minimize resource destruction;
- Forecast resource operation financials to determine the periphery and profitability.

Streamline and Automate Processes and Workflows

As an integral part of performance enhancement, PMO streamlines colorful design operation processes and methodologies. Few exemplifications of resource soothsaying are:

- Establish design requesting, selection, and prioritization process
- Streamline workflow for resource importunity and allocation
- Gathering up to date information about hand chops, interests, experience
- Forecast and give early warning before it's late.

Project Learning and Knowledge

The PMO enables platoon effectiveness by easing knowledge transfers between departmental design brigades. It makes design plans, reviews, templates, and attestation extensively available to concerned members, saving time and costs that would have else gone into rework. Rather than reinventing the wheel, design brigades can't only dock their literacy wind but can also get further work off the ground from the organizational knowledge being participated.

Mentor and Train Project Managers

Since the establishment of styles, processes and tools includes their being used by the staff, the PMO also has to give the separate training and active fostering. This concerns qualifying your design directors and other stakeholders and furnishing farther training of and backing in, diurnal design work.

Facilitate Team Collaboration and Communication

One common similarity among all types of project management is that they focus on three important objectives: ***time, quality, and budget***. Successful projects are completed on time, within budget, and to pre-agreed quality standards, i.e. meeting the iron triangle or three constraints for projects to be considered a success or failure.

For each type of project management, project managers develop and use repeatable templates specific to the industry in which they work. This allows project plans to be highly detailed and highly repeatable, designed to increase quality, reduce delivery costs, and reduce delivery time for project deliverables.

Research in 2017 showed that the success of any project depends on 4 elements that affect the project. They are:

Plan: The activity of planning and forecasting.

Process: A general approach to managing all activities and projects.

People: Including how they work together and the dynamics of communication.

Power: Lines of authority, decision makers, organizational charts, implementation policies, etc.

Regardless of the methodology employed, the overall project goals, timeline, and costs, as well as the roles and responsibilities of all participants, must be carefully considered.

Traditionally (depending on which project management methodology is used), project management includes a number of elements: four to five project management process groups and a management system. Regardless of the methodology or terminology used, the same basic project management processes or development phases are used. Major process groups typically include (1Arizona State University (2019), Pic.2.):

1. Project Initiation
2. Project planning
3. Project Execution
4. Monitoring and Control
5. Project Closure

In a project environment with a significant research element (e.g. research and development), these phases can be supplemented by decisions (go/no-go decisions) where the continuation of the project is discussed and decided upon.



Picture 2. Responsibilities of Project management office

Initiation: Initiating processes determine the nature and scope of the project. If this phase is not performed well, the project is unlikely to be successful in meeting business needs. The key project control required here is to understand the business environment and ensure that all necessary controls are included in the project. Defects should be reported and recommendations for their correction should be made.

The initial stage is formed based on a set of planned documents, which are used to create orders during the project. They include:

- project proposal (project idea, general purpose, duration);
- project scope (project direction and track);
- product breakdown structure (PBS) (hierarchy of deliverables / results and their components);
- work breakdown structure (WBS) (hierarchy of work performed up to daily tasks);
- responsibility assignment matrix (RACI) (roles and responsibilities according to results / results);
- estimated project schedule (milestones, important dates, deadlines);
- analysis of business needs and requirements against measurable objectives;
- stream review operations;
- financial analysis of costs and benefits, including a budget;
- stakeholder analysis including druggies and support staff for the design;
- project charter includes costs, tasks, deliverables and schedules;
- SWOT analysis strengths, sins, openings and pitfalls to the business.

Planning: After the initiation phase, the project is planned in an appropriate level of detail (see example of flow chart). The main objective is to plan adequately to estimate the time, costs and funds required for the work and effectively manage risk during project implementation. As with the inception process team, inadequate planning greatly reduces the chances of a project successfully meeting its goals.

Project planning usually consists of:

- determining the project management methodology to be followed (for example, whether the plan will be determined completely forward, iteratively or in waves);
- developing scope;
- selection of the planning group;
- determination of deliverables and creation of product and work breakdown structures;
- identifying the activities necessary to complete these results and linking them to the network in a logical sequence;
- assessment of resource requirements for activities;
- estimating time and costs for activities;
- developing a schedule;
- development of the budget;
- risk planning;
- development of quality assurance measures;
- obtaining official approval to start work.
- additional processes, such as planning for communication and field management, defining roles and responsibilities, determining what to buy for the project, and holding a kick-off meeting.

Execution: Project management is the element of keeping a project on time and within budget. Project management begins with planning at the beginning of the project and ends with a post-project review, carefully covering each step of the process. Projects may be inspected or reviewed while the project is in progress. A formal audit is usually risk or compliance based and focuses on the objectives of the management audit. Expertise may include comparing approved project management processes with how the project is actually managed. Each project should be evaluated according to the level of control required: too much control takes too much time, too little control is too risky. If project controls are not properly implemented, enterprise costs should be identified in terms of errors and corrections.

Project management (as well as certain Cost Generation) should be established as an independent function in project management. Performs a review and control function during project development to reinforce established performance and formal objectives. Project management tasks include:

- creating the infrastructure for supplying and updating the necessary information;

- to create a method of conveying the inconsistencies of the project parameters;
- intranet-based project information technology development or project key performance indicators (KPI) determination;
- divergence analysis and creation of proposals for potential project rules;
- creating appropriate project structure, project workflow organization, project management and implementation methods;
- creating transparency between project parameters.

Monitor and Control: Monitoring and control consists of the processes carried out to monitor the performance of the project so that potential problems can be identified on time and corrective measures can be taken if necessary to control the performance of the project. The main benefit is that project performance is regularly monitored and measured to identify deviations from the project management plan.

Monitoring and control includes:

- Measurement of project activities ("where we are");
- Monitoring project variables (cost, effort, scope, etc.) according to the project management plan and project performance framework (where we should be);
- Identifying corrective actions to properly address problems and risks (How can we get back on track);
- In multi-phase projects, the monitoring and control process provides interactions between project phases to implement corrective or preventive measures in accordance with the project management plan.

The execution and implementation of these tasks can be achieved by applying specific project control methods and tools. The following methods for project controlling may be used:

- investment analysis;
- benefit and benefit analysis;
- cost benefit analysis;
- expert inquiries;
- simulation calculations;
- risk-profile analysis;
- calculation of additional fees;
- milestone trend analysis;
- cost trend analysis;
- target / actual comparison.

Project Closure In Project Close- Out, as the design enters the final phases the PM will work with the PI to develop staff transition and expenditure plans for the design labor force. Once the

design performance period has been completed, the PM will work with the PI to complete final reporting and account conciliation and check.

A quarter of all actors' PMOs concerns itself most with the two areas "styles, processes and tools" and "perpetration of systems". "Resource operation" plays the lowest part, further time budget is intended to be taken up by "strategic support", "multi-project operation", "training" and "resource operation" in the future. To accommodate this, PMOs mean to reduce the time spent on "standardization" and "perpetration of systems" ([The Project group, n.d., Pic.2](#)).



Picture 2. Distribution Responsibilities

IV.CONCLUSIONS

Ultramodern PMO has evolved into a value center. These are some of the direct benefits of a design operation office to business.

Enables Real- Time Visibility Across the Enterprise. PMO replaces silos of spreadsheets with a centralized system. It enables a PMO to collect data directly at the forming sources and makes them visible to different stakeholders as per their specific part.

Implements norms and Best Industry Practices. Traditionally, a PMO defines design operation norms, guidelines and sets up a design governance structure. In addition, it evaluates and identifies stylish practices in its specific assiduity and implements them in the business.

Aligns systems with Business objects. A value- driven PMO helps the operation in opting and prioritizing the systems aligned to their strategic and politic business objects. In addition, it can track and ameliorate the strategic application of coffers.

Helps in Business Decision Making. A PMO tracks KPIs and does soothsaying related to the systems, programs, portfolios, coffers, pitfalls, etc. They induce reports for different situations of operation to help them make timely opinions.

Helps in Reducing Project Resourcing Cost. A value- driven PMO does further planning and allocates the right coffers for the right systems at the right time. It helps in reducing design resource costs significantly.

Improves Effective Resource Application. A value- driven PMO tracks unborn resource demand billable, non-billable, and strategic application. It helps a PMO in getting visionary and improves effective resource application.

Optimizes Project pool to Beat request Volatility. A value- driven PMO does further capacity planning to read deficit or surpluses of coffers due to request volatility. It helps in erecting an optimized pool without redundant outflow so that the business isn't affected due to request volatilities or business misgivings.

Shares Project Knowledge. There's always plenitude of literacy, assignments, chops, and experience acquired while executing a design. A value- driven PMO collects this knowledge intelligently and shares them with other systems.

Improves Communication and Productivity. Complications of design prosecution have multiplied numerous crowds due to matrix association structure and remote working. So, PMO has started furnishing a cooperative frame for these brigades to ameliorate communication and avoid chaos.

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PORTFOLIO MANAGEMENT OF ASSETS AND LIABILITIES IN COMMERCIAL BANKS OF UZBEKISTAN

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ABSTRACT

The purpose of the article is to develop the theoretical foundations, methodology and mechanisms of bank portfolio management, as well as to develop practical recommendations for improving the asset and liability portfolio management system in commercial banks. The article explores a holistic concept of managing portfolios of assets and liabilities in a modern commercial bank based on the development of the theory and methodology of portfolio management and the development of mechanisms for its implementation within the overall system of banking management. The conducted research allows to significantly speed up the process of developing management decisions in the bank and increase their efficiency.

KEYWORDS: *Asset And Liability Management Of The Bank, The Mechanism Of Bank Portfolio Management, Banking Management, The Process Of Developing Managerial Decisions In The Bank, Development Of The Theory And Methodology Of Portfolio Management.*

INTRODUCTION

To date, it is impossible to give an unambiguous assessment of the current situation in the domestic banking sector. On the one hand, the banking system of Uzbekistan is showing a positive trend in many indicators, gradually recovering from the global pandemic. The published data show that the collapse of the banking system has already been averted and the anti-crisis support measures carried out by the state have had a positive effect. On the other hand, high risks remain in all areas of banking, and only banks with state participation can consider themselves to be somewhat insured against bankruptcy.

Many unresolved problems with lending and financing have accumulated in the banking industry, new threats have emerged related to the state of the world economy and government intervention in the banking sector: firstly, the banking sector is negatively affected by the continuing structural imbalances in the economy of Uzbekistan. The prevailing development of several industries does not allow banks to create a diversified resource base, and forms a limited circle of domestic reliable borrowers.

Secondly, the consequence of the global pandemic was an unprecedented portfolio of problem loans for the banking sector of Uzbekistan. At the same time, a significant part of the problems is hidden due to the fact that lending to non-financial organizations and individuals in the post-crisis years was largely associated with the refinancing and restructuring of previously issued

loans. Thirdly, the desire of the state to save banks from the financial crisis, of course, prevented the collapse of the system, but led to a significant politicization of the banking sector and the strengthening of monopoly tendencies in it. As a result, the systemic risk has significantly increased, when the deterioration of the financial position of one of the banks can lead to the disorganization of the entire banking sector. Fourth, due to unrecovered profitability and the high debt burden of some industries, lack of public confidence in the sustainability of income growth in the near future, moderate dynamics of demand for credit is expected. Even in the event of a revival in consumer and investment demand, banks will not be able, as in the pre-crisis period, to quickly increase borrowing due to the significant accumulated debt burden and the downgraded credit rating of Uzbekistan.

Fifthly, under the influence of the global pandemic, there was a sharp drop in the growth rates of the banking systems of most developed countries, a number of eurozone states were on the verge of default, significant currency contradictions between the leading countries of the world were exposed, and the generally recognized world currencies became de facto dependent on the Chinese yuan. All this testifies to the turbulence in the world financial markets and the unstable state of the world economy.

In the conditions of modern instability of the economy, the issues of effective management in the banking sector are extremely acute. Given the limited access of banks to resources and the growing risks in the placement of assets, only those banks that are able to implement approaches that increase the scientific validity of decision-making will be able to successfully conduct their activities. However, the effectiveness of bank management remains low. The problems of insufficient diversification of banking activities, poor coordination of efficiency, risk and liquidity management, dependence on sources of resources that are sensitive to changes in market conditions and to factors of confidence in the banking system as a whole, indicate that the management of modern banks lacks a scientific base, strategic vision and an integrated approach to asset and liability management.

The role of the banking system in the economy dictates special attention to ensuring their sustainable development. Science has accumulated enough knowledge about the methodology, methods and techniques of banking management in conditions of increased risks. Obviously, it is necessary to deal with the growing risks of modern banking by all available means, including portfolio management tools, which have a strong potential and advantages over others, since it was developed specifically for risk management purposes.

The problem of asset and liability management in terms of its importance and relevance is one of the main ones in banking management. It is necessary to develop new evidence-based approaches that correspond to the goals of ensuring high profitability of banking activities in compliance with the requirements of financial stability. In this regard, the refinement of the theoretical foundations and the justification of specific practical recommendations for the development of methods and tools for managing the assets and liabilities of a commercial bank in modern conditions are important tasks of economic research. At the same time, like any process, they require constant improvement, since the problem of eliminating a certain gap between theoretical research and the main procedures for their practical application is extremely acute.

An urgent need is to develop the theory and practice of optimal management of commercial banking assets and liabilities, using the achievements of mathematical management theory,

which will ensure the stability of banks through more efficient use of available resources. As a rule, the need to maintain sufficient liquidity and stability of the bank entails a "reinsurance" structure of assets and liabilities, characterized by low profitability, which significantly limits the bank's ability to develop. In this regard, the application and improvement of the portfolio management concept of a commercial bank becomes an objective necessity, and the development of adequate tools for managing a banking portfolio acquires not only theoretical, but also great practical importance.

The problems of forming a portfolio approach to managing various types of assets and liabilities of a commercial bank are devoted to the works of such scientists as E. Altman, T. Bowler, M. Bethe, N.I. Beloglazova, E. Gill, X. Grüning, E. Dolan, F. Jorion, P. Cossey, R. Kotter, O.I. Lavrushin, I.V. Larionov, V.T. Sevruk, AM Sinki, R. Smith, P. Rose, M. Thomas, D. Horn, D. Shirreff, E.B. Shirinskaya and others.

Kolesnikov Yu.M. (2000) adapted the theory of diversification of the investment portfolio of Markowitz to the portfolio of banking assets in general and the loan portfolio in particular. At the same time, the necessary diversification of the portfolio is determined by the low degree of correlation between individual types of assets, types of loans, borrowers (issuers), etc.; it is proved that the Savings Bank, due to its special status, is both an economic entity and an economic management body; from this point of view, an assessment was made of the implementation of the theoretical provisions identified by the research in the practice of managing the assets of the Savings Bank; methods for assessing the risk of bankruptcy of enterprises were tested (Z - Altman model, Chesser loan supervision model, Irkutsk R - model and coefficient of loss (recovery) of solvency) and appropriate recommendations are given to improve the assessment of the creditworthiness of legal entities, banks, authorities of subjects and municipalities, individuals based on them; a new approach is given to assessing the financial position of the authorities of the subject, as one of the main borrowers of the Savings Bank, based on determining the consolidated credit rating of the borrower, taking into account the values of the borrower's credit ratings calculated according to the methods of Sberbank's own methodology and according to the methodology of the rating agency "EA - Rating", as well as the value of the indicator of economic development of the region.

Selimov T.R. (2011) clarified the methodological bases for determining the main directions for assessing the quality of asset management of commercial banks of the Republic of Dagestan, aimed at identifying the effectiveness of loans and other funds placed. The study proposes a system of methodological support for the analysis of the financial condition of commercial banks as part of an asset management strategy, which allows the use of certain indicators, methods and techniques of analysis to assess the effectiveness of bank management; the methodological provisions for analyzing the composition, structure and dynamics of loan assets are substantiated, the author's version of optimizing the structure of loan assets under the conditions of crisis phenomena is proposed; proposed measures to improve the methodology for analyzing factors affecting the quality of bank asset management:

Rybin S.V. (2007) gave the author's interpretation of the optimal composition of banking assets, based on achieving an acceptable ratio of risk and return, taking into account the specifics of their formation in modern Russian conditions. The work carried out a classification of external and internal factors that limit the process of profit maximization in the course of managing a portfolio of banking assets, from the standpoint of consistency, the relationship between them

was clarified; the use of simulation modeling as a tool for optimizing the structure of a portfolio of assets of a commercial bank is proposed as the most effective method of multivariate analysis of the behavior of the object under study at relatively low costs; a mathematical model was built for choosing optimal solutions for balancing assets and liabilities of a commercial bank, taking into account the complex influence of factor criteria, which, in addition, allows solving forecast and strategic problems, and the algorithm for its implementation is substantiated; directions have been developed to improve the methods of managing the assets of commercial banks, contributing to timely decision-making on optimizing their structure with checking sensitivity to changes in the economic situation or errors in forecasts.

The first attempts to adapt the portfolio theory to banking were quite slender in the classical sense, but too limited and complex for practical use. Subsequently, the development of portfolio approaches was carried out in certain areas of banking activity and mainly in relation to such bank portfolios as loans and investments in securities. At the same time, a holistic theory of portfolio management of assets and liabilities in Russian banks has not been developed, and the number of independent publications on this topic is limited. In addition, the current situation in the country and the world calls for a revision of previously built economic models designed primarily for a growing rather than a falling market.

The insufficient development of portfolio management problems in banks and the importance of finding ways to improve banking management predetermined the choice of topic, as well as the goals, objectives and structure of this study.

The starting point of the study was the study of the evolution of portfolio theory from its inception to the present day. The study of the genesis of the views of the founders and followers of the portfolio theory showed how the approach, developed for the applied purposes of reducing the risk of investing in securities by combining them into portfolios, received a complete expression in a holistic theoretical concept. The portfolio theory developed at the same time gives an interpretation of the processes of investing in securities, offers its own methodology for analyzing and making investment decisions, and describes the fundamental methods for forming investment portfolios. At the applied level, all this is embodied in specific economic and mathematical models, allowing to formalize the process of determining the composition and structure of financial investment portfolios in accordance with the interests of the investor. The study also showed how the ideas of portfolio theory spread and began to be applied outside the securities market - the area for which portfolio theory was developed and intended.

The main result of the review of the evolution of portfolio approaches in the study was the conclusion that the portfolio theory is based on a special model for setting and solving problems, which implies the recognition that the risk associated with investing in securities is inevitable and can be managed mainly through diversification, i.e. . by combining and distributing risks among unrelated groups of assets formed as separate portfolios.

The next stage of the theoretical analysis of the fundamentals of portfolio management was the study of the applicability of the basic provisions of portfolio theory in banking. For these purposes, the paper gave a detailed description of the bank's activities as a financial intermediary and concluded that the allocation of attracted resources, which is the essence of this activity, extends the scope of risks minimized by portfolio theory, not only to active, but also to passive operations of the bank, makes such cumulative risks, prolongs their duration, and the consequences of these risks become even more unpredictable, while avoiding these risks without

refusing to conduct banking operations themselves, i.e. without losing the status of a bank, it is impossible. Thus, it is revealed not only the possibility, but also the urgent need for

At the same time, the paper proves that the strategy of financial activity proposed by the portfolio theory is based on the need and possibility of a rapid change in the composition of portfolios, taking into account the changing market conditions and the interests of the investor. The essence of this strategy is defined by foreign authors as "create and resell". According to it, the goals set during the initial formation of portfolios can be achieved if possible undesirable changes are compensated by selling individual portfolios or their parts. Traditional banking is characterized by a different conservative model - "create and hold", according to which, by attracting resources and placing them in assets, the bank holds the latter until maturity,

The inapplicability of the financial strategy stemming from the portfolio theory in traditional banking requires a significant modification of theoretical postulates. Without claiming and without making claims to create such a theory, in order to characterize the developed concept of banking portfolio management, the concept of "portfolio approach" is proposed as one of the options for implementing financial management, which is based on a set of methods, tools and means that can be used in asset management and liabilities of banks developed in the framework of portfolio theory, a model for setting and solving problems related to risk management.

The key methodological problem of applying the portfolio approach in banking management is the adaptation of management techniques recommended by portfolio theory to non-tradable asset portfolios. Possible solutions to this problem, as proved in the paper, should be sought in the development of a system of long-term valuations that allow making more informed "irrevocable" decisions regarding non-tradable assets (it makes it possible to increase the degree of validity of the forecast when making decisions in order to avoid the need to sell the asset) , in the application of special methods that allow, in the absence of a real assessment by the market, to determine the value of non-tradable assets close to the market, as is done in the accounting assessment of "net" the value of the asset minus the reserves created for its depreciation (makes it possible to use economic and mathematical models developed within the portfolio theory) and in the use of various financial instruments and techniques designed to give non-tradable assets the qualities of quasi-tradable ones (assignment of claims, transfer of debt, compensation), or giving the opportunity to create tradable substitutes on the basis of non-tradable assets (securitization, credit derivatives). The foundations of these techniques have been successfully used in banking practice for a long time, and the task is to develop them further. or giving the opportunity to create tradable substitutes on the basis of non-tradable assets (securitization, credit derivatives). The foundations of these techniques have been successfully used in banking practice for a long time, and the task is to develop them further. or giving the opportunity to create tradable substitutes on the basis of non-tradable assets (securitization, credit derivatives). The foundations of these techniques have been successfully used in banking practice for a long time, and the task is to develop them further.

In order to identify the essence of the portfolio approach, a comparative analysis was carried out in the work with other well-known approaches to management: situational, systemic, individual, streaming. The analysis made it possible to identify a number of specific features of the portfolio approach, which distinguishes it from others. This approach assumes: formalization of the characteristics of the controlled process and the use of the selected characteristics as the basis for the criterion for identifying homogeneous groups of control objects; subsequent unification of

management objects into groups (portfolios), which makes it possible to consider heterogeneous objects as one and influence the common thing that unites them; access to the objective function for the subsequent solution of the optimization problem; the admissibility of particular deviations in the characteristics of the state of the managed object for the sake of observing the general.

In terms of its content, the portfolio approach is usually opposed to the individual approach. The preferred area of individual approach is a specific procedure or stage of the lending process (tactical level); the scope of the portfolio - the adoption of a strategic decision regarding the composition of management objects (strategic level). In addition, the individual approach is characterized by the completeness of the management cycle: it begins with the issuance of a loan and ends with its repayment. For portfolios of loans, the management cycle is never completed, the result of the management action is a new portfolio that requires further management, etc.

Based on the author's understanding of the content of the portfolio approach in banking management, the paper proposes the interpretation of banking portfolios as specially allocated from the total set of assets or liabilities of the bank in order to optimize their structure of separate groups of claims or liabilities, subsequently managed as a single object with common for each group characteristics of risk, profitability and liquidity. The composition and structure of bank portfolios and its sub-portfolios were also disclosed, which include a deposit portfolio, a portfolio of interbank loans, a portfolio of equity and debt own obligations of a bank, a loan portfolio, a portfolio of participation, a portfolio of investments in chain securities, a portfolio of liquidity and portfolios of off-balance sheet liabilities and requirements.

When managing each of its portfolios, the bank pursues specific goals: the loan portfolio in the most explicit form pursues the goal of making a profit; the investment portfolio has strategic goals for generating income in the long term; the portfolio of controlling participation is designed to solve the problems of developing the bank's infrastructure; the liquidity portfolio aims to form a cash reserve, etc. Based on this variety of goals, the paper concluded that the problem of optimizing risk in banking, which is classical for portfolio theory, is of paramount importance only for a limited range of commercial bank portfolios. In general, the problem of portfolio management in a commercial bank is to find the optimum in solving the triad of financial management problems - ensuring the necessary risk ratio,

The first step of the research carried out in this direction was the study of the principles of bank portfolio management. Despite the variety of interpretations of the portfolio approach in management and banking management, in particular, the question of its principles has not been raised or raised either within the framework of management theory or within the framework of the practice of portfolio management. The authors dealing with these problems proceeded from the general principles of management. Without denying the importance of these principles, the paper proves that portfolio management has significant specifics, which made it possible to formulate the principles of portfolio management used in financial and banking management in particular. These principles included: 1) the optimality of the decisions made; 2) strategic direction of management; 3) the diversity of the composition of banking assets and liabilities and tools for managing them; 4) mutual compensation of goals; 5) focus on loss management.

The first among the principles was the principle of the optimality of decisions made. The content of this principle is revealed in the work based on the essence of the problem setting and solving model, according to which the optimality principle is based on the formalization of the characteristics of the controlled process and the search for the optimum in the ratio of various

elements of the optimized set of assets and liabilities of the bank according to several criteria, which are risk, profitability and liquidity. Thus, this principle involves the choice of the optimal of several portfolio options so that the structure of each of the elements of the population (portfolios of assets and bank liabilities) provided an optimal structure as a whole.

Portfolio management in a commercial bank should also be subject to the principle of the strategic orientation of decisions made, that is, it should always be focused on fulfilling the global goal of commercial banks and solving specific problems. The impossibility without a clear target orientation to find the optimum and achieve the goals of the formed portfolios is a common feature of portfolio management both at the strategic and tactical levels and is equally characteristic of both investment and speculative portfolios. At the same time, the bank as a public institution, unlike other investors, is responsible for the invested capital to its customers and society as a whole. This was expressed in the well-known concept of the bank as a strategic partner of the state, enterprises and population.

The implementation of the principles of optimality and the strategic orientation of the decisions made presupposes the need to comply with other principles, the most important of which is the principle of diversity (variability). From the standpoint of portfolio theory, a monopotfolio consisting only of assets or liabilities of the same type is not subject to optimization: the risks associated with assets or liabilities in such a portfolio cannot be distributed and, accordingly, the goal of portfolio management cannot be achieved. In particular, liabilities cannot be only long-term, and the bank's assets - only short-term or consist only of loans or exclusively securities. At the same time, the objects of management and means should also be diverse, that is, the variability of not only the composition of bank assets and liabilities, but also the tools for managing them is important:

The content of the principle of mutual compensation of goals is that the inclusion in the portfolio of assets that reduce its potential should be adequately compensated by the improvement of other characteristics of the portfolio that are attractive to the bank. In the event that such compensation does not occur or it turns out to be insufficient, the portfolio cannot be considered balanced. The principle of preferential loss management can be considered a development of the principle of mutual compensation of goals. Recognizing losses at the portfolio level as inevitable, the bank's task is to cover these losses with other income and maintain losses at an acceptable level.

The next step in the study of methodology issues was the characteristics of the methods of banking portfolio management. In the work, an approach was chosen to interpret the method as a method that is applicable for solving more than one problem. The paper shows that the solution to the problem of optimizing the composition and structure can be achieved using known methods of diversification, consolidation, acquisition, segmentation, compensation, hedging, securitization, limiting and equity participation in risks. The composition of these methods is most fully disclosed in risk theory. At the same time, the paper proves that these methods are capable of solving not only the problem of risk management, but can also be considered as methods of banking portfolio management in general.

Having specified, systematized and concretized the above methods, the paper proposes to distinguish two of their groups. The first group consists of methods that are of a general nature and do not fully reflect the specifics of portfolio management, characterizing only its individual aspects - these are methods of equity participation in risks, segmentation, compensation, hedging, securitization and limiting. The second group consists of methods that originated and

developed within the framework of portfolio theory, but at the same time are used in other approaches. Among the latter in the work were attributed methods that are basic for the portfolio approach - these are diversification, consolidation and absorption.

The strategic role of diversification is key in the concept of portfolio theory author Harry Markowitz, who was one of the first to draw attention to this method of minimizing risk, proving that investors can reduce the standard deviation of portfolio returns, including stocks, prices for which change in different ways. Modern banks operate in various sectors of the financial market and the economy as a whole, diversify operations to attract and place funds, expand the range of products and services provided to customers. Thus, diversification is the most important method of banks' activity. The diversification mechanism is used primarily to neutralize the negative consequences of non-systematic (internal) types of risks of asset loss, loss of income and loss of liquidity. The action of the diversification mechanism is based on the dispersion of these risks, preventing their concentration. However, diversification cannot reduce risk to zero. This is due to the fact that the activities of the bank are influenced by external factors that are not related to the choice of specific objects of investment or capital raising. In addition, there is a diversification limit beyond which its effectiveness falls.

Complements the system of methods of the portfolio approach, the method of combining, aimed at reducing the possibility of losing an asset or reducing profitability by turning incidental losses into relatively small fixed costs. "Linking" risks with each other, it is also possible to cover them with one reserve. In particular, this method is the basis of insurance and, unlike other methods, does not involve the rejection of risk or its limitation. At the same time, additional costs are associated with the use of the pooling method, which means the rejection of part of the income that is possible as a result of a risky operation.

The third method that has been developed within the framework of portfolio theory is absorption. The method is used when, having the opportunity to immunize itself from most risks, the economic entity nevertheless takes them upon itself. It is aimed at neutralizing the consequences of possible damage in the event of a risk event. The inability to avoid losses when taking risks means that certain actions must be taken so that the consequences of damage are minimal, and the main form here is the creation of reserves against losses that can cover losses and absorb them. At the same time, it is important to keep in mind that the creation of reserves makes it possible not so much to absorb and cover losses that will take place one way or another in any case, but to distribute them over time and stock up in advance with the necessary sources of financing losses.

In addition to the general characterization of the place and role of general and specific methods of portfolio management, the paper characterizes the features of the use of the latter in the activities of commercial banks.

The next stage of work was the study of the system of external regulation

banking activity in the aspect of implementation of portfolio approaches in the management of this activity. At the same time, the presentation of this system as a two-level one was justified, within which, at the mesolevel, the object of regulation is the total banking portfolio (composition and structure of the total banking system), and the conditions for entering the banking industry and types of banking activities are regulated (requirements for the size of equity capital, rules of the state registration, types of licenses, conditions of compulsory deposit

insurance, etc.); at the micro level, the object of regulation is private portfolios of individual commercial banks, and regulation is carried out through a system of requirements for portfolio management in banks.

The result of consideration in the work of the place of portfolio approaches in the system of external banking regulation was the formulation of a number of methodological provisions that reveal the possibilities and directions for their improvement. For these purposes, the work summarized and presented in a complex the requirements of the Central Bank for the implementation of portfolio management in commercial banks, which included regulatory requirements for the structure and quality of bank portfolios and the requirements for organizing the management of individual portfolios in banks.

The paper shows that the requirements for the structure and quality of bank portfolios, set by the Central Bank, are the maximum restrictions on the portfolios of commercial banks from the standpoint of the "risk-profitability-liquidity" parameters, allowing banks, within the given parameters, to choose their own decisions regarding the volume and structure of portfolios of their assets and liabilities, using various methods and techniques of portfolio modeling and validation of the applied models. These included such requirements as mandatory economic standards for the bank's activities, the rules for the formation of the bank's reserves for risky assets, the procedure for calculating the limit

open currency position, a system of restrictions on the composition and structure of bank portfolios from the standpoint of assessing the possibility of allowing a bank to participate in the deposit insurance system, etc. These requirements are established as part of prudential banking supervision and act as mandatory norms for banking activities, ignoring which can lead to negative consequences for jar.

External requirements for the organization of management of individual portfolios in banks (credit, deposit, etc.) are more advisory in nature and are methods developed by the Central Bank in order to analyze and assess the state of bank portfolios for compliance with prudential standards, and also act as a component part of the requirements for the organization of internal control in banks and risk management of banking activities. Thus, in general, evaluating the system of external regulation of banking activities from the standpoint of the implementation of portfolio approaches in it, we can conclude that this system encourages banks to use portfolio management methods in their activities,

The conducted research proceeds from the fact that portfolio approaches were developed solely for the purposes of asset management. However, the classical task of portfolio theory - structure optimization - is also applicable to bank liabilities. The sphere of its implementation should be the structure of liabilities, in which equity and borrowed capital, equity and deposits, funds of the interbank market, etc. are balanced (are in a certain ratio). The validity of this approach is also confirmed by the presence of regulatory requirements for the structure of bank liabilities, which are applied in one form or another in banks in different countries.

The paper proves that the basic algorithm for the implementation of procedures

Portfolio management, which consists in finding the optimum ratio of "risk-profitability-liquidity" by distributing portfolios of assets in relation to the management of liabilities, needs to be modified, taking into account the specifics of liabilities as an object of management. Thus, the state of portfolios of liabilities cannot be directly characterized by the profitability parameter,

since their formation is associated with the implementation of expenses. Not applicable to liabilities and such characteristics as liquidity, which have only the bank's assets. Of the triad of portfolio management goals, only the risk parameter is directly related to liabilities, but the content of this risk is not associated with incurring losses, as in active operations, but with the loss of liabilities as a source of activity.

Taking the above arguments as a basis, the paper concluded that when applying portfolio approaches to liability management, the search for the optimum in the ratio of profitability, risk and liquidity is transformed into the search for the optimal ratio of the characteristics of the term, cost and risk structure of liabilities by varying the composition of their portfolios.

No less fundamental characteristic of the management of banking liabilities based on portfolio approaches is the subordinate nature of such management - the search for the optimum here is not carried out independently, but in connection with the goals - financing of active operations. If this were not the case, then it would be optimal for the bank to form liabilities at the expense of its own capital, when all indicators of risk, costs and terms of repayment of funds would be at their minimum level.

Based on these basic provisions, the paper assessed the practice of portfolio management of liabilities in commercial banks. The study carried out in this direction led to the conclusion that the current state of banks' liability portfolios is characterized by disproportions, which are expressed in the following features:

- a new round of "bank capital race" is unfolding, which is determined by the decisions of the Basel Committee on tightening capital requirements for commercial banks and the plans of the Central Bank and the Government of the Republic of Uzbekistan to increase the minimum amount of own funds of banks. While the equity capital of the country's banks remains largely underutilized;
- Banks are still focused on household deposits as the main source of funds raised. The consequence of this is a high level of risk of concentration of portfolios of liabilities, when the share of customer funds in the structure of the total volume of the portfolio of liabilities accounts for more than 50%, half of which is formed at the expense of deposits of the population;
- the low level of bank borrowings in the domestic interbank market remains (the share of loans, deposits and other funds received from other commercial banks in the total liabilities of the banking system fluctuates within 11-13%). These processes take place against the backdrop of growing loans abroad, while reducing the share of funds received by banks in the form of state support and refinancing. All this also leads to the concentration of portfolio risks in bank liabilities;
- despite the efforts actively made by the Central Bank and the Government of the Republic of Uzbekistan to create conditions in the country for the development of bank borrowing instruments on the open market, their particular result was only a slight increase in subordinated loans. The share of bonds and promissory notes in the liabilities of banks remained insignificant, while the volume of funds raised by issuing certificates had a negative trend. The underdevelopment of bank borrowing instruments on the open market and, above all, in the form of debt securities and their derivatives increases the disproportion in the liability portfolios of commercial banks.

Giving an assessment of the reasons for the negative phenomena in the state of the liability portfolios of commercial banks, the paper noted that the post-crisis stagnation of economic growth and the ensuing increase in problems in the financial sector and the downgrade of the credit rating of Uzbekistan significantly limited the ability of most banks to diversify their portfolio of liabilities through raising funds in international markets. The resulting deficit of resources was partly filled by allocating state support to banks in the form of subordinated loans on self-financing terms, reducing the standards for deductions to the mandatory reserve fund, expanding the practice of placing budget and pension funds on bank deposits, and reviewing the conditions for refinancing commercial banks.

Under these conditions, the role of monetary regulation is growing. Until recently, the needs of the economy in cash were largely covered by interventions of the Central Bank in the domestic foreign exchange market. Such a mechanism, due to its limited scope, cannot be considered rational and, within the framework of the recent transition to new methods of monetary regulation based on the concept of inflation targeting, should give way to normal market mechanisms. The main tool for meeting the needs of the banking system in financial resources should be the mechanism for refinancing commercial banks by the Central Bank, and the refinancing rate - the main instrument of monetary regulation.

The imperfection of the state policy in the field of bank support is not the only reason for the poor condition of their portfolios of liabilities. This is no less due to the weakness of the domestic policy pursued by the commercial banks themselves. Such a policy, as it is proved in the work, as a rule, is reflexive in nature, focused on compliance with external norms and rules and does not aim to solve the problems of increasing the efficiency of liability management.

In order to improve the quality of banks' liability management, the work identifies, systematizes and generalizes particular areas of application of the portfolio approach in liability management. Such particular areas include management procedures that contain elements of the portfolio approach and are associated with the formation of reserves of reserve liquid funds and reserve capital, with the pricing mechanism for bank deposits using the general fund method, with the establishment of restrictions on their size at the level of portfolios of liabilities. and structure and with the implementation of a differentiated pricing policy in relation to various groups of liabilities.

When forming liquidity reserves (which are funds deposited in mandatory reserves with the Central Bank, insurance coverage of bank deposits within the framework of the mandatory deposit insurance system, as well as reserve assets held at the bank's cash desk and on its correspondent account), the portfolio approach manifests itself in averaging the composition and structure of sources of funds attracted by banks when calculating the reserve base (total amount of funds raised, the amount of deposits attracted, the amount of funds attracted to demand accounts, etc.) and the application of a single reserve rate.

The reserve capital, created at the expense of the bank's profit, makes it possible to compensate for systemic risks that cannot be minimized through portfolio diversification and the formation of reserves of liquid reserve assets. The formation of reserve capital is carried out in order to ensure an appropriate capital position of the bank, which allows it to borrow in the interbank markets in crisis situations and thereby ensure the proper condition of its portfolios of obligations. Methodological approaches to assessing the size and sufficiency of a bank's reserve

capital to cover liquidity risks are the subject of discussion, but their unifying point is an integrated risk assessment of a commercial bank's liability portfolios.

The portfolio approach in the management of liabilities is also manifested in the implementation by banks of the requirements of external regulatory restrictions on the composition and structure of portfolios of liabilities - the share of net interbank borrowings in the total volume of attracted funds, the volume of promissory notes issued by the bank in relation to the value of the bank's own capital, etc. These restrictions are of an administrative nature and are related to the need for commercial banks to comply with the norms of general civil legislation and the requirements of the Central Bank in the field of monetary regulation; At the same time, banks in their activities to raise funds have to rely heavily on existing restrictions and constantly structure their portfolios of liabilities according to the established requirements.

The most striking manifestation of portfolio approaches in the management of liabilities is the pricing policy pursued by banks in the field of raising funds. The general fund-of-funds pricing mechanism for bank deposits is based on the assumption that there is no value of a single deposit and non-deposit source per se, but a weighted average of all financial sources held by a bank. Such averaging enables the bank to determine the maximum minimum rate of return on investing funds and predict the degree of impact of changes in financial costs or interest rates on funds raised on the results of the bank's activities. With regard to various types of bank deposits, banks, on the contrary, it is necessary to pursue a policy of rate differentiation in order to ensure the structure of deposits they need. In addition, credit institutions have to focus on the limits set by the Central Bank on the interest rate on attracted deposits, etc.

A general description of the directions for implementing the portfolio approach in managing the bank's liabilities shows their particular nature. The paper proves the need for a system of measures for the development of portfolio approaches and the elimination of imbalances in the structure of portfolios of liabilities of commercial banks. In particular, the paper proposes a concept for reorganizing the resource provision of banks, which provides for the saturation of the economy with additional sources of funds and is designed to create conditions for diversifying bank liabilities and applying advanced portfolio approaches.

In order to implement the developed concept, it is necessary to:

- ensure equal conditions for receiving state support for all operating commercial banks. The paper notes that by supporting only large banks, the state thereby contributes to the formation of monopolies in the banking sector. At the same time, large banks with easier access to resources demonstrate a less responsible approach to risk management, take into account the specifics of their client base worse than their regional competitors, and are not interested in working in depressed regions and low-income market segments. Based on this, the paper concludes that it is necessary to support regional banks, which will contribute to the implementation of a portfolio approach to managing the banking system;
- to stimulate the implementation of measures aimed at increasing the capitalization of environments and small banks, for which: to create a mechanism for reliable enforcement of property rights; reconsider the confiscatory nature of taxation; create effective tax incentives to increase the capital of banks; introduce a differentiated approach to tightening the requirements for the size of the minimum capital of commercial banks;

- expand the boundaries of the deposit insurance system by increasing the amount of deposit insurance coverage and extending state guarantees to legal entities and funds held in trust;
- to create conditions and promote the development of new deposit products - combined deposits - analogues of American-type certificates of deposit, which will contribute to solving the problem of formation of long liabilities.

To identify the distinctive features of the structure of banks' asset portfolios, a comparative analysis of the assets of the domestic and American banking systems was carried out in the work. Despite the large differentiation in the scale of active operations in Uzbekistan and the United States, in recent years, the prevalence of loans in the structure of assets, high riskiness of investments and the growth of problem assets have been common in the field of asset allocation by banks of the compared countries.

In general, based on the results of the analysis, the following general trends were formulated and disclosed in the work that determine the current state of the asset portfolios of commercial banks: volatility of the composition of portfolios (variability in the ratio of the share of various assets and absolute and relative indicators of their growth); the aggressive nature of portfolios of banking assets (which are not supported by available resources and are supported mainly by external borrowings); extensive growth of portfolios (the predominance of loans in the composition of newly issued loans related to the restructuring of previously existing debt); a sharp differentiation in the composition of portfolios of banks of various types; concentration of assets in credit investments to the detriment of other types of investments; low quality of assets (outpacing growth in the structure of assets, the share of problem and bad assets);

The listed features of the structure of banks' assets indicate an insufficient balance in the structure of their assets and a high concentration of risks within portfolios.

The assessment of the level of portfolio management carried out in the work in commercial banks led to the conclusion that the lack of balance the flatness of the structure of assets and the high concentration of risks within portfolios are largely the result of the poor quality of portfolio management in commercial banks, which is characterized by: the fragmented nature of management of various portfolios; lack of advanced risk assessment techniques based on own loss statistics and internal credit ratings; orientation in the application of risk-covering tools to the detriment of tools for its prevention and distribution; orientation in management to compliance with external regulatory norms to the detriment of the search for effective strategies.

The next stage of the study was the development of a methodological approach to determining an acceptable level of diversification of the portfolio of banking assets, which has found its practical application in substantiating the quantitative parameters of the bank's limit policy based on VAR methods. The paper proves that an acceptable level of diversification is a subjective characteristic of the structure of the portfolio of banking assets, in which, in a certain ratio, there are sub-portfolios of assets with individual parameters of risk, profitability and liquidity. At the same time, the subjectivity of indicators of an acceptable level of diversification not only does not exclude, but also suggests that the minimum requirements for its provision are set by the regulator through a system of mandatory economic standards. For example, having determined the methodology for calculating the capital adequacy ratio (H1) and its minimum value at the level of 10%, the Central Bank diversified the bank's assets by risk, distributing them into 5 sub-portfolios. In an effort to unconditionally fulfill the H1 standard, each bank makes its own

decision about which portfolios of assets and in what amount to form. As a result, the level of asset diversification acceptable from the point of view of the Central Bank is transformed into the level of diversification acceptable for the bank.

Outside the scope of regulation by the H1 standard is a portfolio without risky highly liquid assets (they belong to the 1st group of assets with a risk coefficient of 0%). At the same time, its minimum value can be determined on the basis of the instant liquidity ratio (H2), the value of which allows us to assert that, regardless of the degree of fulfillment of the capital adequacy ratio and the specifics of the bank's approaches to structuring (diversifying) the asset portfolio, the subportfolio of highly liquid assets should be as at least 15% of the amount of bank liabilities on demand. Continuing the chain of reasoning, the paper defined quantitative requirements for portfolios of liquid assets, large loans, investments in securities, etc., and

also set minimum requirements for the structure of the portfolio of earning assets.

The way to ensure an acceptable level of diversification in each bank is the limit policy, which is presented as a map of limits and restrictions, distributed by types of portfolios and structural divisions of the bank. The development of the limit map is based on the risk value analysis (VAR) methodology, which is recommended by the Basel Committee on Supervision as the most promising concept for risk assessment, designed to replace standardized regulatory methods that do not take into account the specifics of a particular bank, with more individualized methods.

The need to improve the management of asset portfolios of commercial banks in modern conditions is primarily due to the growth in the share of problem assets. In this regard, the paper substantiates the need to use a portfolio approach in managing distressed assets and highlights the main technologies used in the process of managing them. It is noted that, in general, a portfolio of problem loans can be represented as a set of individual problem loans combined into one portfolio according to some attribute. At the same time, the portfolio of problem loans can be managed both in terms of preventive limitation of the risks contained in it, and in the process of settling the losses realized in the portfolio. In the first case, the portfolio of problem loans is managed at the level of managing the loan portfolio as a whole,

Here, the portfolio of problem loans can be considered in two ways: firstly, as a single set of all loans with increased risk, classified by the bank as "problem"; secondly, as a set of private portfolios of problem loans of different quality. The common features that make it possible to combine individual loans with increased risk into portfolios of problem loans are the average statistical losses on problem loans of various quality, adjusted for the bank's expectations regarding the projected size of these losses in the future. In this regard, all targets and restrictions on the amount of losses set at the level of the bank's loan portfolio as a whole apply both to the total portfolio of problem loans and to individual components of this portfolio. In particular,

In the second case, settlement instruments can be applied to the portfolio, the main purpose of which is to minimize the losses contained in it. The main features for combining loans into portfolios here are the presence of common problems among all portfolio borrowers, which allow applying uniform settlement tools to all loans combined in a portfolio.

Exploring the issues of problem debt settlement at the level of individual portfolios (portfolios that combine problem loans depending on the category of its quality, type of loan, industry affiliation of the borrower, etc.), the paper concludes that the bank's capabilities in this area are limited. The meaning of the bank's work on the settlement of problem loan debt is reduced to the

most complete identification of the borrower's problems with repayment of loans and the choice of the most adequate debt settlement tools to solve these problems. Different causes of problems for borrowers included in a single portfolio necessitate the use of a different set of settlement tools

(whether to grant a delay in repayment of the loan or not, apply penalties or not, take the case to court or not, etc.). Selling the portfolio to external buyers can be considered as the only possible universal way to settle problem debts on a portfolio of problem loans. In this case, the characteristics of the homogeneity of portfolios of problem loans held for sale will be agreed directly with the buyer or directly determined by him. As signs of such homogeneity, the duration of overdue debt on a loan, the presence or absence of collateral, the size of the loan, the type of borrower (legal or natural persons) and other conditions can be selected. The system of these classification features should be sufficient for so that the buyer of debts can fully assess the risk of the acquired portfolio and set an adequate price for it. The price at which the portfolio is acquired acts as a form of reflection of the losses inherent in it, based on the buyer's estimates.

Other areas for improving portfolio approaches to banking asset management included:

- development of banking infrastructure: credit bureaus, bad debt banks, distressed asset management agencies, collection agencies;
- improvement of banking risk management: development of methods for assessing risks and forecasting bankruptcies, using techniques for stress testing the state and development of banking portfolios;
- diversification of banking activities through the introduction of new

banking technologies and banking products: credit derivatives, trust management, syndicated lending.

In order to implement these areas, the study summarized existing proposals for their implementation and developed a set of measures to create a modern banking infrastructure, improve banking risk management and introduce new banking technologies and products.

The study proceeds from the fact that the model of a balanced portfolio management of assets and liabilities of a bank should be built into the corporate development strategy of the bank, which the author interprets as a system of long-term goals for the activities of commercial banks, as well as methods, means, organizational mechanisms and tools for achieving them in conditions of instability. external environment and limited resources. The choice of development strategy is influenced by a number of factors, among which the priority place is occupied by: the mission and goals of the bank, environmental factors and the type of bank. From these positions, the balanced portfolio management of the bank's assets and liabilities is considered as a complex multilateral process, which is an element of the strategic management of the bank,

Since the strategy is based on a system of goals, the main of which is to increase the value of the bank in the long term, the key component of the bank's development strategy is its financial strategy. One of the tools for the practical implementation of the financial strategy is the coordinated management of the bank's assets and liabilities, which involves the distribution of liabilities by volume, timing and cost in order to ensure a sufficient degree of profitability, liquidity and risk of commercial banks' assets.

At the strategy level, the goal of balanced asset and liability management is to determine the directions, priorities and prospects for attracting and allocating resources by the bank and general approaches to achieving the set goals, the achievement indicator of which is integral financial indicators of growth and efficiency. At the level of tactics, the hallmarks of which are certainty, concreteness and adaptability, the composition of management tasks is expanding: long-term strategic goals formulated for the future are transformed into short-term ones, which involves the development of a phased program to achieve them; the strategic guidelines of the bank as a whole are adapted to the level of structural units; criteria for making decisions on the choice of the composition of portfolio elements are developed; a system of restrictions and limits is introduced;

The paper proposes a model for managing a diversified port

the bank's asset portfolio based on the analysis of portfolio migration and the determination of targets in terms of ROA. The developed model assumes that at the planning stage, the total portfolio of bank assets will include different sub-portfolios that provide both maximum current profitability (their ROA should be higher than the given ROA for the bank), security (ROA - at the bank level) and liquidity (their ROA, possibly less than the average ROA for the bank). Thus, each individual portfolio, being part of the total portfolio of assets and performing different functions in terms of ensuring profitability, liquidity and security, will make a different contribution to the provision of ROA for the bank, but at the same time their totality should ensure its specified target value.

Migration analysis allows assessing the current state and probability of risks based on the approaches recommended by the Basel Accords based on general and individual loss statistics. At this stage, the causes of fluctuations in profits are identified and the maximum allowable amount of losses is determined; the break-even point is the level of profitability beyond which the maintenance of an asset becomes impractical. If the ROA, net of losses, for any of the portfolios in the aggregate is less than the bank's target, the portfolio is liquidated.

As a result of the liquidation of one of the portfolios, additional costs will inevitably arise associated with its restructuring (asset sale), the volume of the bank's total asset portfolio will decrease and the concentration risk will increase, which necessitates the formation of a new portfolio as part of the planned ROA characteristics.

In liability portfolio management, an algorithm similar to asset management can be used, but as a target, instead of ROA, there will be a marginal cost of raising funds.

The paper assesses the possibilities and gives suggestions for the implementation of the developed model in a large commercial bank using budgeting and transfer pricing techniques. It is noted that the entire system of financial settlements should be embodied in the system of financial plans developed for each unit operating a specific portfolio, that is, implemented by means of budgeting. In order to ensure effective interaction between departments, it is advisable to introduce transfer pricing, which allows solving the problem of measuring performance by taking into account the cost of financing and the cost of services provided; eliminate interest and currency risks;

In order to implement the proposed model of balanced asset and liability management of the bank, the paper assessed the possibilities of using well-known theory and practice of liquidity management methods in portfolio management. It was proved that the task of liquidity

management from the point of view of portfolio management is to ensure the specified parameters of the bank's profitability in the face of an imbalance in the term structure of assets and liabilities, uncertainty in the dynamics of future income and the risk of loss of confidence in the bank on the part of market participants.

The diversity of sources of liquidity risk, on the one hand, makes it difficult to formalize, and on the other hand, it determines the variety of methods for managing it. A generalization of the available points of view showed that the most commonly used liquidity management methods in practice are the coefficient method, the method of the structure of funds, and the method based on the concept of cash flows. A detailed consideration of the possibilities of these methods made it possible to prove that each of them has its own scope and should be used in combination. At the same time, for the purposes of balanced management of portfolios of assets and liabilities of the bank, from the standpoint of liquidity, the method of coefficients has significant advantages, which establishes a correspondence between certain categories of assets and liabilities of the bank, which allows you to balance the term structure of assets and liabilities. The main drawback of this method - the limiting value of the liquidity indicator - has now been partially eliminated. For example, assessing the economic situation of banks. The Central Bank operates with an integral result, which is a weighted average of 8 liquidity ratios; the calculation of liquidity ratios includes data on assets classified only by risk groups 1 and 2, that is, with a high probability of receiving income; the fact of non-compliance with liquidity standards is a signal of a decrease in confidence in the bank; allows you to create liquidity reserves in the minimum amount set by the regulator, which allows you to maximize the amount of income-generating assets;

The coordinated management of the bank's assets and liabilities is associated with risk management. Therefore, the final stage of the study carried out in the work was the development of a multi-level system for identifying, measuring, monitoring and controlling portfolio risks, which helps to ensure that commercial banks make balanced decisions in the field of asset and liability portfolio management in the course of their activities.

The paper shows that banking portfolio risk management is specific and has horizontal, diagonal and vertical integration. The horizontal integration of risk management consists in generalizing various types of risks (credit, market, liquidity, etc.) - banks must take into account the existing risk landscape when taking on new risk positions, continuously monitor them and, if necessary, use active management methods. Currently, there are many well-established and fairly effective approaches to managing certain types of risks; the problem is to take into account the interconnections and mutual influence of risks within the banking portfolio as a whole. The requirements of risk-based approaches should be taken into account in the activities of various structural units that are not directly connected by relations of power and subordination, which can be summarized by the notion of diagonal integration of risk management. Vertical integration of risk management is associated with the consolidation of risk data, which guarantees the free exchange of information necessary for analysis and decision-making at each executive level in the bank.

Promising in the aspect of implementing portfolio approaches in balanced asset and liability management is also the development of methods for stress testing risks and their assessment based on indicators of the mass of risk, value at risk, etc. For this purpose, a set of approaches unified for all segments of the bank was developed to implementation of risk management in the management of various portfolios of assets and liabilities.

CONCLUSIONS

The study covers a number of issues, the solution of which, in the author's opinion, should contribute to improving the efficiency of commercial bank management. Summarizing the results of the study, the following conclusions can be drawn:

The paper proposes a model for managing a diversified portfolio of bank assets based on the analysis of portfolio migration and the determination of targets in terms of ROA. The developed model assumes that at the planning stage, the total portfolio of bank assets will include different sub-portfolios that provide both maximum current profitability (their ROA should be higher than the given ROA for the bank), security (ROA - at the bank level) and liquidity (their ROA, possibly less than the average ROA for the bank). Thus, each individual portfolio, being part of the total portfolio of assets and performing different functions in terms of ensuring profitability, liquidity and security, will make a different contribution to the provision of ROA for the bank, but at the same time their totality should ensure its specified target value.

Migration analysis allows assessing the current state and probability of risks based on the approaches recommended by the Basel Accords based on general and individual loss statistics. At this stage, the causes of fluctuations in profits are identified and the maximum allowable amount of losses is determined; the break-even point is the level of profitability beyond which the maintenance of an asset becomes impractical. If the ROA, net of losses, for any of the portfolios in the aggregate is less than the bank's target, the portfolio is liquidated.

As a result of the liquidation of one of the portfolios, additional costs will inevitably arise associated with its restructuring (asset sale), the volume of the bank's total asset portfolio will decrease and the concentration risk will increase, which necessitates the formation of a new portfolio as part of the planned ROA characteristics.

Liability portfolio management can use a similar algorithm to asset management, but instead of ROA, the target will be the marginal cost of raising funds.

The paper assesses the possibilities and gives suggestions for the implementation of the developed model in a large commercial bank using budgeting and transfer pricing techniques. It is noted that the entire system of financial settlements should be embodied in the system of financial plans developed for each unit operating a specific portfolio, that is, implemented by means of budgeting. In order to ensure effective interaction between departments, it is advisable to introduce transfer pricing, which allows solving the problem of measuring performance by taking into account the cost of financing and the cost of services provided; eliminate interest and currency risks;

In order to implement the proposed model of balanced asset and liability management of the bank, the paper assessed the possibilities of using known theory and practice of liquidity management in portfolio management. It was proved that the task of liquidity management from the point of view of portfolio management is to ensure the specified parameters of the bank's profitability in the face of an imbalance in the term structure of assets and liabilities, uncertainty in the dynamics of future income and the risk of loss of confidence in the bank on the part of market participants.

The diversity of sources of liquidity risk, on the one hand, makes it difficult to formalize, and on the other hand, it determines the variety of methods for managing it. A generalization of the available points of view showed that the most commonly used liquidity management methods in

practice are the coefficient method, the method of the structure of funds, and the method based on the concept of cash flows. A detailed consideration of the possibilities of these methods made it possible to prove that each of them has its own scope and should be used in combination.

At the same time, for the purposes of balanced portfolio management of the bank's assets and liabilities from the standpoint of liquidity, the coefficient method has significant advantages, which establishes a correspondence between certain categories of assets and liabilities of the bank, which makes it possible to balance the term structure of assets and liabilities. The main drawback of this method - the limiting value of the liquidity indicator - has now been partially eliminated.

The coordinated management of the bank's assets and liabilities is associated with risk management. Therefore, the final stage of the study carried out in the work was the development of a multi-level system for identifying, measuring, monitoring and controlling portfolio risks, which helps to ensure that commercial banks make balanced decisions in the field of asset and liability portfolio management in the course of their activities.

The paper shows that banking portfolio risk management is specific and has horizontal, diagonal and vertical integration. The horizontal integration of risk management consists in generalizing various types of risks (credit, market, liquidity, etc.). Banks must take into account the existing risk landscape when taking on new risk positions, continuously monitor them and, if necessary, use active management methods. Currently, there are many well-established and fairly effective approaches to managing certain types of risks; the problem is to take into account the interconnections and mutual influence of risks within the banking portfolio as a whole.

The requirements of risk - oriented approaches should be taken into account in the activities of various structural units that are not directly connected by relations of power and subordination, which can be generalized by the concept of diagonal integration of risk management. Vertical integration of risk management is associated with the consolidation of risk data, which guarantees the free exchange of information necessary for analysis and decision-making at each executive level in the bank.

Promising in the aspect of implementing portfolio approaches in balanced asset and liability management is also the development of methods for stress-testing risks and their assessment based on risk mass indicators. For these purposes, a set of approaches unified for all segments of the bank to implement risk management in the management of various portfolios of assets and liabilities was developed in the work.

The conducted research allows to significantly speed up the process of developing management decisions in the bank and increase their efficiency.

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