Business Process Automation and Re-Engineering Using Bizagi: Case Study on Loan Request Process

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Abstract: *Business Process Automation (BPA) has become a demand to all types of organization, the automation is used recently in many sectors, regarding banking sector, automation is proved its important for this sector, hence transfer banking transactions from traditional ways that include stress, crowded queues in customer service department, paper applications and waiting for long time to get the answer whether request approved or rejected. Business process automation has emerged as a part of business process re-engineering (BPR), which in turn formulate an important part of Enterprise Resources Planning, the process which must be done recently due to advances and enlargement in business fields. This study presents loan request automation by using the bizagi application. The research outcomes proved that loan request automation reduces time-wasting and efforts for users and banks as well.*

Keywords: Business process, re-engineering, BPR, BPA, ERP, Bizagi, Loan Request

1. Introduction

Nowadays, the world has become one village, due to the charming web networks that could be found on many technological devices that used in our daily life, at the same time in which enterprises, companies, and organizations seek to facilitate their business process, within this recent advanced technology that could be employed to serve the organizations' business process at all levels and in all work' sectors. Business Processes (BPs) could be identified as a series of actions that have made to achieve a common objective, such as fulfilling a business contract or satisfying a customer need. [1]

But companies in the recent days face many challenges in order to cope with the modern development in business area, and the associated competition, what is needed to overcome these challenges is a good planning for the company' business processes by focusing on all resources, this is called "an Enterprise Resource Planning" (ERP), i.e. complete integrated business management system that comprises all business departments such as logistics, production, finance, accounting, and unman resource, result in organizing of integration of all operational process and information to reach the optimum use of resource. [2] While every organization that wants to apply Enterprise Resource Planning must re-engineer its business process. Business process re-engineering is not a new term for the business world. It has become the most popular process management technique in the business field and has taken great attention from industry owners, managers, and academicians. [3] The meaning of re-engineering here is the reconstruction of business processes and its related systems and also organizational structure to improve business performance. [4] To make successful business process re-engineering procedures, many companies have focused on automating its business process, so it could be managed & controlled in an easy and fast way "business process automation" means using technology to automate the complexity of business processes or technology-enabled automation of processes

within any business. [5] To automate BP, there are many software used and thus help in Enterprise Resource Planning which all types of organizations want, one of these software is Bizagi, the new digital business platform, here in the current research, we examine the use of this software to automate loan request process identifying Bizagi' effectiveness to manage, follow the loan request. Where, many people need to request personal loan to face some financial problems, here the role of the banks appear as a trusted organization from which those people could make this request, Bank 'loans range from individuals to families, individually owned and other small business to international company [6] but, what we consider here is the personal loan. Banks also are the most organizations that need and use e-services, using IT, communications and the web-networks to provide their clients by different services and improve the level of these banking services, [7]thus within adopting this e-banking services, the research investigates automate business loan process using bizagi platform.

2. Literature Review

2.1 Business Process Definition

Business process trends that had roots in several disciplines of management has been appeared since the 1980s and 1990s as one of the main patterns of structure and manage the operations of an organization. [8]By looking in the term " business process " one can concludes that there is a serial work must be done to perform and manage different kinds of business, where many researchers give these process different definitions, from them, that a business process " is a grid of related tasks, that are performed by performs whether humans or systems, in logical and temporal sequence with the help of means such as devices and software. The tasks are applied to business elements (data or physical objects) to satisfy a customer's needs.

Furthermore, it is performed in a technical, organizational, and social context. [9] We can also define a business process

as " a network process which is used regularly a series of linked activities using information and resources to transform inputs to outputs, starting from a request or certain task to the satisfaction of the customer needs." [5]

However, a holistic definition by Davenport and Short 1990, who defined business process by distributed it into three subs –dimensions as follows:
- Entities: they are processes that often occur among organizational entities. They could be inside the organization, related to functions or persons.
- Goals: they are the processes that lead to the desired objectives, whether physical or informal.
- Actions (tasks): they comprise managerial (e.g., budget) and operational (e.g., customer application) [10]

But the question is, what does business process offer to a company?

The answer id, business process supports business performance and success, through many characters from them are:
- Improve business processes by enhancing the performance of business steps and functions as well as external processes such as partners, suppliers, and customers such as (the value chainmaking the business processes visible (and thus explicit) to business.
- Maintain the business process modelconsistent with process performing and enable users and analysts to use the model to improve business performance and outcomes.
- •Empowering the effective integration of process actions, business assessments, and management, to prepare the basic stone for continuous improvement.
- Enabling fast repetitions of processes and main systems for continuous process optimization. [11]

After taking a look on business process concept , it worth mention that, by passing the time, the advances become more and more, where technology now is used in our daily life special Android technology, whether on mobile phones or others, thus the business process now is subjecting to what we call business process re-engineering, it will be discussed in the next section and automation (it will be discussed briefly later).

2.2 Brief note on Business process re-engineering

After business process emerged, the organization realized soon that, the need of continuous improvement and make change for better, and ensure achieving new goals for the business and enhance its performance, therefore it was the starting point to re-design the current business elements or even establish new ones, thus business process re-engineering has been taken its way.

Business process re-engineering is an approach that concentrates on costumer and aims to achieve advances and developments within work or business, enhance the whole performance. It acts on the recreation of the business of any organization. [12]

Business Process Re-Engineering (BPR) also could be defined as design, management, and innovation for a

business process. Re-engineering includes a review for organizational processes, but many terms given to BPR, such as core process re-design, new industrial engineering, and so on. All of those names mean the same concept, which concerns about combine both business process, redesign, and information technology used with supporting the re-engineering work. [13]

BPR often breaks the present processes and helps in planning new channels to execute organizing tasks, organizing individuals, and facilitate the use of information technology systems, which in turn leads to processes support the goals of the organization in a better way. This task performed by determining the critical business processes. Then analyze these processes and re-design them for efficiency improvement and performance. [14]

To revise, analyze, and re-invent and design a business process for any company, it needs to perform a serial of that requires. The common steps could be summarized in the next figure:
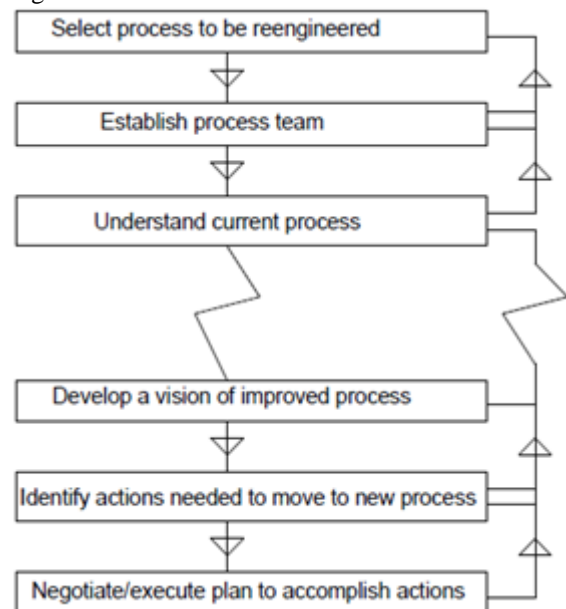

Figure 1: Shows the business process steps: source [15]

Also, Business Process Re-Engineering comprises many activities, and we can mention the common ones (related to the current research) as follows:
- *Business process renewal* – It is business processes re-design in order to improve business operations and performance. Renew process comprises facilitation main business processes, contributing to success and continuous progression of work aspects, and sometimes integrating other business processes. It must be done before automation to be sure that the activities, tasks, and others that will be automated are required to improve the business.
- *Business process automation* – It is a business process mechanization for the propose of improving process efficiency by using ICT. It permits the business to be performed in any location and allows faster transfer to customers and support quick service provision and paperless transactions. Generally, it provides an effective change in the work performing method, and it also helps

the customer in avoiding the stress and effort that are done within traditional transactions. [13]

From the previous, it could be concluded that business process automation is the main part of BPR activity in any organization. Thus, the current research adopts the BPA (Business Process Automation) as a method to re-engineer the traditional loan request process.

2.3 Enterprise Resource Planning (ERP)

ERP system is an enterprise-wide package that integrates all necessary business functions into a single system with a shared database. These software packages can be customized up to a certain limit to the specific needs of each organization. [16]
Enterprise Resource Planning systems or enterprise systems are software systems for business management, encompassing modules supporting functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business. [17]. ERP systems are computer-based systems designed to process an organization's transactions and facilitate integrated and real-time planning, production, and customer response". [18] A holistic ERP system can replace multiple databases with a single and centralized data source, with information relating to products, services, customers, and suppliers accessible by anyone in a company. [19]

Applying the ERP system has resulted in the following benefits:
- Units design, including many special business units such as financial, accounting, manufacturing, and so on.
- Using the database management system (DBMS), which is needed for any business.
- Business units unified and provide easy data flow among these units, increasing operational transparency through standard interfaces.
- ERP is resilient and provides the best business practices.
- Business units with ERP systems work in real-time with online and batch processing. [17]

ERP has four characteristics, specifically, standardization, integration, routinization, and centralization. They are in detail:
a) *Standardization:* means employing System Application Products (SAP) in businesses and controlled by company head offices.
b) *Integration:* is the main character of ERP systems. It points to collect all relevant data related to a set of business processes, and they are managed in the same software application.
c) *Routinization:* It comprises all routine accounting and other information processing that could be managed within SAP.
d) *Centralization:* It is essential to deal with both the systems centralization, design, and control, as well as the centralization of extra maintenance actions.[20]

Regarding the automation process, ERP is generally could be defined as a system that automates key business functions

through integration and support decision making accordingly. [21]

Thus, implement of ERP for any organization must be comprised of business process and business process re-engineering, which in turn includes automation for the process, so the implementation of successful automation leads to ERP successful system, that what the research seeks to examine.

2.4 Loan Request Process

A loan means lends the amount of money to an individual or organization on the condition that it will be paid back over a known period with definite interest. The traditional manual process that used to obtain and grant loans is difficult, exhausting, and needs a lot of time for lender and borrower as well. Thus, automate the loan processing procedure becomes urgent demand. [22] However, within today's lending markets competition, having software becomes more efficient. This software which could be open on one platform permits the lender to use a set of the same tools to develop security protocols and set regulations to emphasis process consistency across the enterprise, that were applied to all loans, so when compliance require updates and verification, it could be made in one-time process. [23] As it is clear, there is a need to automate the loan request process.

2.5 Loan Automation System as An Example for Process Automation

The loan automation process provides the bank services a lot of new features such as speed, the automatic review of application detail, which helps in selecting the user who needs a loan. It reduces the stress that resulted in direct contact between employees and customers. Within loan request automation, the customer will be able to access the system by selecting the login option after a successful registration. The user, therefore, fills the application or loan request online through the system. This reduces users' effort by direct contact in the bank. After the submission of loan details is successful, it will be processed further by verifying the details. After all details being verified and found valid, the customer will be informed whether the bank will approve the loan or it will be rejected. [22]

For making success loan automation process, it needs special requirement, and those requirements could be classified into, functional and nonfunctional, in more detail:
- *Functional requirements*: this type of requirements for automation loan request via application software include online platform for secure loan application, process application, and notification for accepted or rejected requests, links to accept loan repayment via online banking and (ATM), ability to enable multiple users view the services within different fields at the same time, and avenue for managerial update which help in insertion of data in the database tables.
- *Non-functional Specification* : it is very important as well as functional one, these requirements of comprises portability (access from different software and hardware platforms, and deployment to various hardware platforms), efficiency (manage loan contents or

applications efficiently as the structure of content organized accurately and precisely represent the system; interface available, and precise for users, security and others. [24]

3. Bizagi as Software Application for Loan Request Automation

The current research is going to apply the loan automation process via bizagi software. This software includes a special application called personal loan request, this application is reliable as its main software, but first, we need to know more about this program or suite " bizagi".

3.1 Concept of Bizagi

Bizagi is a tool to model and document the business processes. This modeler enables the user to visually diagram, model, and document business processes. (Bizagi, 2009)Bizagi helps organizations to transform into digital business. The Bizagi Digital Business Platform which includes: Bizagi Modeler, Bizagi Studio, and Bizagi Automation helps user to manage the complete his business processes life-cycle [25] " Bizagi Modeler appeared in the next image."
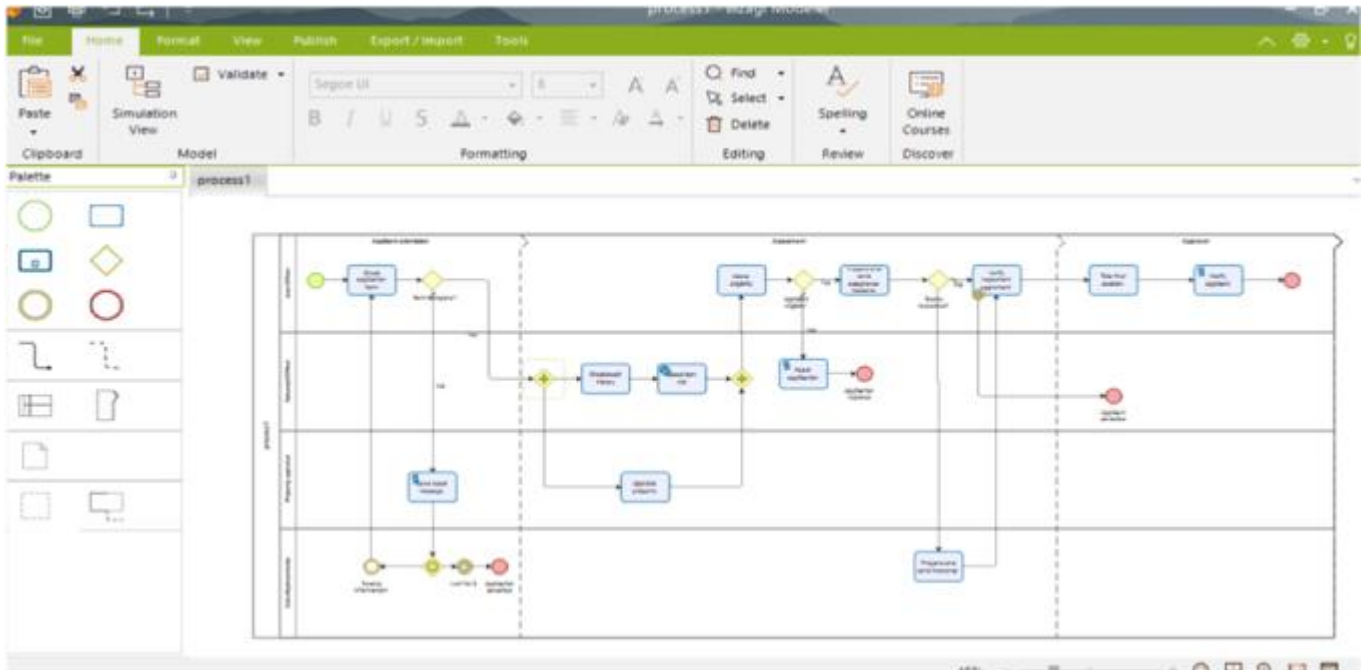
Bizagi's Process Application Platform is known as the Bizagi Digital Business Platform and found on version 11.0. This is a closely integrated, in-house advanced tools suite. A free unique Modeler tool – downloaded more than 2.5 million times all over the world – this application is available as part of the full suite, which is completed by the studio, which fully developed and runtime process application server. [26]

3.2 Bizagi Tools

Bizagi BPM Suite is a system for Business Process Management (BPMS) system that automates processes with more velocity and makes it more elastic than ever before. In Bizagi, it could be re-design and re-construct most of the common and reoccurring needs in process automation. Furthermore, Bizagi enables business users to automate and control or change complex, dynamic business processes faster and with more flexibility than any other system. Thus, it supports the continuous improvement of the company's critical processes. [25]

Bizagi BPM Suite is consisting of three tools that help the user in modeling, executing, and improving a business process life cycle, which are:

Bizagi Process Modeler: The modeler empowers the user to the diagram, model, and document business processes visually.

Bizagi Studio: The design module helps in determining data of the model, the user interfaces (known as forms), regulations of the business, the participants or performers of the tasks of workflow, and acts on integration with external systems.

Bizagi BPM Server: The BPM Suite implement the model in a Work Portal. It could be accessed through a browser, via the Bizagi BPM Server, to make effective and intelligent process management. (e. g. daily uses). [25]

The next image explains the icons for the Bizagi Suite and its three components, referring to the main role of each one.
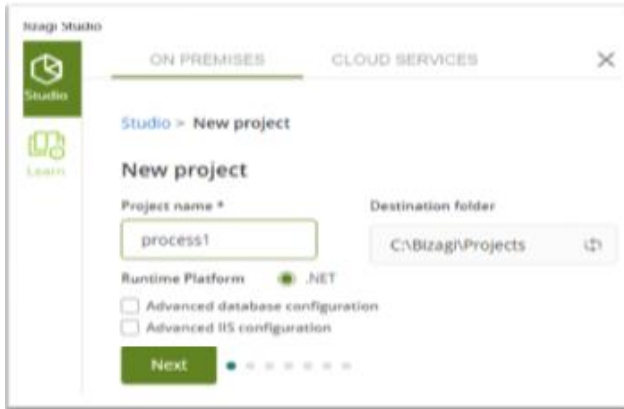
3.3 Creating Project in Bizagi

To create a project in Bizagi business process management, there are specific steps that must be followed:

1) Click the Bizagi icon on your device opening Bizagi application then select New project to create a new Bizagi project. (as seen in the next image).
2) Write by typing the project name: process1 and click Next. (next image)
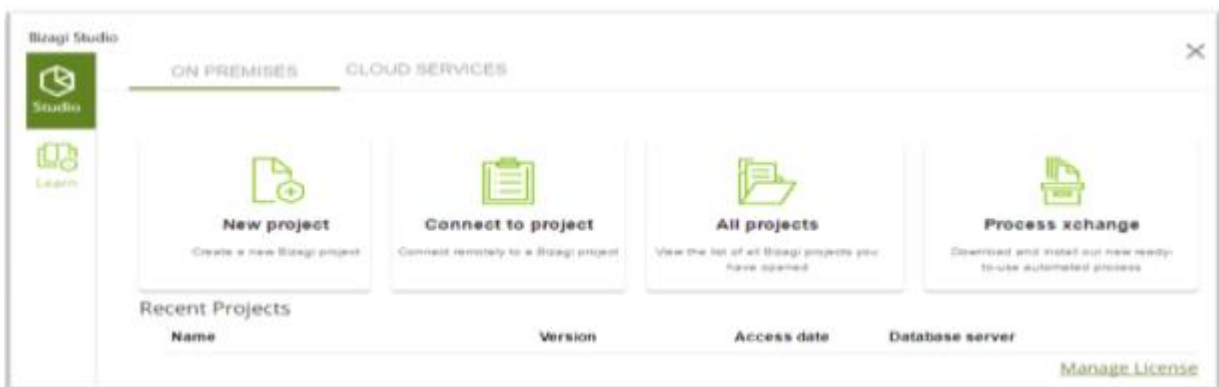
3) Bizagi will begin to create a selected project. (May take several minutes)
4) Bizagi Studio will open soon after doing step 3, and the Process Wizard appears. The Wizard acts as a guide through all the necessary steps to automate the required process. (see next image)
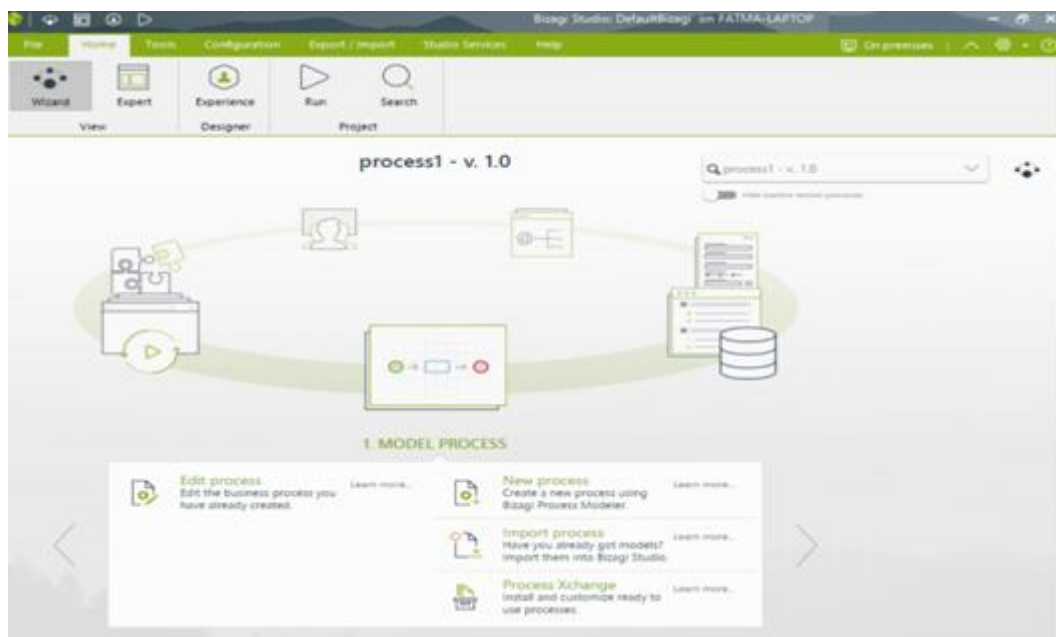
3.4 Bizagi Loan Request Process

Bizagi application of the loan request process is analyzed at different stages. Including investigation of the applicant's profile, his payment capacity, and credit history that is linked to the requested products. The approval stages are determined according to each case and comprise automatic and partial approvals and total negotiations. [27]

The applicant forms of bizagi loan request appeared in the following image:

The user or the customer needs to fill Query Form on bizagi in case of loan request; using bizagi is easy and available for every user.

3.5 Previous Study

By reviewing the literature and previous study, the researchers didn't find any study examine or apply bizagi as a software for automating loan request process, which distinguish the current research from others, and explain the need to conduct it, however there are many studies have been conducted on business process automation, especially in banking sector, we could offer them as follows:

A study by [1]: it is a case study of modeling and automating business processes in the loan monitoring department of a medium-sized bank. In this study, business process automation has been performed using Lotus Domino/Notes groupware platform. The direct mapping and support of MPN main entities within the Notes environment ensured the accurate and complete implementation of all business processes and reduced significantly programming cost. The study recommended using business process automation in loan monitoring, while it is an effective and fast way if it was applied in the right way.

[24] The objective of this study is to analyze how Norwegian providers of financial technology utilize new technologies—and the combination of these— in light of a regulatory directive.

Design and creation research strategy was adopted, and data collection was through existing documents and structured interviews. The waterfall software development method was adopted. The result of the study provided a loan automation application that saves paper works throughout the life of the loan, and its design is also available as a contributory guide towards the creation of a similar system.The Loan Automation Application Software would help boost a lending institution's customer service in many ways and make lending operations more efficient and transparent.

[28] The study examined the factors affecting customer experience in retail banking services delivered by business process automation. In specific, it developed a theoretical framework for the role of various factors that affect the adoption of process automation in the retail banking industry. The research model was tested using a survey questionnaire. Results indicated that factors such as security, privacy, reliability, and usefulness are significant in advancing process automation in the retail banking industry. The research emphasis process automation as an alternative way for human banking work.

[22] The study aimed to develop an online loan application project to introduce an easy way to apply loan. The study seeks to help users to get information about applying for a loan and can apply online. The application of the study implements, where users need to fill the details of identity cards like PAN and bank account details. This information about users will be verified by the bank authority and status of the loan. The developed program enabled the user to receive notification regarding loans, whether approved or rejected, and they also can download the details of the loan in the cases of approved loans. Information, notification about the loan could be gained from anywhere and at any

time. Thus, the application can save a lot of time. The study indicated that the automated loan request could be a very useful and successful way to apply for the personal loan request.

4. Description of the Loan Request Process Re-engineering

4.1 Loan Request Process- AS-IS

The loan application process takes place between the borrower and the loan provider to approve the loan application. There are four loan provider roles:
1) The financial officer is responsible for checking the customer's credit card.
2) The property appraiser evaluates the property.
3) The insurance sales representative displays the insurance rates for homes when needed.
4) The loan officer performs all other responsibilities.

The process begins at the request of the client. Upon receipt of the application, it is confirmed that the application is complete. In case the application is not completed, it shall be returned to the client to complete the necessary within a period not exceeding five days. In the next stage, the application moves to a stage where two operations are required: The first is to check the customer's credit card history and estimate the risk, the second process will

evaluate the property by the property appraiser. After passing the second stage, the eligibility of the client is assessed. If the customer is not eligible, the request is completely rejected. If the customer is eligible, the loan officer will send the acceptance documents and the payment agreement to the client by mail to be signed and returned to the bank within two weeks. The loan officer verifies the client's signature on the paperwork and approves the agreement between him and the bank and then issues the final decision whether to approve or reject the loan application. The customer shall be informed of the approval or rejection decision. The loan application can be accompanied by a home insurance plan if required and is made after sending the acceptance papers and the payment agreement to the customer.

4.2 Loan Request Process- TO-BE

The loan request process requires a specific time limit for filing the application and completing the approval process. Therefore, it is important in the loan request process to take care of the time to complete the task. The applicant's application could reject for several reasons, informing the customer why and making suggestions for accepting the application helps save time and effort for the client and the bank as well. Loan request process re-engineering focuses on providing the customer with appropriate suggestions in these cases:

1) When the applicant's request is received, it is checked to make sure that the order is complete, and in case it is not completed, a rejection message is sent to the client and suggestions are provided to help him know the reason for the rejection to be completed and re-order again.

2) When the applicant's eligibility is rejected after the property and the loan risk evaluation, the application is rejected, and then suggestions are sent to check the balance on the credit card to be approved.

3) When the application is canceled because the client has not signed the payment agreement, suggestions are made to the applicant to complete the required paperwork and procedures within two weeks.

5. Conclusion

Business process automation is an essential step in the ever-evolving world of industry. It has emerged as a part of business process re-engineering, which in turn formulate an important part of Enterprise Resources Planning. Companies, especially banks, are constantly striving to work in parallel with these developments in the industrial world. Automation helped banks reduce waiting times and efforts for users and employees, thus improve performance and efficiency.

This research is aimed to apply the bizagi personal loan request application in order to examine and follow the loan request automation. This suite or program is selected because it could be download easily, and users can access and handle it quickly and clearly. The research outcomes proved that loan request automation has many benefits for bank, employee and users such as reduce stress, time-wasting, effort, long procedures, increase the speed, and dealing with large number of customers, users also can access to bizagi platform from any device at any time, fill the application, get notifications about their request and pay via it in the case of accepted requests.

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