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DOES THE NEW MANAGEMENT INFORMATION SYSTEM IMPROVE OPERATIONAL EFFICIENCY IN THE BANKING INDUSTRY OF KAZAKHSTAN?

The purpose of this study is twofold. First, it is undertaken to assess the current management information systems (MIS) used by the banking sector of Kazakhstan. In addition to that, it is done to come up with a recommendation on how to set up an efficient MIS in the banking industry of Kazakhstan. Due to the rapid development of the financial sector in Kazakhstan, local banks require an efficient MIS to be and stay competitive in the challenging sector. Moreover, future employee resistance should be avoided after the successful implementation of efficient MIS. To ensure the representativeness of the sample size, the questionnaire has been disseminated among 250 employees who face MIS. This research covers the implementation of the right system and managing human factors for its proper functioning over a long period. To evaluate the effectiveness of the MISs used by the banking sector in Kazakhstan, the questionnaire has been designed and disseminated among employees of one of the largest banks in Kazakhstan. This study contributed to the existing literature by investigating MIS in the banking sector of Kazakhstan. The benefits and results of the information systems as well as their significance for the banking sector are discussed and analysed in this study. An efficient MIS sets and provides data that management requires to achieve its goals. The right MIS provides a decision support system which could be the most useful tool for the bank in solving complex questions. The fundamental steps to develop MIS, which should be adopted by the bank have been presented in this study.

Key words: Kazakhstan, MIS, banking industry, operational efficiency.

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Басқарудың жаңа ақпараттық жүйесі Қазақстанның банк саласындағы операциялық тиімділікті жақсарта ма?

Бұл зерттеудің мақсаты – Қазақстанның банк секторы қолданатын қазіргі МИС-ті бағалау. Сонымен қатар, Қазақстанның банк саласында тиімді басқарудың ақпараттық жүйесін құру бойынша ұсыныстар әзірленді. Қазақстанның қаржы секторының қарқынды дамуына байланысты жергілікті банктер қиын секторда бәсекеге қабілетті болу және қалу үшін тиімді басқарудың ақпараттық жүйесін (МБЖ) қажет етеді. Сонымен қатар, тиімді МБЖ сәтті енгізілгеннен кейін болашақ қызметкерлердің қарсылығына жол бермеу керек. Бұл зерттеу дұрыс жүйені енгізуді және оның ұзақ мерзімді кезеңде дұрыс жұмыс істеуі үшін адам факторларын басқаруды қамтиды. Іріктеме көлемінің репрезентативтілігін қамтамасыз ету үшін сауалнама МБЖ-ке тап болған 250 қызметкер арасында таратылды. Бұл зерттеу қазақстандық банк ісіндегі басқарудың ақпараттық жүйесін зерттеу арқылы бар әдебиеттерге өз үлесін қосады. Бұл зерттеуде ақпараттық жүйелердің артықшылықтары мен нәтижелері, сондай-ақ жаңартылып жатқан банк секторы үшін маңызы талқыланады және талданады. Тиімді МБЖ өз мақсаттарына жету үшін басшылыққа қажет деректерді орнатады және қамтамасыз етеді. Дұрыс МБЖ шешім қабылдауға қолдау көрсету жүйесін ұсынады, ол күрделі сұрақтарды шешу үшін банк үшін ең пайдалы құрал бола алады. Осы зерттеуде банкке қабылдануы тиіс МБЖ дамытудың іргелі қадамдары ұсынылған.

Түйін сөздер: Қазақстан, МБЖ, банк саласы, операциялық тиімділік.

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Повышает ли новая информационная система управления операционную эффективность в банковской отрасли Казахстана?

Целью данного исследования является оценка существующих ИСУ, используемых банковским сектором Казахстана. Кроме того, делается рекомендация по созданию эффективной информационной системы управления в банковской сфере Казахстана. Из-за быстрого развития финансового сектора в Казахстане местным банкам требуется эффективная информационная система управления (ИСУ), чтобы быть и оставаться конкурентоспособными в сложном секторе. Для обеспечения репрезентативности размера выборки анкета была распространена среди 250 сотрудников, сталкивающихся с ИСУ. Более того, после успешного внедрения эффективной ИСУ следует избегать сопротивления сотрудников в будущем. Это исследование дополнило существующую литературу исследуя информационную систему управления в банковской сфере Казахстана и охватывает внедрение правильной системы и управление человеческими факторами для ее надлежащего функционирования в долгосрочной перспективе. В работе обсуждаются и анализируются преимущества и результаты информационных систем, а также их значение для банковского сектора. Эффективная ИСУ устанавливает и предоставляет данные, необходимые руководству для достижения своих целей. Правильная ИСУ обеспечивает систему поддержки принятия решений, которая может быть наиболее полезным инструментом для банка при решении сложных вопросов. Основные шаги по развитию ИСУ, которые должны быть приняты банком, были представлены в этом исследовании.

Ключевые слова: Казахстан, ИСУ, банковская отрасль, операционная эффективность.

Introduction

Management Information Systems (MIS) have developed into an essential part of numerous present-day businesses, specifically in managerial decision-making. Without up-to-date and accurate information such as system grants, even the most outstanding executive is seriously obstructed when analyzing high-level applications. This paper focuses on the systematic mechanism for developing and building an efficient MIS tailored to the specific needs of the banking sector. All the important aspects such as information sharing, day-to-day transactions, and customer data are examined. Technology has a significant impact on the financial sector, especially the Internet and electronic data interchange systems, which are components of MIS. The information system is vital in modern banking systems and should be designed and secured neatly.

According to Valacich (2009), there are three main distinct categories of information systems:

- “Transactional Processing Systems” (TPS)
- “Management Information Systems” (MIS)
- “Decision Support Systems (executives)”

(DSS)

The above systems are very different from each other in terms of the technology used to build them and execute specific tasks required by an organization.

TPS tracks day-to-day activities and transactions. For instance, a bank’s transactional processing system would obtain information on withdrawing money from and depositing to an account. Data from each transaction is recorded, checked, approved / rejected, and the verified transactions are stored in the system database. Reports can be generated immediately to provide a summary of the activity. Then, if required, the transaction information is sent to another part of the business system. Coutts and Dove (2001) indicate that the purpose of TPS is to provide fast and efficient processes for recording each transaction using fewer employees and increasing the accuracy of work done. This should be linked to another banking system.

A management information system is an IT system that accepts raw data from TPS and transforms it into a meaningful and consolidated form. For instance, data obtained from TPS could provide information on which websites customers of a bank are using more frequently and the most demanded location for ATMs. Such information could be used to increase sales or install more machines.

The decision support system is specially designed for higher-level managers and senior executives to be a useful instrument in making important decisions. The MIS role is to produce reports, but the DSS provides an interactive environment in

which managers can use data and adjust business model operations. The components of DSS are a database extracted from MIS and TPS, graphical and mathematical models of business processes, and an interface designed for dialogue to interact with the system. An efficient DSS can use both “what if” analysis and past data. “What if” analysis is mainly used for forecasting and predicting future circumstances. An efficient system should be easy to use.

The issues raised in this paper are significant for financial intermediaries. By understanding the requirements of the banking sector and its information-sharing environment, a proper and efficient MIS can be designed. MIS is not a new term; however, the question is what makes the system efficient.

Kazakhstan has an advanced banking sector. However, technology is growing rapidly, and the use of efficient IS can bring more benefits and ensure that financial institutions remain in business, being profitable and reliable banks that people choose and use their services without switching to competitors.

Materials and methods

The purpose of this study is twofold. First, it is undertaken to assess the current Management Information Systems (MIS) used by the banking sector of Kazakhstan. Additionally, it aims to provide recommendations on how to establish an efficient MIS in the banking industry of Kazakhstan.

An efficient MIS allows for the evaluation of mistakes in the decision-making process and enhances the profit-generating activities of financial institutions. To evaluate the effectiveness of the MIS used by the banking sector in Kazakhstan, a questionnaire has been designed and distributed among employees of one of the largest banks in Kazakhstan. In accordance with confidentiality requirements, this study does not disclose any information about the legal title of the bank or the names of the respondents.

To ensure the representativeness of the sample size, the questionnaire has been distributed among 250 employees who interact with the MIS. The sample size has been determined using the approach described by Yamane (1967) which is $665/(1+665*(0.5)^2) = 250$, where 665 represents the total number of employees in the bank. The questionnaire has been approved by the executive director of the bank.

The questions in the questionnaire have been grouped into three categories to assess:

- The efficiency of the MISs used by the banking sector of Kazakhstan in promoting products/services offered by banks, enhancing their quality, reducing costs, and meeting customer expectations regarding online services.

- The accuracy of the payroll system data and the overall operational efficiency of financial institutions

- The need for the replacement of the current MIS with a new one.

The results of the processed questionnaire are assessed using the Chi-square test, which is a statistical method for testing hypotheses by comparing observed information with expected data.

The chi-square value is estimated in the following way:

$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

Figure 1 – Chi-Square formula

where,

f_o – Observed frequency

f_e – expected frequency

\sum – summation

χ^2 (Chi 2) – estimated Chi Square Value

Literature review

Zmud et al. (1986) accentuated the importance of an effective MIS in reaching organizational goals. The characteristics and requirements of the MISs vary based on the size and type of organization. As Senn (1990) pointed out the characteristics are defined using the requirements of the bank, the total number of transactions, and size. According to Avison and Fitzgerald (2003), in a challenging environment, the MIS would contain complicated management requirements and needs at each of the three levels of the bank; operational, strategic, and functional. On the other hand, the basic system is designed especially for the small financial intermediary where the executive requires only an essential informational data to function correctly. According to Friedman et al. (2013) design of the system should be appropriately conducted based on the type of organization. Castro et al. (2002) defined that the system should be unique for each company and should bring benefits for a particular organization to get accurate results from it. To understand the constitution of an MIS, the

ingredients that compose the system should be taken into consideration. Hong et al. (2006) indicated that management must provide an approach for evaluating achievement and outcomes so that it can decide if the bank follows objectives to its operational anticipation. All various types of data are required to build the comprehensive design of IS. Then, as Vahid and Givargis (2002) pointed out, the information is categorized into different logical subgroups so that the System Developer can study each part of the business individually. The process of analyzing each segment of information consists of a description of the information requirements of each task and function. Therefore, according to Iwasaki et al. (2003), the relationships of each part are developed according to the business of each area. The logic that points to the system's architecture is the summarisation of important data that are coming from each of the operating missions. According to Daft and Lengel (1986) marketing, sales, operation, and finance departments should employ their own IS or subsystems, which are developed to support entity goals. The overall result and value of the efficient system, as pointed out by Stein and Zwass (1995), will come from the proper design stage.

Results

1. Hypotheses testing

First Hypothesis testing.

H₀: The information system currently used by the BS of Kazakhstan does not affect the promotion, pricing and quality of banking products/services and does not meet customer expectations regarding online services and easy access to information.

H₁: The information system currently used by the BS of Kazakhstan positively affects the promotion, pricing and quality of banking products/

services and meets customer expectations regarding online services and easy access to information.

The significance level is set at 0.05.

To test the first hypothesis, six questions have been chosen.

Answers to the first question allow us to get insight into whether the mechanisms in place such as online shopping, cashback, online deposits, and dally rewards as well as any terminals that are taking a small commission, enhance the promotion of products/services offered by the bank.

The second question aims at the identification of whether product price is reduced by the applications introduced for phones like online banking, sending money paying bills, and ordering online information systems used.

Another question aims to identify how product/service quality is affected by the information system currently in place.

Further, it is crucial to understand whether the current system is up to date, so it is capable of meeting employees' requirements to address challenging issues and cope with a fast-paced business environment.

One of the clear indicators of whether the Information system in place meets the minimum level of customer expectations is the existence of online services as any customer should observe the account sitting at home and be sure that all money is secured. Further, easy access for customers to the information is one of the determinants of the information system efficiency. So, questions about online services and easiness of access to information by customers are part of the questionnaire.

The results of the processed questionnaire are presented in Table 1 – Testing the first hypothesis, expected and observed data. The chi-square test is used to test the hypothesis.

Table 1 – Testing the first hypothesis, expected and observed data

Question	yes	no	total	yes expected	no expected	total
Is your Information System suitable enough to keep pace with dynamic business environment?	237	13	250	172.8333333	77.16666675	250
Is the product quality being improved by using IS?	127	123	250	172.8333333	77.16666675	250
Has Information System made the product price minimize?	72	178	250	172.8333333	77.16666675	250
Does Information System create a wide range of product promotion?	110	140	250	172.8333333	77.16666675	250
Does the company provide online service to the customer?	247	3	250	172.8333333	77.16666675	250

Table continuation

Question	yes	no	total	yes expected	no expected	total
Is it true that after arrival of Information System it provides easy access to information for the customers?	244	6	250	172.8333333	77.16666675	250
Total	1037	463	1500	1037	463.0000005	1500

Note: This table has been compiled by the authors based on the results of the research conducted.

The total answers “yes” that are indicators of the efficiency out of 1500 time make 69 %. So, the expected values are taken using this percentage out of each 250 answers. That makes “yes” expected to be 172.83 times in each of the question, and the “no” expected is equal to 71.16 times in each question.

To come up with a conclusion, the chi-square value should be estimated. The chi-square is equal to 579.1950527. The degree of freedom is equal to 5 ((R-1)×(C-1)). At the 5% level of significance, the Chi-Square criteria is 11.1. Given that the estimated Chi-Square value of 579.1950527 is higher than 11.1, the decision is to reject the null hypothesis (H_0) and conclude that the Banking Sector of Kazakhstan has an efficient information system that allows for the provision of high quality banking products/services, promotes them and meets customer expectations regarding online services and access to information.

Second hypothesis testing.

H_0 : The information system currently used by the banks of Kazakhstan does not allow for the implementation of time recording mechanisms, fraud prevention controls in the payroll system, and does not provide an employee-accessible structure for contacting responsible departments

H_1 : The information system currently used by the banks of Kazakhstan allows for the implementation of time recording mechanisms, fraud prevention controls in the payroll system, and provides an employee-accessible structure for contacting responsible departments.

Significance level is set at 0.05.

Today, any financial institution is expected to have mechanisms in place that will record the arrival and departure times of employees (like personal

cards) to properly reflect their working hours.

Another important aspect of the information system is whether it prevents fraudulent activities of employees, such as signing for a coworker or using someone else’s card to receive the full salary even if the person always comes late and leaves early. To ensure the accuracy of the payroll system data, there should be control over this type of cheating in the workplace. Front offices are under control, given that they work directly with clients of financial institutions, and if they cheat, they could be easily caught.

The structure of the company should allow employees to call responsible departments and increase the speed of processes, thereby increasing the effectiveness of work undergone by employees. The next two issues addressed in the questionnaire are how internal communication and working speed are affected by the information system in place.

The results related to this part are presented in Table 2, which tests the second hypothesis and includes the observed and expected data. The estimated chi-square value is equal to 118.96. The degree of freedom is equal to 4. The Chi-Square criteria is equal to 9.48. Given that the estimated chi-square value of 118.96 is higher than the Chi-Square criteria of 9.48, the decision is to reject the null hypothesis (H_0) and conclude that the banking sector of Kazakhstan can properly reflect the working hours of employees and prevent their fraudulent activities, which ensures the accuracy of the payroll system data. Further, the information system used positively affects internal communication providing support to employees and improving working speed and overall operational efficiency of banks.

Table 2 – Testing the second hypothesis, the observed and expected data

Question	YES (obs)	NO (obs)	total	yes expected	no expected	total
Are there some cards or other identification methods that fix the time and working hours?	250	0	250	210.2	39.8	250
Does in your company exist time sheet card or a journal as an alternative method in case of broken system?	234	16	250	210.2	39.8	250

Table continuation

Question	YES (obs)	NO (obs)	total	yes expected	no expected	total
Does the system administrators control the activities during the work?	174	76	250	210.2	39.8	250
Does Information System speed up the internal communication?	188	62	250	210.2	39.8	250
Is the working speed of the staff increased after using Information System?	205	45	250	210.2	39.8	250
Total	1051	199	1250	1051	199	1250

Note: This table has been compiled by the authors based on the results of the research conducted.

Third hypothesis testing

H₀: There is no need to replace the current MIS with a new one that will enable the collection of information in a meaningful form, ensure high quality of information to be provided to senior executives, and automate the decision-making process.

H₁: There is a need to replace the current MIS with a new one that will enable the collection of information in a meaningful form, ensure high quality of information to be provided to senior executives, and automate the decision-making process.

Significance level is set at 0.05.

One of the concerns is whether there is a need to replace the currently used information system by financial institutions with a new one or if it will be sufficient to continue with the current system in place assuming that regular updates will be implemented to address the ongoing concerns of the financial institution in a timely manner. This replacement is expected to mitigate operational risks faced by any financial institution by substantially improving the quality of information provided to senior management for making strategic and operating decisions, as well as automation of the decision-making processes. However, it will be a costly endeavor.

To address this concern the first issue to be examined is the quality of information that is being provided to senior executives to making strategic decisions. Specifically, it is important to determine, whether the organization has mechanisms in place, such as a separate unit responsible for ensuring the quality of information provided.

It is worth noting that not all respondents may have access to or knowledge of the information that is being provided to directors. However, once a decision has been made by the director, there is control over the execution of the decision as confirmed by the respondents.

The next question pertains to the level of automatization in the decision-making process. Most respondents do not believe that the current system in the bank is sufficiently developed in terms of automation.

The final question addresses the ability of the current information system to gather information from all departments and present it in a meaningful form.

The results related to this part of the study are presented in Table 3, which tests the third hypothesis and includes the expected and observed data. The estimated chi-square value is equal to 81.72, with a degree of freedom equal to 3.

Table 3 – Testing the third hypothesis, expected and observed data

Question	YES (obs)	NO (obs)	total	yes expected	no expected	total
Is there in your organization the responsible department that deals with the quality of information?	98	152	250	133.75	116.25	250
Is there automated management decision-making?	185	65	250	133.75	116.25	250
Is there control over the execution of managerial decisions?	103	147	250	133.75	116.25	250

Table continuation

Question	YES (obs)	NO (obs)	total	yes expected	no expected	total
Does the existed system gather the information from all departments and put it into meaningful form?	149	101	250	133.75	116.25	250
Total	535	465	1000	535	465	1000

Note: This table has been compiled by the authors based on the results of the research conducted.

Given that the estimated chi-square value of 81.72 that is greater than chi-square criteria of 7.815, the null hypothesis is rejected. This means that there is no need to develop a new MIS for the bank. However, the responses on the questionnaire suggest that significant changes are required to improve the current information system.

2. Development of the MIS

Design Requirements

The design phase of an efficient MIS is very complicated and costly. The success of the design depends on the quality of planning. Once the System Committee has completed the planning and data requirement stage, the route and selected design of the information system are established.

During the design phase, the Systems Committee should determine whether to adopt a manual system, a computer-based system or combination of both. Most modern systems incorporate both manual and computer design methods. The following questions require an in-depth review:

- In the case of implementing a manual system, would it be agile enough to update the database quickly?

- Would a manual system provide the required information in an appropriate format?

- Which system is more expensive in the long term?

Computer-based systems are strategically and operationally effective, while the manual system should be in place as a backup for extremely unavoidable situations.

To work out the details of the system design, the following issues should be examined:

- 1) What Information should be provided?
- 2) In what form should it be provided?
- 3) To whom should the data be provided?

The design stage begins with gathering all the necessary data to create a system. The information is then divided into logical subgroups or target centres so that personnel can analyse each part of the bank separately. This analysis process involves determining the information needs of each function

and the relationship of each part of the bank with other areas.

The prototype of the system project will be a model of the banking system, which outlines what needs to be done and how it should be done. A model will be created for each function and these separate models will then be combined into the final information system. In other words, each department should have its own proper information system (IS) or subsystems that support the bank's goals.

Quality is essential in the design phase and transactional stages of the bank's system. The following design rules and requirements should be carefully considered:

- Installation schedule: Each design element should have a specific installation date to be completed within the targeted deadline.

- Flexibility: Each step in the design process should be responsive to the requirements of different users.

- Maintainability: A properly designed system should require minimal changes after installation. When updates or modifications are necessary, the system should not be compromised. The system Committee should ensure that the system's design records are compatible, properly documented, and easy to follow.

- Tailoring: When structuring the overall IS, the System Committee should make a concerted effort to ensure that the data is up-to date and effective in meeting performance requirements. The data format should be user-friendly. Further, users should not be burdened with additional manual tasks that can be automated by the system.

- System's growth: The System Committee should consider further requirements in relation to the existing ones to accommodate the bank's growth.

- System's Reliability: To ensure the reliability of the data produced by the system, designers must establish operational controls and internal checks to ensure the processing of accurate and valid data.

Data Input and processing

Figure 2 provides an example for the System Committee to use in the detailed design stage

of the system development cycle. Design requirements vary from bank to bank, and the design considerations differ at each level within a bank, making the design process highly complex. Figure 2 illustrates how to assist the System Committee and help personnel plan the system's framework at each stage. The Figure 2 includes

explicit depictions of how each function would be accomplished in computer-based and manual systems. Every information system would typically be a combination of mechanised and manual system. The degree of combination depends on factors such as bank size, management needs, and transaction complexity.

	INPUT			PROCESSING			OUTPUT		
	Capture and data recording	Data classification	Data arrangement	Summarization	Calculation	Storing	Retrieving	Reproducing	Data communication
Electronic Computer Method	Key punch Optical scanner Collection device Conversion device Terminals	According to system design specifications	Internal processing storing and filing	Central processing unit (CPU)	Central processing unit (CPU)	Magnetic tape Central processing unit (CPU)	Online system for direct access	Terminal printer Central processing unit (CPU) Microfilm Fax	Machine prepared reports Terminal displays Manual reports Telephone
Manual method	Voice observation Hand-written forms Documents Checklists	Hand posting Hand coding	Indexing Filing Keysort cards Alphabetize	Calculators operated by hand	All manual type operation	Index cards Accounting journals	Manual type retrieval methods	Carbon paper Reproduce by hand	Hand prepared reports

Figure 2 – System Design Guide

Note: Alexander Hamilton Institute Inc. 1985. How to develop the right management information system

1. How to Consider Output and Input Design

The form of the output summaries is essential because they immediately influence the requirements of the subsystems. The form of output could be a hard copy (printer) or soft copy (display) according to user requirements. Hard copy summaries are commonly needed to document the continuous business processes. Video displays are intended for fast information requirements like customer payments or paying abilities. Output summaries should be in due course to bring any value to users. The creator of systems must attentively examine for every cell of the system, the time claims of users and comprise them in the detailed structured plan. Every output summary part of the total system should include a particular time consideration for data which could vary from immediate to delay. The cost of immediate response could be very high.

2. Database design

The word database widely depicts the all-informational records, which are accessible to

the users of the system. The essential and most significant contemplation for the bank's database is if it fits all users' needs. The following general database determinations could be helpful for people who are not acting in data processing functions.

- Master file – a file, which holds constant data or records, which totally depict the items within (for example, master file, which compose of all relevant customer-oriented data).

- Transaction File – a file to store data, which afterwards used to upgrade the master file (for example, clients phone number or address changes then update data in client master file).

- Table File – a file composed of constant data, which is retrieved or stored in common processing activities.

- Backup File – a file that helps to recover the master file in case of damage or loss of information. (E.g. Hacker attacks etc.).

In most financial intermediaries, there has been spreading of databases. The databases designed

and managed by the different units of the bank for their own localised aims. Upon designing the databases, there is need of an integration process of databases. There should be one main database in company. According to Fong (2015) in order to complete the task of database integration, firstly “schema integration” should be constructed. The process includes some steps fixing the clashes between source databases, apprehending the connotation of “...entity, weak entity, cardinality, ISA, generalisation, categorisation and aggregation of thee relations, and merging to a new integrated schema...” for every pair of the current relational schemas in the core database. Next step is integration of data process. According to Batini et al. [1986] it aims at combining data from core database to the recent “global database” without any deprivation of information.

3. Factors in file organisation

File organisation is the procedure by which the information in a specific document is organised so that the different records might be received and intermittently upgraded. The effectiveness of the file configuration is crucial in the systems success.

There are three fundamental sorts of record structures. A “sequential list” document structure is an arrangement of information records that are sorted out for a numerical plan (for instance, client account numbers which are masterminded by clients place in the letters in order). A “reversed rundown” structure utilizes lists and different cross-referencing systems to sort out the records. It is a more intricate and expensive system than the consecutive posting. The third approach is the “immediate access” technique.

4. Data Processing Techniques

Two primary processing procedures which ought to be considered are batch handling and online preparing. In batch handling, different information streams are gathered and go into the machine for preparation.

Batch preparing is cost-effective, less demanding for non-information handling representatives to get and is particularly suitable to a framework that contains an extensive number of information flows.

Online handling permits overhauls or inputs to be made haphazardly to the different expert documents.

5. Moving Toward Decentralisation

1) Considering that an MIS is rotating around information handling, more organizations are picking the decentralized method of operation due to the following: Local destinations can prepare information rapidly and create reports in a configuration that addresses their issues.

2) Placing PC power in individual areas permits every site’s self-sufficiency.

3) The effect of downtime (PC disappointment) is diminished since individual offices can keep on working all alone even though the centralized server neglects to work.

6. Different Data Processing Applications

Information handling offices can serve various applications which could be interrelated and according to Haag et al. [1998] could be grouped into:

- Business applications: incorporate get-ready spreadsheets and reports, for example, benefit/misfortune articulations utilized by supervisors and bookkeepers.

- Database applications: fabricate connections in the middle of information and store them into groupings. A database may be isolated into discrete documents identified with a particular subject, such as bookkeeping or building.

- Estimation applications: control information to determine results.

- Representation applications: produce graphs and outlines.

- Word handling applications: allow to create, keep up and control content.

- Operational applications: include utilizing and keeping up the processing framework itself. These applications incorporate insights concerning its framework; deal with its inner assets and give security.

7. Decentralisation/Participation (DP) in Action

While arranging DP applications, the expert would most likely need a couple of registering terminals in his office that impart straightforwardly to a centralized server or in a roundabout way utilizing a minicomputer. These terminals permit to get, modify, include, and erase information that is either put away in an analyst’s office or at a focal PC office, or both. The terminals in the analyst’s office will be either “conservative” or “intelligent” contingent on his needs. If an analyst needs processing to happen at the workstation level, then he should utilize intelligent terminals. These terminals grant an analyst adaptability to design and control information. The user could use an intelligent terminal if he wants his workstation to function between times in standalone mode, but at the same time hold the ability to process information. If the final user needs a terminal that is working for a minicomputer or centralized computer, allowing no local control or manipulation of information, the utilization of a conservative terminal is going to be useful.

8. Controls for Information Systems

A last quality prerequisite in the configuration is the general control to be incorporated with the framework itself. The data framework is an important asset. Accordingly, steps ought to be taken to guarantee that it is functioning as was planned. These controls must be considered amid the arranging and plan stage, not after the framework has been planned. The system's control configuration will envelop four distinct classifications – authoritative controls, operational controls, documentation controls and security controls.

Security controls are intended to guarantee that sensitive information of the bank is legitimately protected. These controls likewise guarantee that unapproved persons not to utilize the general framework.

9. Developing an Economic Appraisal

During the third stage of the development of master plan, the Systems Committee must build up a financial examination for the Board of directors. This evaluation is an investigation of the proposed framework and allows to figure out:

- financial effectiveness of the framework that is delineated in the arranging and definition stages is.
- existence of the assets to bolster the long-haul objectives.
- operational proficiency in the arranged framework.

The Systems Committee will now have the information to judge if the organization has the staff, gear, and funding to add to the data framework.

10. Best Alternative Design Strategy (ADS)

The process of selecting the best-fitted alternative design strategy has at least two steps. Firstly, conducting a comprehensive group of Alternative Design Strategies and secondly, choosing the alternative that is most appropriate in the desired IS. All economic, technical, and organizational constraints that affect and bound the actions should be considered. For instance, according to Walls et al (1992), such bounds around ADS include:

- Date when replacement of system required,
- Availability of resources (human, capital),
- The unchangeable elements of the existing system,
- Restriction about modifications of the software,
- Limitations that are coming from the significance of the problem.

A serious review of the stated constraints will tremendously help in the process of generating alternatives.

11. Installation and Implementation of the system

The Systems Committee ought to arrange the execution of the framework, following a schedule developed to control the procedure execution.

Banks can build up a framework from a few sorts. The aggregate data arrangement of the bank is frequently a blend of a few frameworks or subsystems. Four of the more basic data frameworks that banks may begin to integrate into their current data system are payroll, accounts receivable, purchasing, and general ledger.

The PC-based framework might be 100 per cent successful from a configuration and mechanical perspective. Meantime, the system's clients, along these lines, can contribute to the general achievement or failure of any system. Diversity of users requires some training to be conducted to ensure proper work of the system. Training should be user-specific. For example, a developer who has been included in the system's outline ought to have adequate training to deal with the keeping programming prerequisites.

12. Testing the System

Testing is the last process before actuating the system. Testing unveils mistakes or bugs in the framework. These blunders could be in the PC hardware or the programming. Faults can likewise come about because of wrong use by the users. Testing can reveal regions where revisions are required to make the system more workable. In addition, testing demonstrates to the software engineers where the system's controls should be reinforced to shield against real blunders that could happen later. Every segment of the system ought to be checked separately to figure out whether it complies with established principles. Every bit of equipment, and supporting gadgets, ought to be checked for operational execution and compatibility.

13. Payroll System

The payroll operation is one of the most widely recognized system applications in business. A computerized Payroll System is typically an advanced part of the aggregate IS in large and complex organizations. The Payroll System ought to provide productive and effective means for processing the bank's payroll. It ought to be simple. Moreover, it also ought to contain sufficient alterations and checks to shield against mistakes that are quite common in the manual payroll system. The PS is the only system in the bank's overall information network that affects each employee. If employees think it makes faults, then they accept that none of the alternate systems function as they are expected to. Mistakes in PS, therefore, might possibly lead to the loss of validity of the whole IS.

14. Accounts Receivable System (AR)

The modern business environment places impressive emphasis on such measurement tools as forecasts of cash flow, rate of return and stock turnover. These performance indicators are either directly or indirectly linked to the company's accounts receivable (AR). Cash flow figures rely on the time required to convert clients' credits to money. Rates of profitability are adversely affected by bad debts. Accounts Receivable turnover ratios are a good indicator of the current financial position of the bank. Therefore, the AR information is very significant. When the information is provided in a reasonable timeframe, it enables the bank to plan efficiently. The AR system can provide regular feedback about clients' accounts, credit status of clients or could be used to flag clients who fit certain descriptions. It allows management to act on issues related to receivables more quickly.

15. General ledger system (GL)

Another significant system is the general ledger IS. It controls most of the financially related activities of the bank. Due to the nature of this system, it directly influences every function. The requirements of the general ledger (GL) system are strong because it receives information from all the parts of the subsystems in the aggregate IS of the bank. The scope of the GL system is critical. However, the different input sources and interrelationships among functions make the system's design complex. Essentially, every component of the GL is itself a separate subsystem. The general ledger system is controlled by the chart of accounts. The chart of accounts includes a list of account code numbers that are linked to the financial information so that the information is accurately classified and recorded. The following are examples of the kind of information that is entered into a general ledger system:

- The Payroll System inputs the required information to support the gross pay, withholding tax and other deductions for the period.
- The customer payable file to compute the AR for the period.
- The cash receivables section of the AR system produces the cash amount for the period.

Discussion

Every bank should install its Management Information System (MIS) in manner that suits its specific needs and requirements. This tailored approach increases the probability of success in implementing an effective MIS. However, it is

crucial to place significant emphasis on the final approaches to MIS implementation during project considerations. These final approaches include:

1) Vendor Investigation: When a Bank has a clear plan and an idea of the system it wants to develop, it should begin by requesting proposals from suitable vendors. An important initial step is evaluating the reputation of vendors. Factors to consider include their expertise in data and word processing, the quality of after-sale service, and their financial performance. If the bank has a well-defined and detailed request for proposal (RFP), it can expect fewer responses. Conversely, an RFP with insufficient data may result in an overwhelming number of from vendor responses. Once vendors have responded to the RFP, the bank can ask them specific questions about their handling of sample applications. This is the benchmarking process that helps evaluate the suitability of different systems.

2) Pilot Program Strategy: Implementing the pilot program allows the bank to assess the impact of the new system on the workplace. The value of a pilot program lies in its isolation from the regular business flow, as well as its defined time and scope. The success or failure of the pilot program can be evaluated based on various targets, such as working hours of the department, system logs, and records of system upkeep. To get a feedback, tools such as questionnaires, interviews, and critiques about the trainings can be used. A practical approach to initiating a pilot program is to provide the accounting department with cost-effective minicomputers and software, such as spreadsheet software.

3) Managing Human Factors in MIS Implementation: Implementing a new system through a pilot program substantially impacts the work environment, requiring changes in tasks and processes. Proper involvement of personnel at all levels is vital to increase productivity and ensure effective and organized work practices. Human resistance to change is a common challenge during MIS installation and can indicate of managerial shortcomings. To minimize resistance, employees should be involved in the MIS project development process. Addressing concerns of people about downsizing is crucial, as employees may fear being replaced by computers or more qualified personnel. Open-door question and answer sessions should be organized and employees should get position-specific training.

4) Local Area Networks: Office automation, a standard practice with MIS, relies on Local Area Networks (LANs). LANs are established by

connecting multiple devices within the office building using special cables. LANs enable users to have individual workstations while sharing information and hardware with others. The operating system (OS) plays a key role in the functioning of LANs, providing security protocols and facilitating resource sharing and communication. Each computer requires an interface card and proper cabling for effective communication. Further, LANs can serve as gateways to connect PCs with other LANs or mini computing devices.

Conclusion

All banks are distinctive, and there is no one common solution that would be perfectly fitted for every bank, except there are general rules that everybody should follow. Nevertheless, the proposed efficient MIS could be suited as the basics and the advances depend on the bank that

wants to implement an efficient system. Employees are potential obstacles in the implementation of an effective system. Employees are afraid of being replaced by technology and people who can manage this technology. There are many analyses before the development of proper systems. The System Committee should control the process and involve every employee to bring their ideas for developing an easy system that is going to make their work easier and more productive. To sum up, the information system in any bank is a very useful tool for success. There are various reasons like an increase in customer service quality and the process of innovative solutions for new proposals of loans. The better information sharing in the bank, the better the relationship among colleagues. Providing better quality service and maintaining employee happiness are the outcomes of an efficient management information system.

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