

InsurerIT Health Insurance Claims Handling

MIST 5750

TTR 2:20

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Executive Summary

Three main sub-processes compose InsurerIT's business model. These are: receiving a claim, assessing the claim, and settling the claim. Through an analysis of their current process, we identified some inefficiencies and bottlenecks in InsurerIT's processes. Their high-level process begins with the filing of a claim, triggering subsequent activities. After thoroughly analyzing the case, we identified specific steps in each subprocess and created an As-Is model. Following this, we explained our thought process in creating this model and why we used specific process modeling tools. In order to better understand and identify InsurerIT's bottlenecks, we chose four tools to further look into InsurerIT's processes. We performed a careful computation of cycle times for each subprocess and identified the time spent on activities such as data entry, insurance checks, claim assessment, and settling claims. The cycle time efficiency is calculated to be 0.61%, indicating significant room for improvement. Additionally, we created a value-added analysis that categorizes activities as non-value-added (non-VA), business value-added (BVA), or value-added (VA). Utilizing this, our group identified several processes that may be changed or removed to increase InsurerIT's business efficiency. The issue register provides detailed information on each issue and provides insight into the severity of each issue as it gives a quantitative analysis of the damage each issue could cause. Our final analysis tool was a simulation; the controlled environment enabled us to gain a better perspective on the bottlenecks of InsurerIT's processes. Our main recommendations included the incorporation of claims management software for claim submissions, establishing partnerships with medical providers, creating an Enterprise Resource Planning system for low-level tasks, and eliminating the use of postal services. We decided to utilize an analytical redesign approach when creating the "To-Be" model. Finally, we proposed a "To-Be" process model, incorporating the recommended changes. Overall, after incorporating principles from concepts such as Lean Six Sigma and process modeling, we believe our proposed recommendations and "To-Be" process will best enhance the effectiveness, efficiency, and customer satisfaction of InsurerIT's health insurance claims handling process.

As-Is Process

High-Level Process

After careful analysis of the insurance claims handling process at InsurerIT, our team has determined that the overall process consists of three high-level activities: receive claim, assess claim, and settle claim. The overall process begins when an instance of “claim filed” (the starting event), which triggers the subsequent activities shown below. The process is concluded when the “claim settled” event occurs and is modeled with a circle with a dark, thick border. The high-level overall process is depicted below. It is also important to mention that this high-level overview is not an accurate depiction of the true process; the process has been summarized and simplified to be easily digestible for the user.

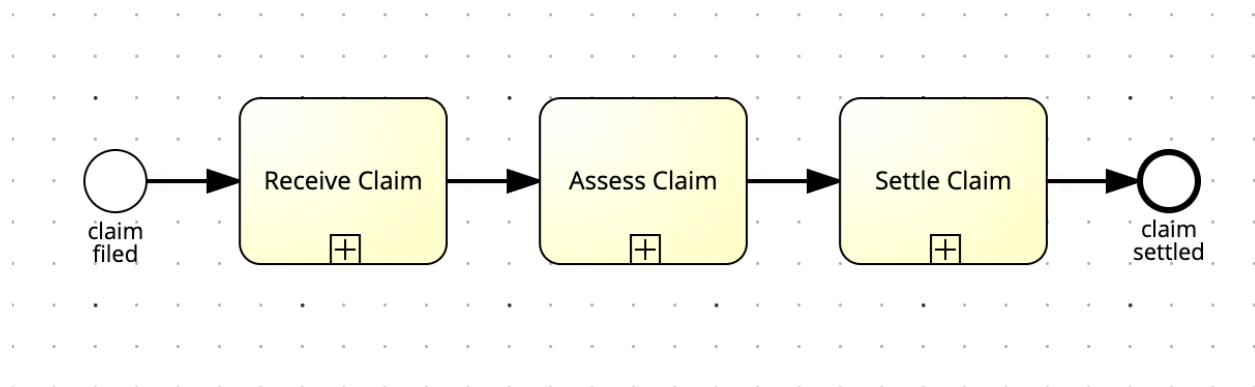


Figure 2.1 - High-level overview of the overall insurance claims handling process at InsurerIT

Receive Claim

The figure below (figure 2.2) is a more detailed and accurate depiction of the first high-level subprocess, "receive claim", of the overall insurance claims handling process. The process is triggered when the junior claims handler receives a filed claim from the customer; this is portrayed with a catching message start event. Subsequently, the junior claims handler enters the details of the claim into the insurance information system. Once this activity is completed, the junior claims handler proceeds to verify the insurance policy and the type of claim being filed. As a result of this decision activity, the process is split with an XOR gateway to depict that

an instance of the activity must follow one particular sequence flow. If the claim does not fall under insurance policies, the customer is notified with an automated message, and the claim is rejected and settled. However, if the claim passes the insurance claim, the instance is verified and moves on to the next subprocess: assessment of the claim.

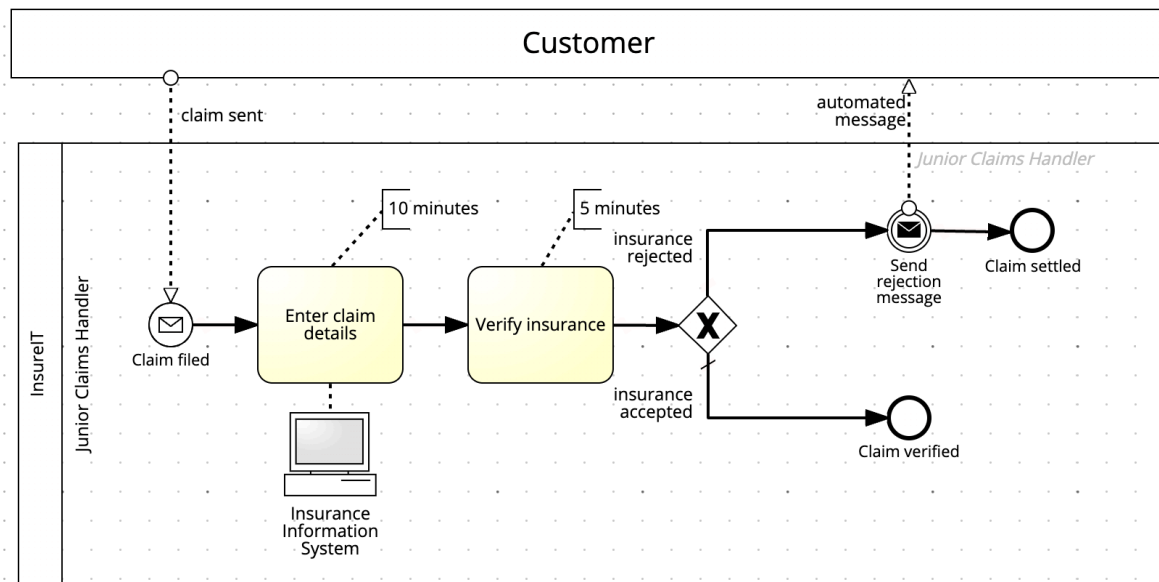


Figure 2.2 - Detailed depiction of the first subprocess: receive claim

Assess Claim

Once the claim has been verified, the instance moves on to the next high-level subprocess: the assessment of the claim (figure 2.3). To start the claim assessment process, the claims handler receives the verified claim and determines whether the instance falls under short-term or long-term entitlement benefits. As a result of this decision activity, the subprocess is split with an XOR gateway to depict the two scenarios. If the claim falls under short-term benefits, the claim can be assessed immediately. It is important to note that we have modeled an intermediate error event on the boundary of the claim assessment activity to depict any cases of fraud. There was no standard procedure described in the details of the insurance claims handling process, thus we terminated the instance with an end error event. If the claim falls under long-term benefits, the senior claims handler will require a medical report before assessing the case. As a result of this

requirement, the case is handed over to the junior claims handler, who requests authorization forms from the customer. The customer is given a 14-day timeframe to submit the requested authorization form. This scenario is depicted with an event-based gateway. If the forms are not received on time, the claim is assumed to be withdrawn and the process ends. If the forms are received promptly, the junior claims handler proceeds to request medical reports from the respective healthcare provider utilizing the signed authorization form. Once the medical report is received, the claim is handed back to the senior claims handler to perform an assessment. This sequence flow is then merged back into the original flow as depicted with the XOR Join gateway.

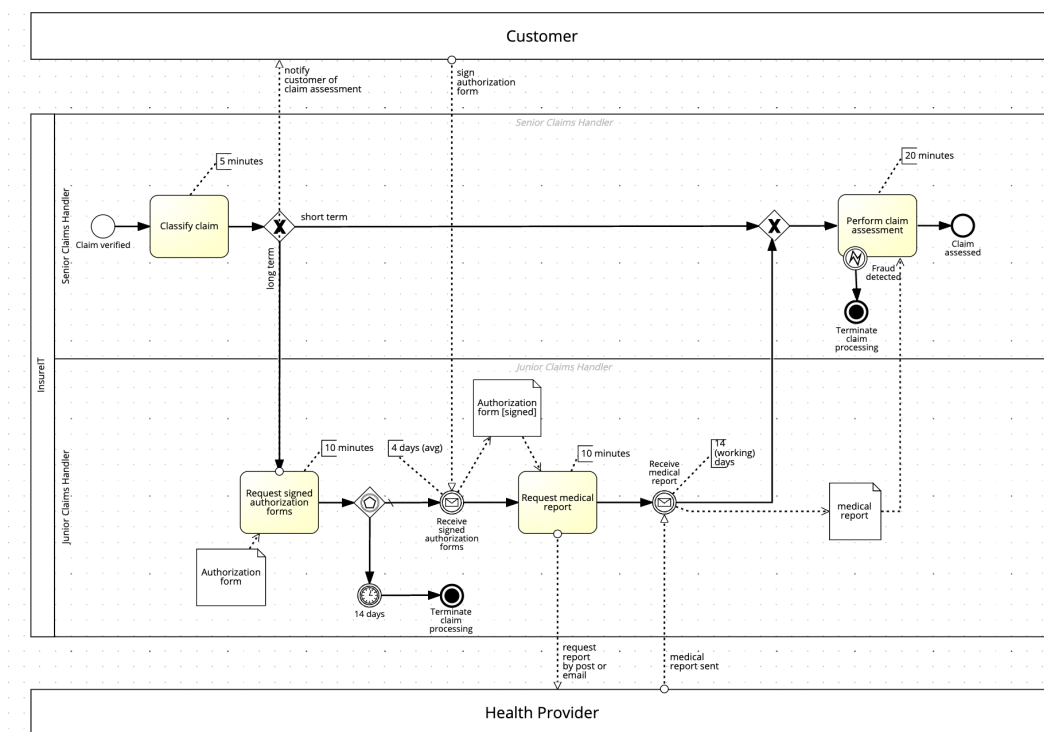


Figure 2.3 - Detailed depiction of the assess claim subprocess

Settle Claim

Once a claim has been assessed, the instance moves onto the final subprocess of settling the claim (figure 2.4). First, the senior claims handler notifies the customer of the decision regarding the claim assessment. If the claim is denied, it is immediately settled, and the process ends. On the contrary, if the claim is approved, the senior claims handler will assess the

entitlement benefits of the case. Once benefits have been determined, the claim is handed over to the financial officer to schedule the entitlement payment. The claim is then merged into the original sequence flow with an XOR join, and the process concludes.

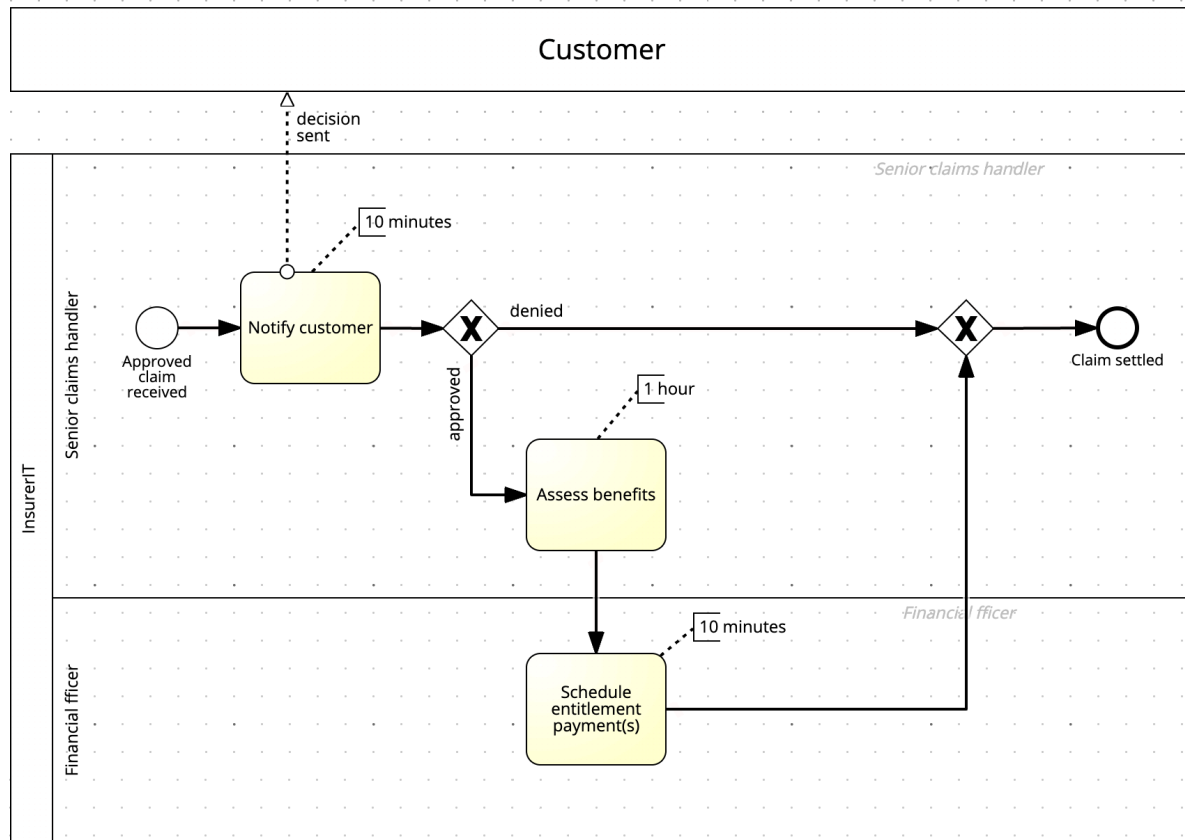


Figure 2.4 - Detailed depiction of the "Settle Claim" Subprocess

In summary, our team has mapped the current As-Is process model for insurance claims handling at InsurerIT. To enhance and improve this process further, the subsequent steps will involve computing cycle time efficiency and conducting a quantitative/qualitative analysis to determine the bottlenecks of the process. Lastly, our team will utilize this in-depth analysis to refine and improve the process and develop a "To-Be" process model.

Cycle Time Computation

| Sub-Process 1: Receive Claim | | |
|--|---|--|
| Activity | Cycle Time | Theoretical Cycle Time |
| Data Entry | 10 minutes | 10 minutes |
| Insurance Check | 5 minutes | 5 minutes |
| Total Duration: | 10 minutes + 5 minutes = 15 minutes | 10 minutes + 5 minutes = 15 minutes |
| Sub-Process 2: Assess Claim | | |
| Classify Claim | 5 minutes | 5 minutes |
| <p style="text-align: center;"><i>XOR Block</i> Short Term (20%) Long Term (80%)</p> | | |
| Short Term | | |
| <i>Claim Assessment</i> | <i>20 minutes</i> | <i>20 minutes</i> |
| <i>Short Term Total</i> | $(.20) * (20 \text{ minutes}) = 4 \text{ minutes}$ | $(.20) * (20 \text{ minutes}) = 4 \text{ minutes}$ |
| Long Term | | |
| <i>Authorization Request</i> | <i>10 minutes</i> | <i>10 minutes</i> |
| <i>Receive Authorization Forms</i> | <i>4 days (average) * 24 hours * 60 minutes → 5,760 minutes</i> | <i>0 minutes</i> |
| <i>Request Medical Report</i> | <i>10 minutes</i> | <i>10 minutes</i> |

| | | |
|---|---|--|
| <i>Receive Medical Report</i> | <i>14 days (average) * 24 hours * 60 minutes → 20,160 minutes</i> | <i>0 minutes</i> |
| <i>Claim Assessment</i> | <i>20 minutes</i> | <i>20 minutes</i> |
| <i>Long Term Total</i> | <i>(.80) * (10 minutes + 5,760 minutes + 10 minutes + 20,160 minutes + 20 minutes) = 20,768 minutes</i> | <i>(.80) * (10 minutes + 0 minutes + 10 minutes + 0 minutes + 20 minutes) = 32 minutes</i> |
| Total Duration: | 5 minutes + 4 minutes + 20,768 minutes = 20,772 minutes | 4 minutes + 32 minutes = 36 minutes |
| Sub-Process 3: Settle Claim | | |
| <i>Notify Customer</i> | <i>10 minutes</i> | <i>10 minutes</i> |
| <i>XOR Split Denied (5%) Approved (95%)</i> | | |
| <i>Denied</i> | | |
| <i>End-Event</i> | <i>0 minutes</i> | <i>0 minutes</i> |
| <i>Denied Total</i> | <i>(.05) * 0 minutes = 0 minutes</i> | <i>(.05) * 0 minutes = 0 minutes</i> |
| <i>Approved</i> | | |
| <i>Assess Benefits</i> | <i>60 minutes</i> | <i>60 minutes</i> |
| <i>Schedule Entitlement Payment(s)</i> | <i>10 minutes</i> | <i>10 minutes</i> |
| <i>Approved Total</i> | <i>(.95) * (60 minutes + 10 minutes) = 66.5 minutes</i> | <i>(.95) * (60 minutes + 10 minutes) = 66.5 minutes</i> |
| Total Duration: | 10 minutes + 0 minutes + 66.5 minutes = 76.5 minutes | 10 minutes + 0 minutes + 66.5 minutes = 76.5 minutes |
| Overall Cycle Time: | 15 minutes + 20,772 minutes + 76.5 minutes = 20,863.5 minutes | 15 minutes + 36 minutes + 76.5 minutes = 127.5 minutes |
| Cycle Time Efficiency = Theoretical Cycle Time / Actual Cycle Time = 127.5/20,863.5 = 0.0061 = 0.61% | | |

Quantitative And Qualitative Analysis

Value-Added Analysis

Based on the Value-Added analysis, we have identified three non-value-adding activities in the receive claim and settle claim processes. These steps are all currently handled by the Junior Claims Handler when they could be automated to reduce the effort invested in non-value-adding steps.

| Step | Performer | Classification |
|--|-----------------------|----------------|
| <i>Sub-Process 1: Receive Claim</i> | | |
| Enter claim details | Junior Claims Handler | Non-VA |
| Verify insurance | Junior Claims Handler | BVA |
| <i>Send rejection message</i> | Junior Claims Handler | VA |
| <i>Sub-Process 2: Assess Claim</i> | | |
| Classify claim | Senior Claims Handler | BVA |
| Request signed authorization forms | Junior Claims Handler | Non-VA |
| <i>Receive signed authorization forms</i> | Junior Claims Handler | BVA |
| Request medical report | Junior Claims Handler | Non-VA |
| <i>Receive medical report</i> | Junior Claims Handler | BVA |
| Perform claim assessment | Senior Claims Handler | VA |
| <i>Sub-Process 3: Settle Claim</i> | | |
| Notify customer | Senior Claims handler | VA |
| Assess benefits | Senior Claims Handler | VA |
| Schedule entitlement | Financial Officer | VA |

| | | |
|------------|--|--|
| payment(s) | | |
|------------|--|--|

Issue Register

| | |
|----------------------|---|
| Issue # | 1 |
| Issue Name: | Long waiting times for long-term claims |
| Priority: | 3 |
| Description: | The average time between a claim being lodged and a decision being made is 22 working days for long-term claims. This is significantly longer than the three working days for short-term claims. |
| Assumptions: | <p>The average time to obtain medical reports from health providers is 14 working days.</p> <p>Half of the benefit renewals require a new medical report.</p> <p>Claims handlers often have to contact health providers to enquire about the estimated date to obtain a medical report.</p> <p>The claims assessment process takes an average of one hour for long-term claims.</p> |
| Qualitative impact: | <p>Delays in processing claims</p> <p>Customer dissatisfaction</p> <p>Negative publicity</p> |
| Quantitative impact: | $2000 \text{ claims/year} * 0.8 * 18 \text{ days delay/claim} * \text{€}1,780.82 \text{ revenue lost per day} = \text{€}24,691,328$ |

| | |
|----------------------|--|
| Issue #: | 2 |
| Issue Name: | High variance in medical report delivery times |
| Priority: | 1 |
| Description: | There is a high variance in medical report delivery times from different health providers. This can cause significant delays in processing long-term claims. |
| Assumptions : | Some health providers are very cooperative and respond within a couple of working days of receiving a request for a medical report. Other health providers can take up to 30 working days to respond. |
| Qualitative impact: | Delays in processing claims Customer dissatisfaction |
| Quantitative impact: | $2000 \text{ claims/year} * 0.8 * 0.5 * 10 \text{ days delay/claim} * €1,780.82 \text{ revenue lost per day} = €7,123,280$ |

| | |
|-------------|--|
| Issue #: | 3 |
| Issue Name: | Waiting time due to manual authorization request |
| Priority: | 2 |

| | |
|----------------------|--|
| Description: | Customers must provide a signed authorization form before InsureIT can request medical reports from their health provider. This process can take up to 14 days, which can delay the claims handling process. |
| Assumptions: | All customers will comply with the request to provide an authorization form. Health providers will not issue medical reports without a signed authorization form. |
| Qualitative impact: | Customers may experience anxiety and frustration due to the delay in processing their claims. InsureIT may lose sales due to unsatisfied customers. |
| Quantitative impact: | $2000 \text{ claims/year} * 4 \text{ days delay/claim} * €1,780.82 \text{ revenue lost per day} = €14,246,560$ |

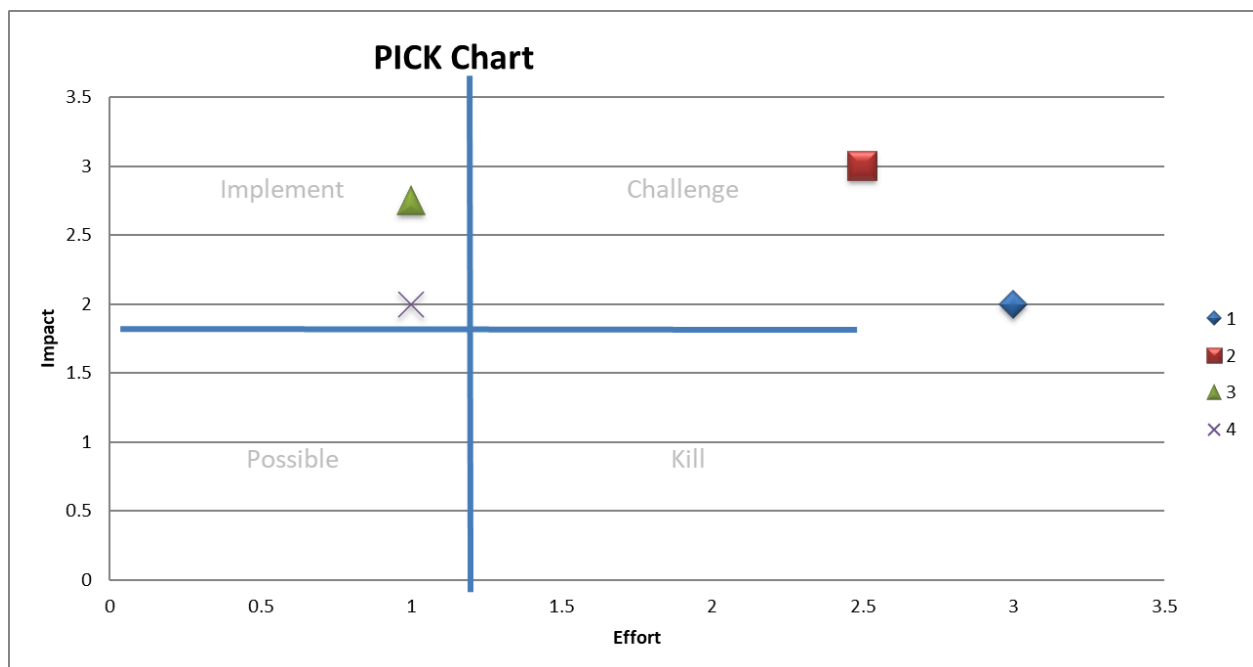
| | |
|--------------|---|
| Issue #: | 4 |
| Issue Name: | Usage of postal mail to inform customer |
| Priority: | 2 |
| Description: | InsureIT uses postal mail to inform customers of the outcome of their claims assessment and to notify them of their monthly benefit entitlement. This can also delay the claims handling process, as it can take several days for customers to receive the letters. |
| Assumptions: | All customers will receive the letters sent to them by InsureIT. Customers will read the letters and understand the information provided. |

| | |
|----------------------|--|
| | Postal mail is not the most efficient form of communication and has unnecessary delays or risks |
| Qualitative impact: | <p>Customers may experience anxiety and frustration due to the delay in receiving information about their claims.</p> <p>Customers may not be aware of their benefit entitlement if they do not receive the letters from InsureIT.</p> |
| Quantitative impact: | $2000 \text{ claims/year} * 3 \text{ days delay/claim} * \text{€}1,335.61 \text{ revenue lost per day} = \text{€}8,013,660$ |

Pick Chart

Below are the issues we felt should be prioritized for InsurerIT's resource allocation:

1. Long waiting times for long-term claims
2. Variance in medical report delivery times
3. Waiting time due to manual authorization request
4. Usage of postal mail to inform customers



For the first issue, our group agreed this would have a medium impact and high effort because generally, customers may be annoyed by the long waiting time for their long-term claim. However, they are also probably more understanding when it is a long-term claim. A solution to help speed up this issue could be an ERP system that not only categorizes claims as long-term or short-term but also extracts data from forms and questionnaires. This ERP system can also be applied to some of the tasks performed by the senior claims handler in the settle claim subprocess to reduce skill underutilization.

For our second issue, we agreed this would have both high effort and high impact. Many customers may become annoyed with the extremely long waiting times for their medical reports to arrive and may leave the insurer, making it a high-impact issue. A high-effort solution for this issue would be for InsureIT to establish a partnership with another health provider to create an in-house section of InsurerIT that can quickly provide medical records.

In our third problem, we found that there can be some potential for junior claims handlers to make mistakes or take a long time (up to four days) for customers to submit applications, leading to further waiting times for the customer for their claim to be processed. We believe that a good solution to this may be for customers to submit their authorization form along with their application to avoid this bottleneck. If customers choose not to, we can set up an easy access portal where customers can submit their authorization equipped with notifications to help customers submit in a timely manner. We believe this problem is low effort but high impact for the company.

Our fourth issue deals with there being a bottleneck in the postal process as it can take at least four business days for claim assessment to reach the customer as well as the length it takes for InsurerIT to receive the medical reports. We believe automating this process over a portal/email is a low-effort and high-impact solution, and InsureIT should look to implement this.

Simulation

For our last process analysis, we opted to employ a simulation to replicate how the claims-handling process would unfold in real time. It is worth noting that the results of this simulation are skewed under the assumption that all resources work at the same capacity and do not incorporate variance in human efficiency. To ensure the accuracy of the simulation, all activities were assumed to have no association with cost. Additionally, it is also assumed that junior claims handlers are paid at a baseline rate of 50€ per hour, senior claims handlers are paid 75€ per hour, and financial officers are paid 65€ per hour. Furthermore, the simulation was run over a period of 31 days with a frequency of 8 cases per week. This frequency was derived from InsurerIT receiving approximately 2000 cases per year. Lastly, we have also assumed that the average workweek is 40 hours and that there are 260 working days in an average year.

Figure 4.1 depicts the activities that incur the most cost throughout InsurerIT's claim handling process. Upon completion of the simulation, we discovered that the "assess benefits" activity incurs the most total cost. This result can be justified by the fact that all approved claims are funneled into this activity, and the most expensive process participant, the senior claims handler, is responsible for the completion of this step. This activity takes an average of one hour to complete per claim.

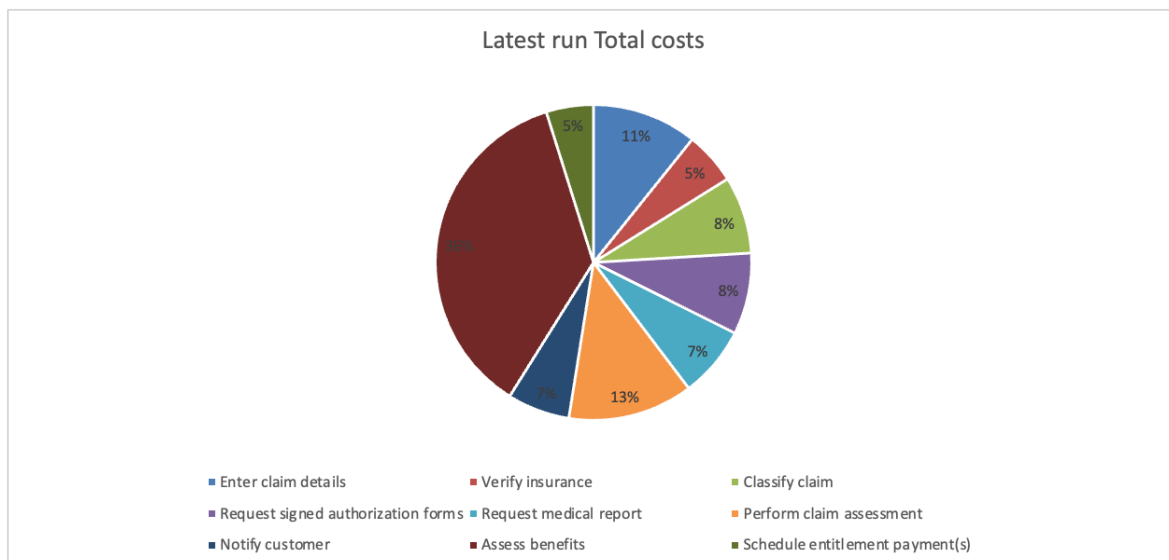
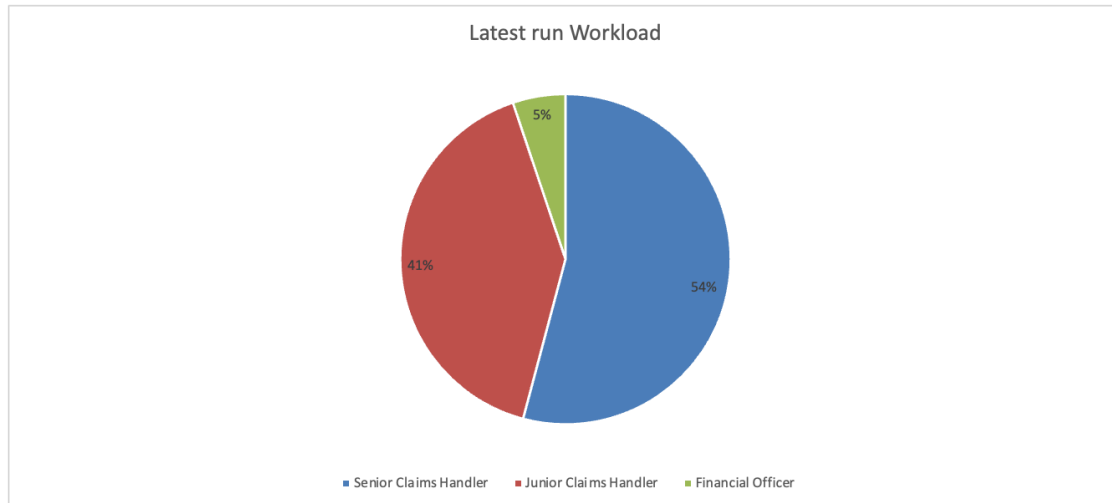


Figure 4.1a - total cost via process participant utilization rate

Additionally, our simulation has discovered that the senior claims handler is utilized the most, with 54% of the workload being shouldered by this process participant. This fact is evident in Figure 4.2, as these process participants are highly skilled workers who are responsible for many of the decision activities in the claims handling process.

*Figure 4.2 - Process participant utilization rate*

Lastly, the simulation was able to capture the bottlenecks that caused massive delays in the claims-handling process at InsurerIT. From this analysis, it can be concluded that as a result of the "Request medical report" activity, the bottleneck appears in the "Assess benefits" activity. This is due to the delay in receiving medical reports from health providers, potentially causing an influx of long-term cases. Additionally, without the proper information, the senior claims handler will not be able to assess the benefits of long-term claims, which ultimately causes another bottleneck to appear in Figure 4.3.

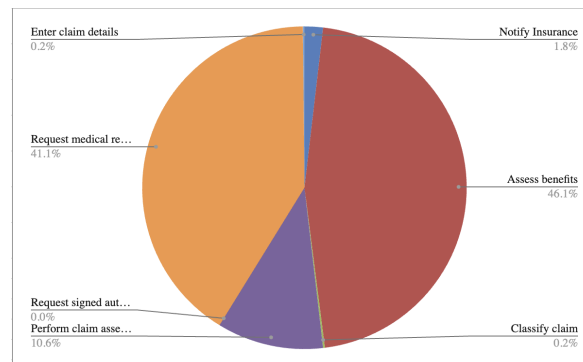


Figure 4.3 - Bottlenecks

Access to the full simulation report can be found at the following link:

<https://docs.google.com/spreadsheets/d/1awb7sh3htqNy4pqDvDaXWMiGfP0rbrQGa1--pqf0NSg/edit?usp=sharing>

Tool Justifications:

We chose several tools that best helped InsureIT analyze their bottlenecks. Since a company can face many problems, it can be optimal for companies to create pick charts to determine how many resources to allocate per challenge. In the case of InsureIT, this is no different. Based on the issue register, we can get a sense of what the main issues pertaining to the case are and build the pick chart based on this.

The issue register is also a great tool to lay out our most pressing issues in the process and provide a comprehensive overview of each. This provides a great reference to see what impacts (qualitative or quantitative) each issue has and written descriptions of our current understanding. We also used a Value-Added Analysis, which provides crucial information regarding what kind of value each step in the process does or doesn't add. When trying to optimize and provide recommendations for our process model, it is beneficial to see one by one which parts are contributing BVA, VA, or neither. This streamlines and keeps our decision for changes focused and ensures they impact relevant activities in the process.

The order of our analyses was very intuitive. The Value-Added Analysis categorizes activities throughout the process so we know how each step fits into our objectives, which works naturally as our initial analysis tool. Then the Issue Register specifies and details areas for

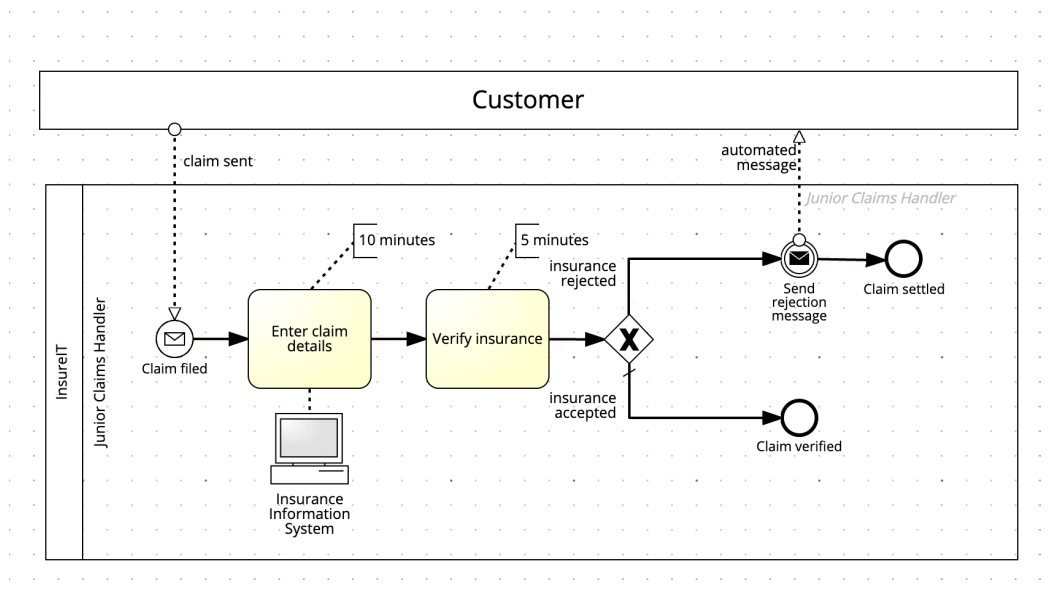
improvement throughout, and lastly, the PICK chart uses the same issues decided in the previous tool and provides a visual and improved focus on which problems should be tackled first.

Lastly, we used Simulations to get realistic projections for Total Cycle Time, Total Waiting Time, etc. This tool was extremely useful to produce realistic data and provide evidence on which areas can be changed or improved. It makes sense for this to be our last tool because with the reflection and focus from the three previous tools, our team can carry on those ideas and see which line up with the results we were able to simulate.

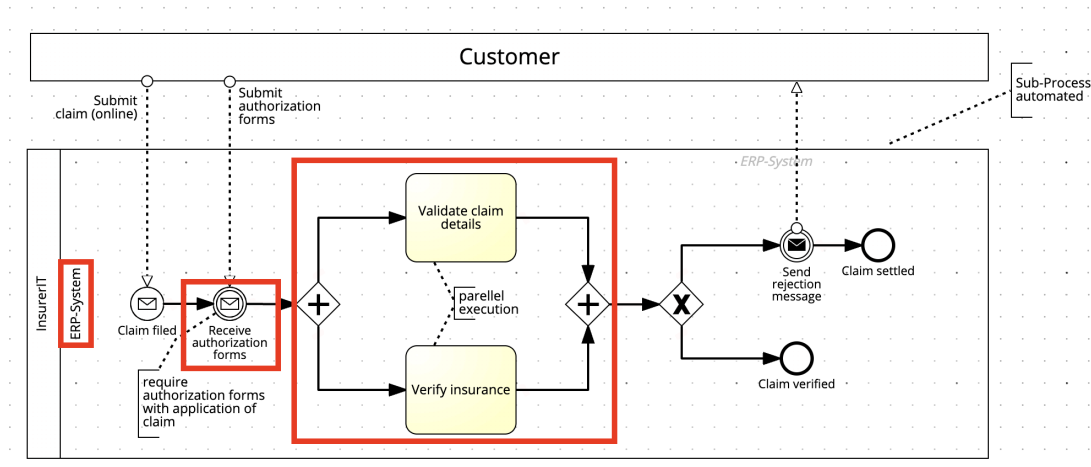
Recommendations & "To-Be" Model

After conducting various quantitative and qualitative analyses, this section of the deliverable aims to implement our findings and recommendations in a redesigned claims handling process. By focusing on leveraging technology in addition to synchronizing the people and process aspects of handling claims at InsurerIT, this redesign aims to optimize efficiency, minimize errors, and drastically reduce cycle time. Through this detailed examination of the subprocesses, we took a deductive redesign approach by addressing issues, identifying bottlenecks, and prioritizing implementable changes. These proposed changes not only seek to enhance operational effectiveness but also address customer frustration and improve overall satisfaction.

As-Is “Receive Claim” Subprocess:



"To-Be" "Receive Claim" Subprocess:



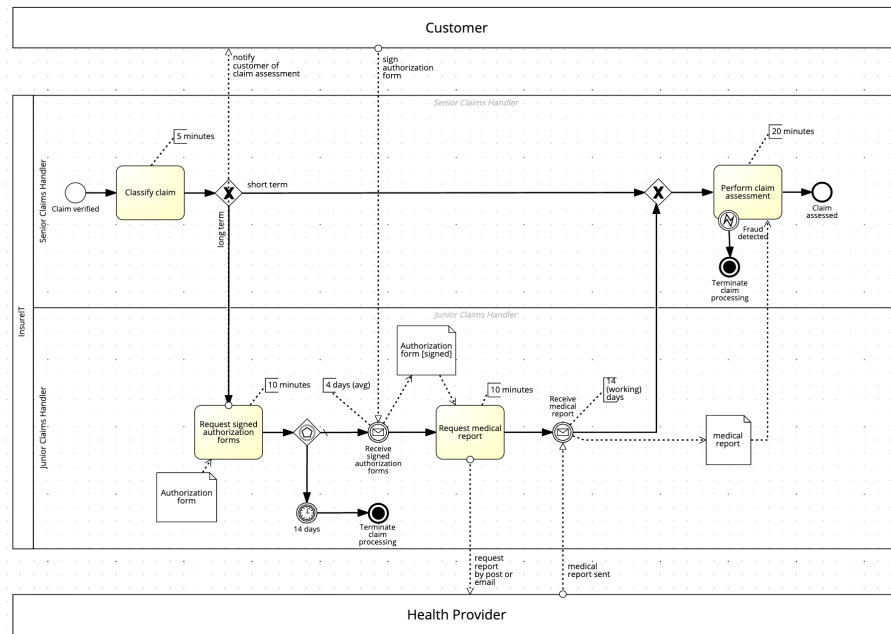
Receive Claims Changes

The objective for redesigning the "Receive Claim" subprocess was to incorporate more technology to fully automate activities that do not require human resources. Through the implementation of the Enterprise Resource Planning system, the technology aspect of the claim handling process can greatly influence the overall process by performing simple back-end office activities (such as data entry and insurance verification). By replacing human resources with technology, it can be expected that this subprocess can be fully automated, which will yield a faster cycle time with minimal errors. Furthermore, the team also suggests that the steps "Validate Claim Details" and "Verify Insurance" should be executed in parallel fashion through the use of an AND gateway.

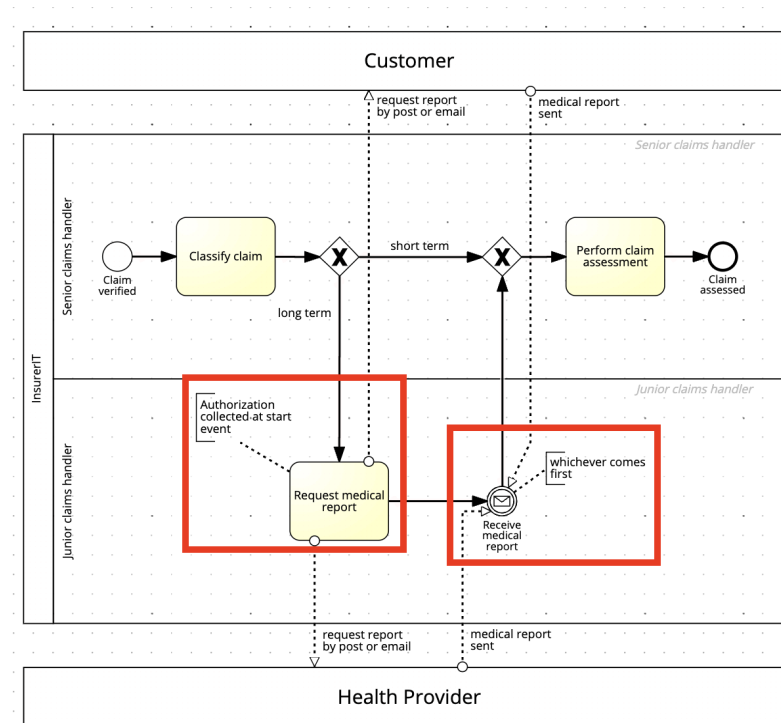
Additionally, our team suggests that the method of receiving applications should be standardized. Rather than receiving physical applications through postal services, email, or fax, the firm should implement an online application that allows users to lodge claims with all required information. Through this change, the ERP system will be enabled to perform the functions we have depicted in the figure above. In addition to an online application, our team also suggests requiring authorization forms with the application of the claim, regardless of its claim type (short-term, long-term, etc.). This change will drastically reduce the cycle time in our next

subprocess, "Assess Claim," and reduce the bottleneck that occurs when claims are assessed. This should immediately reduce 4 days from the process cycle time as the firm will not have to request authorization forms further along the process.

As-Is "Assess Claim" Subprocess:



"To-Be" "Assess Claim" Subprocess

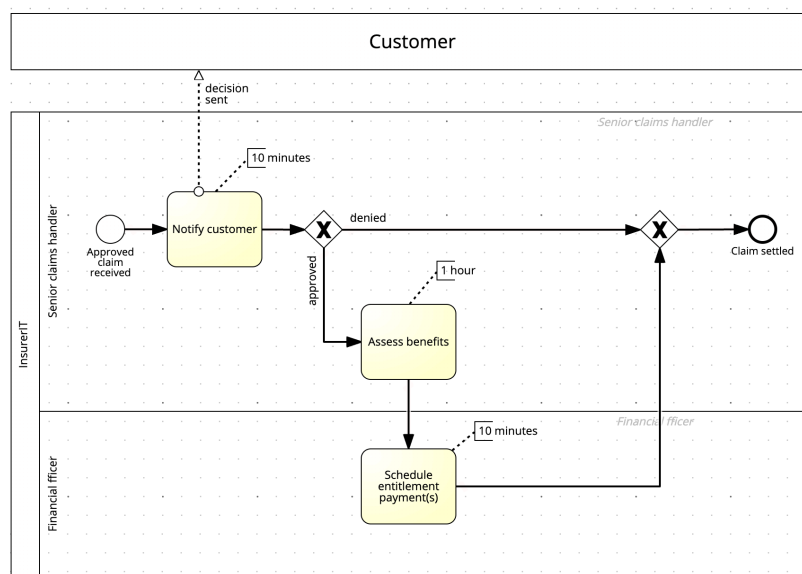


Assess Claim Changes

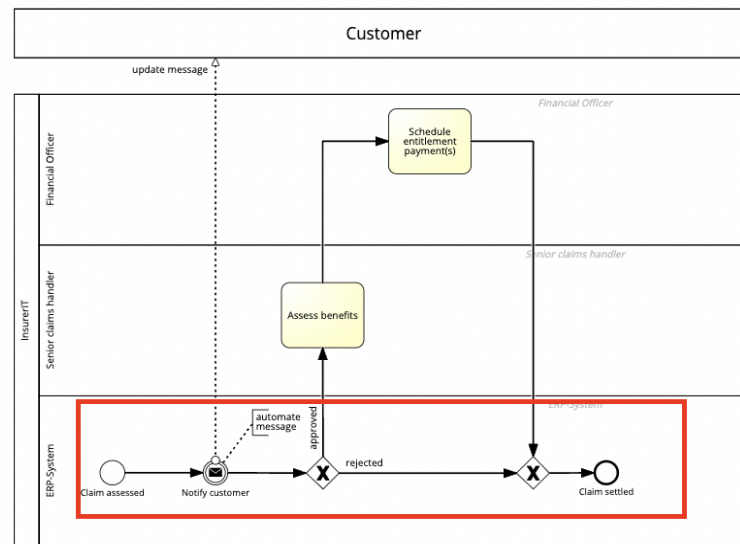
To address the third issue of customers' frustration due to the long wait time for medical reports to arrive, our team has made changes for medical reports to be requested from an in-house Health Provider; this would allow the communication and transfer times of the medical reports to be shortened. The medical reports would be received from whichever sending party (customer or health provider) sends it in first. This option has been added since the scenario stated, "the majority of health providers do not see any incentive to put more resources into issuing medical reports for insurance companies. They perceive that their customers are the patients. The process of issuing medical reports to insurers is secondary for them". Because of this finding, we believe that if a medical report was requested from both provider and customer, the customer may receive the medical report sooner as they are prioritized. From this, we will utilize the first medical report that contains all the information that is needed to evaluate the claim.

In addition to the added partnership in-house health provider, our team also decided to eliminate the "Request signed authorization forms" activities to achieve a faster turnaround time. Instead, the customer would send in the signed forms along with their initial application. With these changes in the process model, our team was able to move straight from the long-term XOR gateway case to the "Request medical report" activity. In the case that customers do not want to submit their authorization forms with the application, they have the option to submit it on an online portal as they see fit in their schedules. Finally, our team recommended that the communications between customers, junior claims handler, and health provider be over email/portal since this would be a high-impact and low-effort change.

As-Is “Settle Claim” Subprocess:



"To-Be" "Settle Claim" Subprocess:



Settle Claim Changes

The primary changes made in the "Settle Claim" "To-Be" process model are to accommodate the transition of some decision processes and low-skilled, automatable tasks to an online ERP system. Our team identified this as a waste of non-utilized talent for a high-skilled worker such as the senior claims handler to be performing tasks like notifying customers of decisions and making approval and rejection decisions. These tasks can be performed by an ERP system that not only reduces waste in effort and skill but also saves time, since an online system would perform these tasks with more accuracy and efficiency. Our team's solution was to add an ERP System lane to handle these tasks and then perform a handover to the senior claims handler to assess the benefits afterward. Additionally, having an online portal can serve as a shared data store for all decisions and activities carried out by the systems. Despite having more handovers, our team decided that the benefits of having an online system easily outweighed the additional handovers. Lastly, this would also empower the senior claims workers to feel more productive in the activities they perform and thus more empowered.