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A critical analysis of the pricing process for the Corporate and Commercial segments of Bank XYZ in South Africa

Katlego Mankge (Student number: 1262975)

School of Industrial, Mechanical and Aeronautical Engineering

University of the Witwatersrand, Johannesburg, South Africa.

Supervisor: Mrs. L Doherty

A Research Report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, in fulfilment of the requirements for the degree of Masters in the Science of Engineering (MSc Industrial Engineering).

Date: 15 January 2020

Abstract: This research report seeks to investigate the pricing execution process and its shortcomings in the Corporate and Commercial banking segments of South Africa. It aims to justify how these shortcomings in process, result in revenue loss to the bank and compromised client experience. It makes use of quantitative and qualitative methods to determine the length, breadth and depth of process failures and their effects on the bank's ability to offer quality service to customers, improve on product offerings, elevate brand trust, improve the bank's financials and market capitalisation. The research proposes the implementation, and governance of a Pricing and Billing IT platform, underpinned by dynamic process logic and business intelligence, for ease of pricing and billing of customers and products, product maintenance, improved customer engagement channels, and a means through which a pricing and billing strategy can be developed and maintained by the bank. The research highlights that the implementation of such a platform invariably renders the current manual and labour-intensive pricing processes and operations counterproductive, archaic, null and void.

Plagiarism Declaration

I Katlego Mankge (Student number: 1262975) am a student registered for MEng Industrial Engineering in the year 2020.

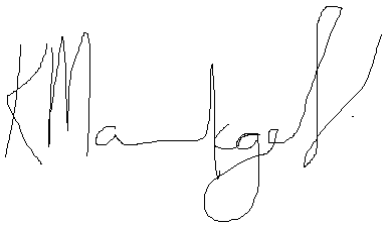
I hereby declare the following:

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.

I confirm that the work submitted for assessment for the above course is my own unaided work except where I have explicitly indicated otherwise.

I have followed the required conventions in referencing the thoughts and ideas of others.

I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.



Signature: _____ Date: 15 January 2020

Acknowledgement

This paper is dedicated to my late mother, Dorothy Matjie Mankge. This qualification wouldn't have been attainable without her devotion, motivation and belief in me – my deepest love, adoration and respect goes to you Mother. Thank you, I salute you and may you rest in eternal peace!

I would also like to thank my family, partner and friends for the constant push to complete what I started – you have taught me that perseverance shapes character.

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My utmost gratitude and appreciation to my Supervisor, Mrs. Lorrainne Doherty. A phenomenal woman to work with, dedicated to the cause, consistent, and always putting her best foot forward. Your passion for education and students is astounding. I have learnt valuable lessons from you - which I will carry throughout my career and personal life.

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List of acronyms

RM - Relationship Manager/s

MIS - Management Information System

CRM - Customer Relationship Management

FMEA - Failure Modes and Effects Analysis

BIU - Business Intelligence Unit

ETL - Extraction, Transformation and Loading

PH - Product House

BRS - Business Requirements Specifications document

QA - Quality Assurance

FSD - Functional Specification Design document

PSB - Public Sector Banking

RPN - Risk Priority Number

ATM – Automated Teller Machine

NPV – Net Present Value

IRR – Internal Rate of Return

Background

The South African banking industry compares favourably with that of developed countries. The regulated banking system comprises a central bank, commercial and mutual banks, and investment institutions. After the economic crisis of 2008, commercial banks experienced a multitude of challenges, including: effects from slowed economic growth; a trust deficit between the customer and the bank (as a safe place for saving and transacting); and increasing levels of competition in an environment where the purchasing power of consumers continually increases due to the perceived value that customers enjoy from one bank over the other.

The gradual shift in operating environments (from one which was oligopolistic in nature to one which encourages perfect competition) means that commercial banks should either innovate around new products and services and create a market for these, and/or be efficient in the way they currently operate to deliver a suite of '*vanilla type'* products and services. Thus, it has become increasingly difficult for a bank to:

1. Qualify and quantify '*value*' in its service offerings;
2. Retain customers due to increased competition and;
3. Identify and effectively communicate key differentiators which distinguish it from its competitors.

One of the critical success criteria which harbours a direct bearing on customer service, is the way in which a bank goes about effecting new pricing on the products and services it provides to its customers. The annual pricing process represents an opportunity for a bank to differentiate itself - not only on how it goes about pricing products and services, but also how it can improve customer relations. This is pertinent in the commercial space where the bank negotiates pricing with the customer for a basket of goods and services.

Considering growing competition, there is a need for the pricing process to be flexible; responsive; transparent; fair; efficient and effective as it results in the creation or deterioration of value to the customer. Research shows that pricing execution is one area with large and rapid payback in terms of investment for market share growth. The impetus is based on a comparison of pricing relative to the other elements contained in the marketing mix, namely product development, promotional activity, and geographic location. In fact, it is said that an effective pricing process and pricing model delivers a

three to ten-fold payback on investment, thereby improving the market share and market value of a company (Davidson & Simonetto, 2005).

For confidentiality reasons, the name *'Bank XYZ'* will be used to conceal the identity of the South African Bank under study. This investigation will focus on critically analysing the efficiency of the pricing process for commercial customers with an annual turnover exceeding R60 million. These customers are eligible for negotiated pricing, and they constitute eighty percent of Bank XYZ's commercial segment profits.

In the 'negotiated pricing' space, the pricing process forms the skeletal framework of a bank's market capitalization. This process determines whether a corporate client will continue to bank with said bank, or if the corporate body will move its portfolio to another bank. Hence the deduction is made that:

1. The process is a fair indication of the perceived value customers get for good and services and;
2. The perceived value that customers get from pricing goods and services, directly influences customer retention, market share, market growth and the going concern of the business banking segment in any bank.

As at January 2018, Bank XYZ retains a market share of 22% (Genesis Analytics, 2018). Table 1 below depicts the market share for commercial banks in South Africa - specific to corporate, investment and merchant banking segments. The name '*Bank EFG*' has also been used to mask the identity of another 'Big Four' South African bank to ensure that Bank XYZ's identity remains confidential.

For various products and services (mostly comprised of transactional activity for which pricing has a direct bearing), the 'Big Four' banks of South Africa hold majority market share. This further highlights the dependency of market share growth on effective and efficient pricing models and processes to deliver quantified value to the corporate customer.

TABLE 1: MARKET SHARE COMPARISON FOR CORPORATE AND COMMERCIAL CLIENTS ACROSS THE BIG BANKS IN SOUTH AFRICA. (GENESIS ANALYTICS, 2018)

Market Share in Corporate, Investment and Merchant Banks in South Africa							
Product / Service	Standard Bank	Nedbank	Bank EFG	Bank XYZ	Capitec	Investec	Other
Cash, cheque and transmission accounts	23.3%	19.6%	20.6%	21.8%	6.2%	7.0%	1.5%
Demand Deposits	20.1%	15.4%	21.5%	17.5%	7.1%	12.9%	5.4%
Loans, advances, overdrafts	21.2%	20.9%	15.3%	22.9%	5.5%	11.3%	3.1%
Debtor / Working Capital Finance	17.2%	16.5%	18.8%	20.1%	-	13.1%	13.9%
Treasury Service	31.0%	26.0%	19.0%	13.0%	-	6.0%	5.0%
International Banking Services	19.0%	13.0%	18.0%	19.9%	-	20.2%	9.5%
International Business Centres	21.2%	12.3%	18.6%	16.7%	-	15.8%	15.0%
Custodial Services	26.1%	22.0%	14.0%	20.0%	-	14.0%	4.0%
Structured / Specialised Finance	23.1%	16.0%	16.9%	19.8%	-	17.2%	6.9%
Corporate Finance	19.5%	17.9%	22.2%	20.0%	-	17.3%	3.2%

This investigational project will firstly seek to illustrate the pricing value chain for bank XYZ, then critically examine this value chain for root causes of failure which result in an inability to meet implied customer needs, which typically are:

1. To price products competitively,
2. To allow for sufficient time to negotiate pricing,
3. To timeously provide customers with an annual pricing letter which accurately reflects products and services to be consumed by the customer and the associated agreed, negotiated pricing, and
4. To bill customers correctly

Process failures which result in a breach of the above, will be ranked based on three parameters, namely: severity, frequency of occurrence, and assessment of the detection measures in place to prevent occurrence. This project will utilize two methods of analysis or information gathering, namely, a quantitative analysis to highlight process gaps and financial and customer service - related failures and workshop sessions which will form part of a qualitative analysis with subject matter experts to explore root causes, assess how customers interpret value offering and generate solutions to address financial loss impact and improve on customer engagement. These solutions will also be ranked based on several criteria highlighted in the Research Methods section.

Outline of chapters

Chapters outlined in this research report are as follows:

Chapter 1 consists of:

- 1.1 Problem definition
- 1.2 Critical research question
- 1.3 Research objectives
- 1.4 Scope of research

Chapter 2: Literature Review

Chapter 3: Research Methods

Chapter 4: Analysis of Results

Chapter 5: Proposed solutions / recommendations

Chapter 6: Discussion of recommendations

Chapter 7: Conclusions and recommendations

Chapter 1: Problem identification, research question, objectives and scope of research

This chapter covers the high-level problem statement on Bank XYZ's pricing process. The problem is justified in two ways: financial leakages and frontline staff queries all related to the execution of the current pricing process. This chapter also covers the critical research question this report wished to address and the objectives and scope of research.

1.1 Problem statement

The problem will be justified in two ways:

1. Analysing the '*voice of the internal customer*', that is, analysing queries raised by frontline staff whose duty it is to manage the relationship with the external customer and,
2. A financial impact analysis on revenue loss.

To understand the severity of the pricing process for the bank, a text analysis is done (figure 1 below) which analyses and groups queries of similar nature, to highlight the main concern.

The data gathered represents a period for one full year (February 2017 to February 2018). This analysis comprises typical queries raised by frontline Relationship Managers (RMs) for the back-office to resolve. These issues have a direct impact on client engagement and the ability to successfully meet client expectations. The image below shows the results.

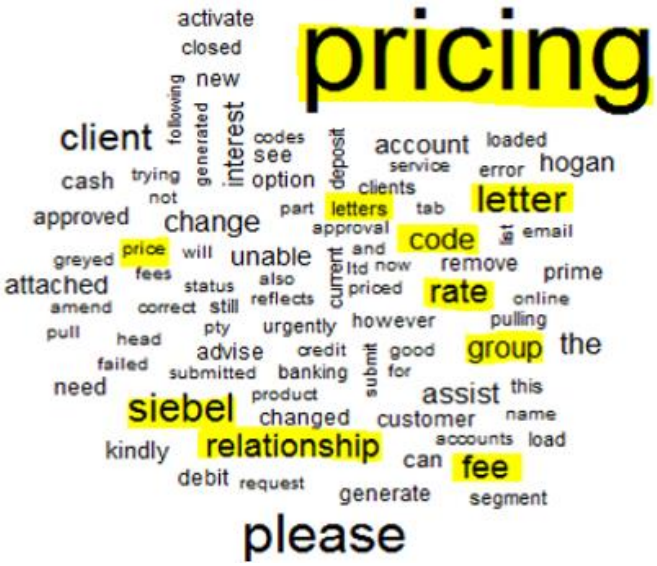


FIGURE 1: FRONTLINE TEXT ANALYSIS: PRICING GURU DATA, 2018

From the above analysis, the conclusion can be drawn that the execution of pricing remains a subject of much contention with customers. Additionally, all the items highlighted above, have a direct or indirect influence on pricing. Furthermore, a financial impact analysis is also considered to strengthen the argument that the pricing process is vulnerable to financial losses – the results can be seen in figure 2 below, for the period January 2014 to February 2018.

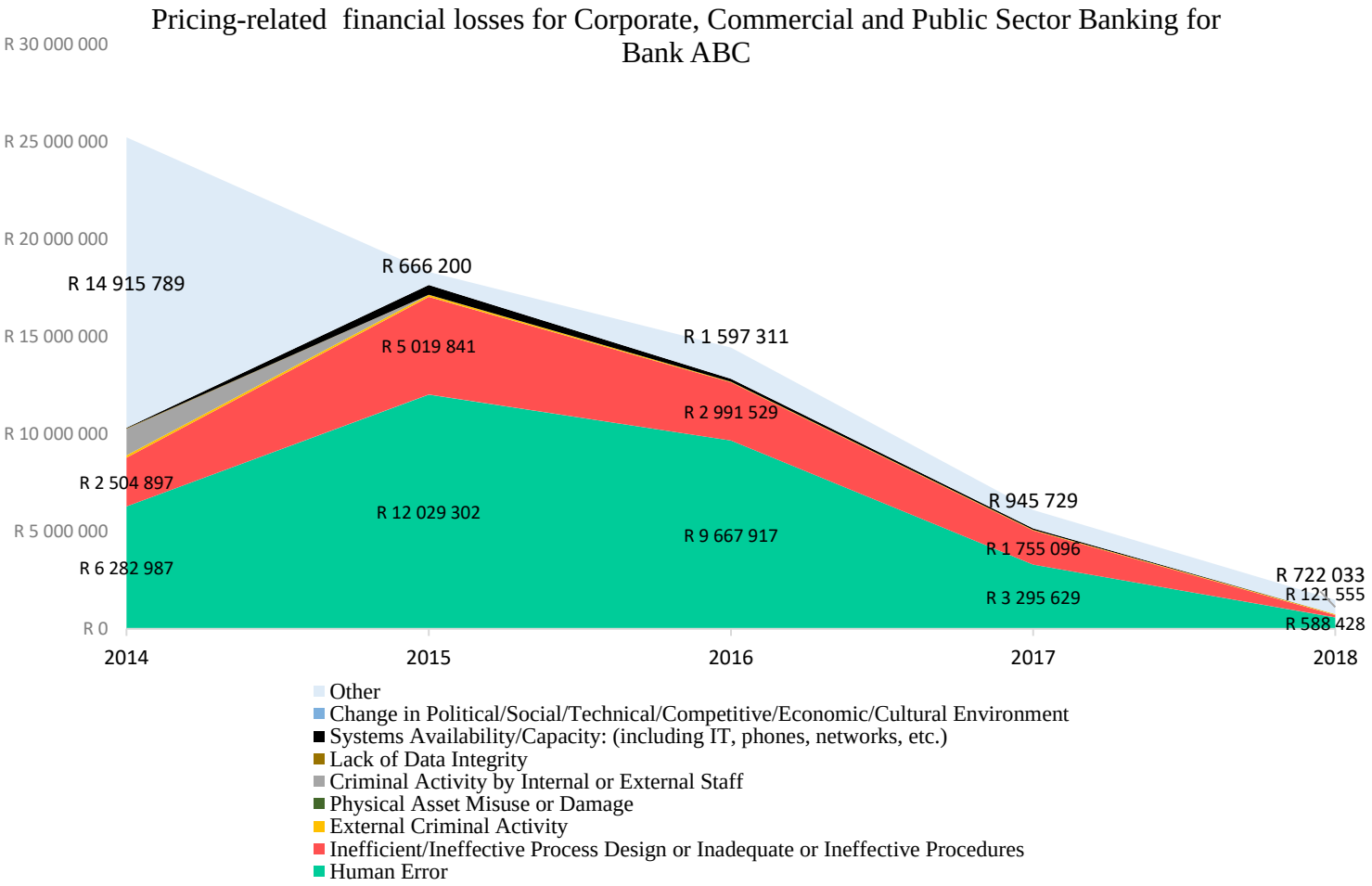


FIGURE 2: PRICING FINANCIAL LOSSES (RISK COMMITTEE, 2018)

The graph highlights the following:

1. For the period 2014 – March 2018, the bank has made a concerted effort in reducing pricing-related financial losses. The tapering slope of the graph signifies this. The analysis also proves this pricing problem has been in existence for at least five years.
2. The two largest contributors to financial losses are human error and an ineffective process. These two items have a direct relationship with one another as the process is manual in nature (pricing data is extracted, transformed and loaded manually on the pricing system and data

file transfers occur between central pricing teams and different billing system owners for loading on various systems) and it consists of excess hand-overs, which result in an inadequately designed process. The effect of these human errors and a poorly designed process is not only excessive charges levied to customers (the outcome of which is reimbursements made to the customer - seen in the figure 2), but also unwarranted large discounts which result in minimized profits for the bank.

Additionally, the bank lacks a clearly defined pricing strategy and a governance framework to assist in steering pricing towards an overarching, bank-wide objective, despite losses decreasing over the period 2014 to 2018.

1.2 Critical Research Question

Suffice to say, this project needs to answer the following question:

1. What are the root causes for process failures and do these have a material impact on financial losses and frontline complaints?

A subset of questions will need to be investigated to answer the above critical question, these are:

a. Where, in the end-to-end pricing process, do these root causes / process failures emanate?
b. What solutions can be implemented to improve the pricing process and what effect will these process improvements have on the reduction of financial losses and improved customer experience?
c. How are solutions to be ranked and what criteria will be used to achieve this?

1.3 Objectives of Research

The objectives of this project are:

1. To illustrate the end-to-end pricing process for Bank XYZ.
2. To identify process failures and their effects on the pricing value chain.
3. To identify process re-engineering requirements.
4. To present solutions.

1.4 Scope of Research

The scope of this project will be limited to:

1. Analysis of Bank XYZ's pricing process and using this as a case study. The underlying assumption is this process is representative of pricing across all 'Big Four' commercial banks currently headquartered in Johannesburg.
2. The research will not focus on the mathematics and models employed in pricing individual products, but rather on how pricing and billing processes appear to fail the customer.
3. The identification and use of the annual pricing process for customers eligible for negotiated pricing - these are the customers contributing a larger share of revenue as they:
    a. Transact in higher volumes;
    b. Are more inclined to process failures due to the vulnerability of the process;
    c. Can easily terminate a relationship with the bank as they are most sought after by other financial institutions;
    d. Require large sums of reimbursements due to billing and pricing misalignments resulting in revenue leakage for the bank;
    e. Require a better, more bespoke service offering as opposed to the current process
4. The analysis will span two segments of pricing, namely; the Commercial, and Corporate segments.

Chapter 2: Literature review

The purpose of the literature is to highlight the following:

1. The importance of pricing processes in banks and the effects of neglecting these processes on a bank's financials.
2. The correlation between what customers perceive as 'value' in banking services and efficiency in pricing operations.
3. Challenges faced by banks in implementing efficient pricing processes and operating models centered around customer experience.
4. Qualifying the use of qualitative and quantitative data in the context of improving the pricing process from a financial and a customer experience perspective.
5. Methods of sampling for qualitative data analysis.

2.1 The importance of pricing and pricing operations in the marketing mix

Pricing is crucial to a bank's sustainability. In fact, in the marketing mix (product, price, promotion and place), pricing is the only element concerned with revenue generation, whilst the other elements are expense lines. However, pricing and the operational aspect of pricing in a bank often remains an overlooked element. Few academic publications on pricing address pricing operations and processes. Substandard pricing operations can distress a company even when a good pricing strategy is in place (Sodhi & Sodhi, 2008). The regulatory environment for the banking industry has changed considerably over the years, especially since the financial crisis of 2008. This has resulted in banks placing a more resolute effort on compliance and managing the associated costs, at the expense of other elements such as pricing. It is critical for banks to shift focus towards improving pricing operations if they are to ensure that realized profits are met.

It is a well-known adage that customer satisfaction brings about customer loyalty. The banking industry is no exception. To achieve superior customer service, it is incumbent on a bank to deliver services and to adopt a customer relationship management strategy which is superior to its competitors. Furthermore, bundling products and services and presenting them as value to the customer is regarded as crucial to the ability of a bank to compete in a market (Bick, et al., 2004).

In contrast, Parasuraman, *et al*. (1988), maintain that the market place is saturated with financial institutions offering similar products which are similarly priced.

The authors stress that clear winners will be the ones who can differentiate themselves through exceptional service quality.

2.2 The importance of *value* in the Business Banking sector

Treacy and Wiersema (1995), believe there are three concepts which businesses should learn from market leaders. These are:

1. Value proposition – regarded as the commitment which management make towards delivering value in terms of price, quality, convenience, performance and product selection or, a combination of these (Treacy & Wiersema, 1995).
2. Value driven operating model – these are the systems, processes, business structure and a culture enabling the provision of value (Treacy & Wiersema, 1995). Academics suggest that some financial institutions purchase price optimization models. However, only three per cent of the customers surveyed by AMR Research are attempting pricing execution models (Davidson & Simonetto, 2005). Pricing tools are of little use, if they lack robust processes to support the technology.
3. Value disciplines – termed as the three ways in which an organization can combine value proposition and the operating model to maximize customer value.

   The three distinct value disciplines are:

   a. *Operational excellence* – providing products at the best price with minimal inconvenience to the customer. The mantra being '*low prices and hassle-free service.*'
   b. *Product leadership* – organisations which focus on offering the customer the very best product. They invest in research and development and are usually the first to render their own products obsolete.
   c. *Customer intimacy* – these are organisations focused on building customer relationships. They aim to understand the customer and offer solutions best suited to the customer's needs.

Other esteemed authors elaborate that service quality is the degree of discrepancy between a consumer's perceptions and their expectations, and it is the three value concepts noted above which bridge this gap (Parasuraman, et al., 1988). Organisations should choose which of these concepts and disciplines they will excel at without necessarily neglecting the others.

Sobel (1995) believes the three concepts noted above are similar to elasticity of demand. Having a value discipline simply allows an organization to make the demand of its product more inelastic, thereby less

price sensitive. This means, increasing customer expectation of value would result in an increased propensity for customers to pay more for products and services (Sobel, 1995).

Bick, Brown and Abratt (2004) further explain that driving customer intimacy requires the empowerment, and skills development of frontline staff. South African banks reveal a trend of dis-empowering employees by revoking their decision-making powers and building these into information technology systems to speed up processes and bank applications. Bitner et al., found that 42.9 per cent of unsatisfactory service encounters were because of employees' inability or unwillingness to respond effectively to service failure situations (Bitner, et al., 1990). Service firms need to leverage process dimensions and service delivery since it is during delivery when a customer directly experiences a service provider's skills. Talukder (2017), also believes it is the service component (which is a direct result of the process), that will matter most in meeting challenging competition.

Technology, however important, should not be a replacement for personal interaction and relationship management, especially in an industry in which customer engagement can be the key differentiator between a market leader and its rivals. Technology should facilitate interactions with customers as it is an enabler for execution. Pozin (2018), highlights the pricing technology platform as a fundamental pillar towards pricing excellence. In my view, this platform will encourage speed, flexibility and pricing process quality, which impact on how the customer perceives the standard of engagement from a bank. The customer engagement period represents an opportunity for an organization to elevate its reliability levels in a way that can differentiate it from its competitors (Parasuraman, et al., 1991).

Additionally, research suggests that customers identify the '*operational excellence*' value discipline, as being more in line with their expectations. This advocates that reliability of service is critical to delivering exceptional customer value (Parasuraman, et al., 1991). However, other academics argue that 65 per cent of customers studied, value *product features* over and above *service features* (Davey, et al., 2006). In my view, the above argument is most likely valid for tangible products rather than non-tangible products – such products as those offered in the financial services industry. In financial services, customers are more inclined to bank with a financial institution they perceive to provide good, repeatable, and reliable customer service.

To reinforce my view, Parasuraman et al. (1988), categorise service expectation in 10 dimensions: reliability, tangibles, responsiveness, assurance, communication, credibility, security, competence, access and empathy. The authors further classify reliability as a component of *service outcome* (this is measured as the accuracy and dependability with which the services are being delivered) and the other four

dimensions a component of the *service process* (how effectively the service is being delivered) (Parasuraman, et al., 1991). These service expectations represent the aspects which customers would consider when rating the quality of products and services for a financial institution.

2.3 Pricing operational challenges

Sodhi (2008) asserts that one of the key challenges in managing pricing operations, is the dependence of the pricing process across different functional areas, each with different objectives. As is the case with Bank XYZ, the pricing process spans three different segments (Corporate, Commercial and Public Sector) with inputs from 27 Product Houses and various other functional areas, such as finance, marketing, sales and product management, each with their own objectives.

Sales personnel, compensated on sales volumes, will typically require flexibility in pricing to drive volumes, whilst pricing specialists will employ quantitative analysis to justify pricing. Finance personnel will argue for higher prices to push the profit margin, highlighting conflicting objectives. The pricing process should impose controls on prices and balance functional objectives, however, the effect of these controls diminishes if management is not sufficiently exposed to the operational level of pricing, leaving the pricing process to be ad-hoc.

Moreover, customers tend to demand faster turnaround times on pricing decisions. For a bank, this represents a challenge since high transactional volumes can be used as a point of persuasion for personnel to grant larger discounts to retain a customer, often diminishing profit margins. If a company lacks solid pricing processes and governance, this issue can easily present and disguise itself.

Sodhi (2008), also indicates that continuous changes in both the internal and external environments of the banking sector, which in many instances, lead to changes in processes and policies (in which personnel are not sufficiently trained). Unnecessary changes in the pricing process can lead to variation, which, in turn, affect pricing outcomes, since variation in the pricing process reflects inconsistent pricing decision-making. Sodhi (2008), positions that Six Sigma can assist in driving standardization and repeatability, thereby reducing excessive discounts or excessive prices.

He further elaborates the five stages in Six Sigma Pricing:

1. Define – defining the pricing related defect by means of an operational or transactional defect.
2. Measure – measuring the extent of the defect through financial implications, customer satisfaction, process quality and turnaround time.
3. Analyse – analysing the size of the defect and its possible root cause.

4. Improve – improving the process by making change recommendations driven by quantitative or qualitative proof.
5. Control – implementing control measures for the process which can be monitored.

2.4 The Pricing Platform

McKinsey & Company suggest that one of the first steps towards improving a pricing process is to identify price leakages. The global consulting firm suggests that banks lose 2 to 4 per cent of potential corporate revenue each year because of price leakages in the form of unwarranted discounts given to customers (McKinsey & Company, 2016). Plugging leakages and implementing preventative controls could be a quick win towards increasing revenue. The consulting group also draws attention to the need for a pricing centre supported by a price monitoring system which should be used to:

1. Track pricing and discount trends.
2. Compare and benchmark pricing by region and Relationship Manager.
3. Analyse the impact of price, volume, and cost on profit margins.
4. Assess leakages on frequency and their impact on profitability.
5. Analyse cross-sell opportunities.
6. Provide a 360-degree customer view. This encompasses data stored in IT systems which ought to be complete, accurate and up-to-date with transaction history and profitability analysis.
7. Initiate an automated process, that is, to run a standardized process through the system, including authorisations and approvals.
8. Provide consistent information across all platforms through which the system can be accessed. Such as online banking, cellphone banking, branch banking, telephone banking and relationship banking.

McKinsey & Company also emphasize the need for process support for Relationship Managers in their day-to-day activities. This can be achieved using pricing approval workflows and pricing simulations. Additionally, a pricing system needs to be integrated with the bank's overall IT architecture for seamless extraction of customer data across various systems (McKinsey & Company, 2016). Figure 3 below is a McKinsey depiction of the minimum requirements for a pricing system.

System and data integration for pricing platform

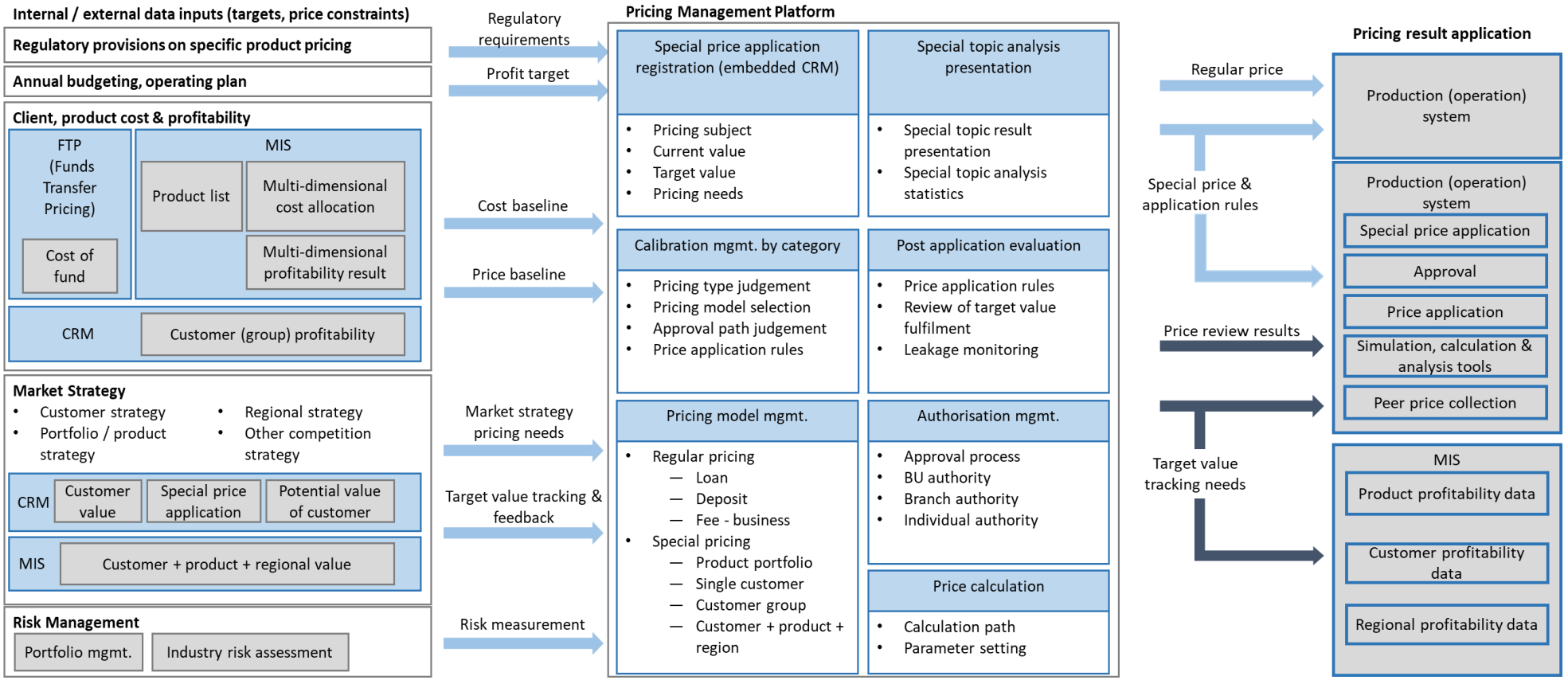


FIGURE 3: SYSTEM AND DATA INTEGRATION FOR PRICING PLATFORM (MCKINSEY & COMPANY, 2016)

2.5 The need for a pricing governance framework

Pricing value disciplines need to be accompanied by a pricing framework. Strong governance over pricing practices is encouraged. In fact, Sodhi (2008), stresses that some companies have Chief Pricing Officers who drive the business strategy, operations and implementation of pricing software technology. This suggests that pricing policies ought to be enforced, coupled with effective metrics to gauge performance. Pozin (2018) also alleges that most banks do not have a formal documented pricing strategy.

The lack of a pricing strategy is the very basis for misalignments in pricing practices and it preserves outdated practices. Sodhi (2008) puts forward the example that frontline staff may offer excessive discounts if no certainty exists of the validity of a price point or cannot explain the underpinning value to customers. It is on this basis that banks need to adopt a more holistic view of pricing - through the draft and implementation of a business strategy to reference when pricing, also keeping in mind that poor execution invariably lends poor results.

The current challenge faced by banks, is the consideration of pricing as an annual project. Research has shown the amount of resourcing, time and effort spent during annual pricing results in a three per cent increase in fees (Pozin, 2018). Furthermore, this annual event also means that some customers may enjoy longstanding discounts, but the bank may lose revenue.

Banks also need to create intelligence, not only about their customers' behaviour, but also about price elasticity and value (Pozin, 2018). Intelligence would equip a bank to provide bespoke solutions for the implied needs of their customer(s), and improve value, retain customers, and minimize the effect of competitor market activity.

Banks could engage pricing simulations to determine thresholds and discount points for a suite of products and services used by customers. Such action would inform a continuous revision of business strategy, optimise revenue and enable the bank to track its income statement on a continuous basis and effect changes where necessary, in contrast to waiting a whole year before pricing changes can be made.

Pozin (2018), is also of the opinion that the pricing process in banks does present some low-hanging fruit. The author declares that assessing and defining the current state of a pricing process from a financial, resource capacity, process efficiency, performance and capability standpoint and all other factors impacting pricing and profitability, could result in small innovations with potential for significant savings and profit maximization. Sodhi (2008), posits that one way of analysing the current process is using Six Sigma principles.

Several esteemed authors, in the article titled '*An effective pricing framework in a competitive industry: Management processes and implementation guidelines'* suggest a pricing framework comprising three phases: planning, execution and analysis.

The planning phase deals with macro-economic objectives and considerations, such as supply, demand, cost, regulation, technological shifts and competitor analysis with the goal of accurately predicting industry prices and effectively responding to them (Hwang, et al., 2011). This phase is further supported by unambiguous pricing objectives and strategies guided by the company's business plan. The execution phase covers the operational activities put in place to meet the pricing objectives, whilst the analysis phase provides feedback on pricing performance and the effectiveness of the strategy and objectives.

Hwang, et al. argue that the execution phase is the phase most likely to cause revenue leakage and price discrepancies. The authors stress that some of the more common problems arising from this phase include:

1. Incorrect pricing assessments - maintaining price consistency and integrity when offering largely varying prices to multiple customers (Hwang, et al., 2011).
2. Inefficient price adjustment approval – where relationship managers would like to price a customer outside of their mandated authority, pricing would need to be forwarded to upper management for approval, in this instance, management would require sufficient evaluation time to reach a decision, time which is usually not available (Hwang, et al., 2011).
3. Discrepancies in quoted pricing and effected pricing.

The above noted problems are consistent with the findings in bank XYZ's pricing process. Additionally, bank XYZ's pricing strategy is found to be one which is decentralized in nature, suggesting product houses create their own pricing strategies and objectives, independent of an overarching pricing strategy, for which one may argue evidence of existence.

Hwang, et al. also stress the significance of an analysis phase which may reveal pricing performance, trends and opportunities. Some of the principles which should be adhered to for effective implementation of a pricing process are: accuracy, completeness, responsiveness, and flexibility (Hwang, et al., 2011).

2.6 The need for qualitative research

Qualitative research is based on the aims it wishes to fulfil, which are to gain insight and understand some social aspect of life; in other words, to understand the experiences and attitudes of customers towards a process or system with which they must engage to obtain a favourable output and turning this understanding into a quantifiable measure for analysis purposes. Examples of this are: the need to understand customer experience from an end user perspective and identifying barriers to service excellence.

Authors express that qualitative methods such as interviews and focus groups can be used to solicit such information. They further stress that quantitative and qualitative data, used collectively, can be a powerful tool for lobbying, stating that the survey identifies the extent of the problem whilst quantitative methods typically highlight there is a problem. (Brikci & Green, 2007). The authors further express that where very little is known about a problem, qualitative methods can assist with generating hypotheses for testing, through the use of quantitative methods (Brikci & Green, 2007). Much in the same way for this paper - quantitative methods have revealed financial losses linked to the pricing process, qualitative methods are used to expose the extend of the problem and the constraints or process breakages from which these financial losses emanate. Qualitative methods seek to answer the '*what*', '*how*' or '*why*', whilst the quantitative methods answer the '*how many'* or '*how much'* (Brikci & Green, 2007).

2.6.1 Developing the research protocol

Brikci & Green (2007) highlight the importance of developing a research protocol for obtaining information. They posit that one should:

1. Develop the right research question which will supply one with a definitive output. This can be achieved by stating clear objectives for your research.
2. Detail the background about the topic.
3. State methods for collection of information.
4. Ethical considerations.
5. Identify existing research and the conditions and context under which this research was carried out.
6. Assess if a qualitative approach is appropriate. This would be the case if a researcher wants to:
    a. Understand the perspective of the participants; or
    b. Observe a process in depth; or
    c. Explore the meaning the participants give to a phenomenon.

2.6.2 Sampling

It is important to select a credible and indicative sample. Sampling in qualitative research should be purposive, which means participants should be selected based on their likelihood for generating useful data, and not based on statistical representation – as would be the case in quantitative research (Brikci & Green, 2007). The authors lean towards a *maximum variation sampling* method, which involves selecting participants based on demographic or functional variables (see the types of sampling methods in the table below). Since the aim of qualitative research is to know the '*why'* as opposed to the '*how much*,' writers suggest supplying questionnaires or interviewing participants until nothing new comes from the data, that is, until the researcher has reached a saturation point.

In the authors' experience, 15 people are sufficient for a short-term study in maximum variation sampling. (Brikci & Green, 2007). The Maximum Variation Sampling method will be used in this paper since the pricing function cuts across multiple functional areas and it is my belief that a common thread of problems across all functional areas can be identified, which has the biggest impact on non-conformance of the pricing process. This will be achieved using a questionnaire provided to participants. Interviews will not be held due to the length of time required to interview multiple participants.

TABLE 2: TYPES OF SAMPLING STRATEGIES (BRIKCI & GREEN, 2007)

Type of sampling	**Purpose**
Intensity sampling	To provide information from a few select cases which manifest the phenomenon intensely but are not extreme cases.
Deviant case sampling	To learn about highly unusual occurrences on the phenomenon in question.
Stratified purposeful sampling	To extract comparative information from subgroups.
Snowball or chain sampling	To assist in identifying hard-to-find cases.
Maximum variation sampling	To document diverse variation to identify common patterns that cut across all variations.
Convenience sampling	To save time, money and effort. The information provided is not credible.
Criterion sampling	An in-depth investigation into a particular type of case

2.7 The need for quantitative research

Quantitative research is explaining a phenomenon by collecting numerical data which can be analysed using mathematical methods (Aliaga & Gunderson, 2005). This type of method is best suited when a researcher wants to find a quantitative answer, in our case, how much does Bank XYZ lose due to pricing-related errors or failure?

Aliaga & Gunderson (2005), warn against the use of quantitative research to explore a problem in depth. They state that quantitative methods are best employed for hypothesis testing, and that qualitative methods rather be used for understanding the depth of a problem. The authors advocate for a mixed method of analysis when wanting to understand the breadth and depth of a problem (Aliaga & Gunderson, 2005).

In mixed methods research, qualitative and quantitative components can either have equal weighting or one can dominate the other, it is up to the researcher and their objective as to which will be given precedence. In this paper, both methods will be used to explain the breadth and depth of the pricing process problem, with greater emphasis placed on the qualitative analysis due to the nature of the problem.

Chapter 3: Research Methods

This chapter highlights the method which will be used in carrying out the research. It includes the sequence of tasks to be carried out to meet the objectives of the research; the procedure followed for collecting data and the sampling method used. This is detailed in the '*Research Protocol'* section which comprises the method of qualitative and quantitative data collection, the detailed sampling selection method, ethical considerations, resources used and the desired objectives of the data collection stage.

3.1 Research Methodology

The sequence of the research method will be:

1. Define the current end-to-end pricing process. This will form the scope of the project and allow for a clear understanding of the As – Is process. Understanding this process will form the foundation of the critical analysis function.
2. Identify and analyse process failures or process risks. This analysis will assist in clearly identifying the process steps or functions which require improvement.
3. Perform a Failure Modes and Effects Analysis (FMEA) to assess:
    a. The impact / severity of these process failures,
    b. The frequency with which these failures occur,
    c. The adequacy of current controls to prevent failure

    The FMEA tool will be used to gain an understanding of how these failures translate into financial losses and how they compromise frontline's ability to meet customer expectations.
4. Prioritise failure modes using Risk Priority Numbers (RPN). This step will ensure prioritization, that is, addressing those risks which pose a greater threat to customer experience and / or have far reaching financial implications.
5. Generate and prioritise solutions based on failures with the highest RPNs.

The necessary ethics clearance procedures have been followed in carrying out this research methodology. The ethics clearance number provided for this research is MIAEC 077/18.

3.2 Data Collection, Analysis Procedures and Sampling

The below table depicts the tools and techniques to be employed in completing the study.

TABLE 3: RESEARCH METHODOLOGY, PROCESS AND INSTRUMENTS

Research objective	Data collection / information gathering method	Instrument
Define the current end to end pricing process	A process mapping workshop will be conducted with the relevant stakeholders from pricing. These stakeholders are: 1. Central Pricing Teams for all three segments 2. Business Intelligence Unit 3. Siebel development and testing teams A sample size of 40 participants will be used. Participant roles wil be discussed in the Research Protocol section of this report	Microsoft Visio
Identify and analyse process failures or process risks which have a financial and customer satisfaction impact	An in depth analysis of queries / complaints will be completed to identify gaps or failures in the process. These queries will be extracted from Pricing Guru, which is a system Frontline uses to log any issues they may have relating to pricing and customer engagement. The data will be clustered based on similarity to identify the main topics	Pricing Guru data extract and analysis completed on Excel (quantitative analysis)
Identify root causes for process failures which result in financial losses and result in customer dissatisfaction	A root cause analysis will be completed through use of a brainstorming workshop held with key stakeholders. These root causes will be translated into process failures and their origination determined.	**Method**: Workshop 1 **Output**: Ishikawa / Fish bone diagram
Identify and assess the effectiveness of current process controls in mitigating financial losses and preventing poor service quality	Failures will be prioritised using a Failure Modes and Effects Analysis tool (FMEA) for analysing and prioritising risk. This tool ranks failures with respect to three dimensions: 1. **Severity** - this is the impact a failure mode has on the customer and the bank (financial, reputational damage, susceptibility to fraud, etc) and can be quantified by audit reports obtained from the Risk and Compliance department 2. **Occurrence** - How frequently the failure occurs. This can be measured through data gathered from Pricing Guru 3. **Detection** - An assessment of the effectiveness of the current controls to mitigate risk. This will be completed through a workshop session with stakeholders to rate how effective current controls are and if they are active or reactive in nature.	**Method**: 1.) Data analysis for measuring and aggregating severity and Occurrence 2.) Workshop 2 for assessing effectiveness of process controls with stakeholders A sample size of 40 participants will be used in the second workshop. These will be the same participants involved in the first workshop. The output of the second workshop will be a FMEA document.
Generate and prioritise solutions	A scaled questionnaire will be designed which will be sent out to 60 stakeholders identied in the pricing process. The purpose of this questionnaire is to solicit minimum requirements for the re-design of a pricing process taking into account root causes for failure denoted above. These minimum requirements will be developed into solutions in which a matrix will be designed to generate and rate solutions based on the following criteria: 1. Effective reduction in revenue leakage. 2. Improved, efficient customer service. 3. Streamlined pricing process with reduced complexity. 4. Probability of successful implementation. 5. Capital cost requirement. A follow - up workshop will be held with the 40 participants to assess solutions	Template with rating scale and assessment criteria

3.3 Research Protocol

The following protocol is followed in gathering quantitative and qualitative data:

Aims and objectives	Participants in the project will be given a brief explanation of the aims of this project. They are to: 1. To assess and identify process failures and their effects on the pricing process. 2. To present solutions based on identified process gaps and business requirements. The objectives of the workshop session will therefore be: 1. To brainstorm all possible process failures in the pricing process 2. To provide all 40 participants with a survey (see Appendix A) eluding to the pricing process. Participants need only select one answer per statement, based on their experience of the pricing process. A second workshop will be held where the objectives will be: 1. To discuss the results of the survey (identify common themes which require solving) 2. To decide on critical success factors for which solutions will be measured against. 3. To brainstorm and prioritise solutions based on these critical success factors.
Background	Prior to the commencement of the workshop sessions, participants are made aware of findings from the quantitative analysis. i.e. The signed off financial losses related to the pricing process and the Text Mining exercise from which data was extracted from the frontline query logging system, identifying pricing as one of the more prevalent challenges frontline staff face daily. This information sets the tone for the workshop sessions and highlights the need to improve the pricing process for all participants involved.
Methods	The workshop sessions are run using a tool called Participlan. This is a facilitation planning toolkit, highly effective for brainstorming. Participants are given sticky notes to write all probable process failures they can think of. These are then collected and ordered into six different themes, which are:

	systems; process; people; measurement; material, and time (see fishbone). Participants are also supplied with a survey (Appendix A) to complete anonymously. From this, common themes are identified in conjunction with the fishbone themes. Common variations are identified which cut across all functional areas, signifying opportunity for substantial improvement. In the second workshop, the results of the first workshop are discussed, and participants are given sticky notes to generate success criterion against which solutions will be assessed. These criteria are assigned weightings. Participants further engage by generating solutions for the common problems identified. These are rated against the success criteria identified. This information will then be presented to Management. This method of soliciting information allows all stakeholders to participate in the problem-solving phase and therefore encourages team work in the work place.
Sample size	A sample size of 40 participants has been identified for the workshop session. These workshops are held at Bank XYZ's headquarters in Johannesburg and the Maximum Variation Sampling Method is used as it is best suited for processes running across multiple disciplines / functional areas. Participants are listed as follows: 1. 15 x Pricing Specialists and Pricing Heads from all Product Houses. 2. 5 x Information Technology Specialists (System Analyst, Developers and Testers) 3. 3 x Business Intelligence Analysts 4. 15 x Relationship Managers in the Johannesburg Region 5. 1 x Project Manager 6. 1 x Business Analyst
Ethical considerations	An application for ethics clearance has been granted to cover the following: 1. Written consent from company for use of data and information for investigation purposes and in fulfilment of the MSc degree. 2. Human sources - distribution and completion of a questionnaire to solicit process re-engineering requirements. Ethics clearance has been granted with clearance number MIAEC 077/18.

Resources	1. Participlan Facilitation toolkit is used to facilitate the workshop sessions. 2. Pricing Guru and Siebel are systems used to extract frontline query data. This data is then analysed using a statistical tool called R. This tool is used for text mining. 3. An internal audit report assessing financial losses in commercial and corporate banking. 4. Meeting rooms for stakeholder engagements.
Time scale	The workshops are scheduled 2 weeks apart, with the first taking place on the 8th of August 2018 and the other on the 22nd of August 2018. Each workshop is scheduled for 2.5 hours to obtain meaningful information and participation from all stakeholders.
Output	Expected outputs from the project are: 1. Root causes for process failures. 2. Assessment criteria for evaluating solutions. 3. A set of potential solutions. 4. A matrix depicting the best solution based on the assessment criteria.

Chapter 4: Analysis and Results

This chapter defines Bank XYZ's annual pricing process and analyses the quantitative and qualitative data obtained in the context of the process. It includes:

a) A fishbone diagram used for exploring all possible pricing process failures.
b) Quantitative analysis and prioritisation of frontline staff queries. This section relates to the frequency of occurrence of failures.
c) Analysis of survey results to strengthen arguments and inferences made in the quantitative analysis section of the report and to further explore other issues not contained or visible in the quantitative analysis section. This section covers the breadth and depth of the pricing process as it looks at the process holistically as opposed to looking at the process in parts. It therefore enables the generation of a solution which addresses both quantitative and qualitative issues.

4.1 The Annual Pricing Process

Preparation for the annual pricing process commences each year in September, to be executed on the first of July the following year. Figure 4 depicts a high level, end -to- end pricing process for bank XYZ. A detailed process can be seen in Appendix C.

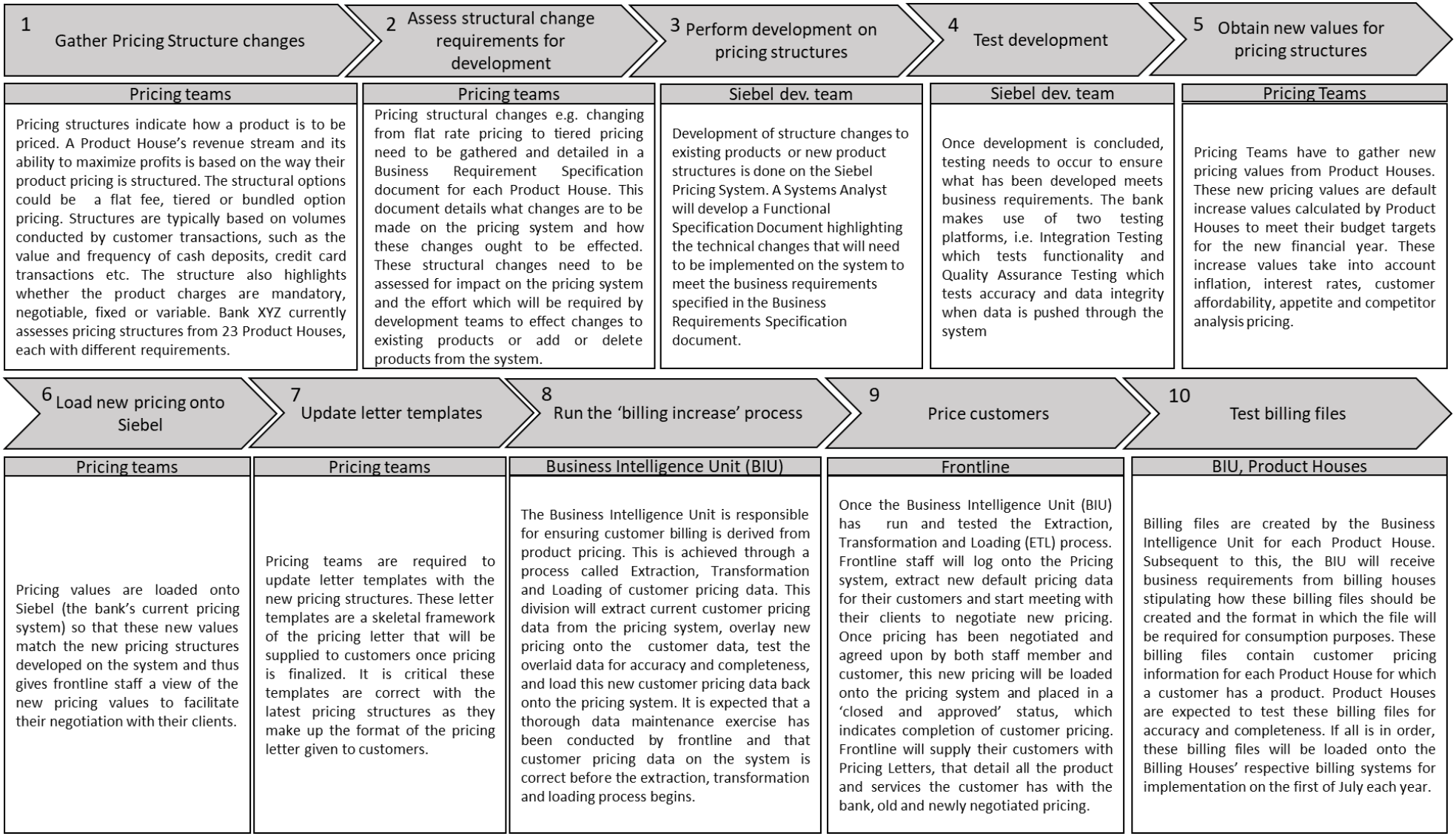


FIGURE 4: THE ANNUAL PRICING PROCESS OF BANK XYZ

4.2 Qualifying the use of tools and techniques and the process of analyzing data

Root cause analysis is a process used to identify underlying factors which may have an adverse effect on a process or system. Identifying and understanding these factors that contribute to process or system failure can assist in generating preventative measures and solutions.

A fishbone diagram (figure 5 below) was used to brainstorm possible causes of failure and sorted these ideas into useful categories. The problem is displayed at the head of the 'fish' whilst the causes are listed on the 'bones' of the fish. This becomes a visual depiction of all possible contributing factors to be considered. Therefore, the use of a fishbone diagram coincides with the main objective of this study - answering the question: *what are the root causes to process failure*. It also assists in giving an indication of *where* in the value chain these possible causes may occur. Hence a discussion on the annual pricing process in the above section (section 8, figure 4), followed by a root cause analysis in the below section of this paper (section 11). However, the fishbone diagram falls short in quantifying the financial and customer satisfaction impact each potential cause has on the pricing process.

To quantify the financial and customer satisfaction impact of these potential causes, quantitative methods were used. Data was extracted from pricing source systems and analysed in relation to the pricing execution process. A Pareto analysis method was used. This method highlights the top 20 causes which have an 80 per cent adverse effect on the process.

The method not only reinforces the possible causes highlighted in the Fishbone diagram but also prioritises these based on impact to customer satisfaction and financials – this paper seeks to generate solutions for those causes which have the most significant impact on pricing execution. Shortcomings of quantitative analysis techniques are that research is only confined to data. It is necessary to expand on the research to include the human aspect of how the process is perceived, and not only that of frontline staff, but also those opinions of all other stakeholders in the process. This obtains a balanced view and can be achieved by qualitative analysis techniques.

The qualitative analysis section in the paper aims to understand the experiences and attitudes of customers towards a process or system with which they must engage to obtain a favourable output and turning this understanding into quantifiable measures for analysis purposes. This section is conducted by means of a survey and measures any other potential causes which may not have been measured by the data obtained in the quantitative analysis section. It also ensures a balanced weighting between the quantitative and qualitative sections.

The effect of the mixed method approach can be seen in the Risk Prioritisation Model employed. In this section, the quantitative method is blended with the qualitative method based on the following risk-rating criteria: severity of root cause on customer satisfaction and financials, frequency of occurrence, and the effectiveness of control measures currently in place. Solutions are generated and evaluated against a set of criteria which is critical to quality, customer satisfaction, cost and efficiency for the bank and the customer.

4.3 Pricing Brainstorm

Below is a fishbone diagram depicting the results of a brainstorming session held with 40 participants to identify process failures in the pricing process.

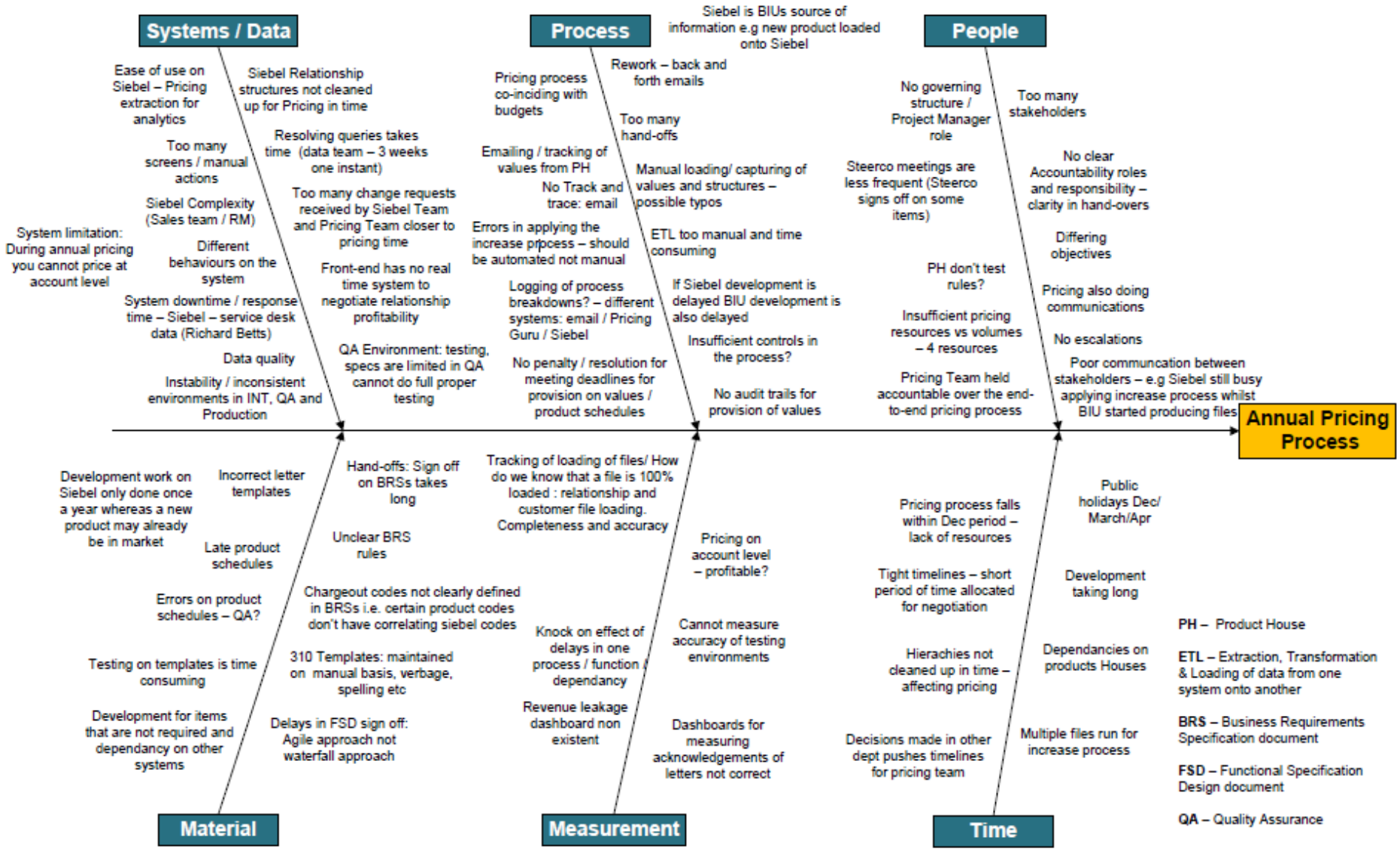


FIGURE 5: FISHBONE DIAGRAM OF PRICING PROCESS FAILURES

4.4 Root cause analysis – analysis and interpretation of quantitative results

Due to the number of issues raised by stakeholders in the fishbone diagram (figure 5), a quantitative analysis was undertaken to determine the more prevalent issues with high impact. The results can be seen in figure 6 below.

Frontline staff use a system called Pricing Guru to log any issues they may have during the pricing period. This system routes these queries to the Pricing Teams for resolution. The graph below illustrates a Pareto analysis of the types of queries Pricing Teams will receive from frontline.

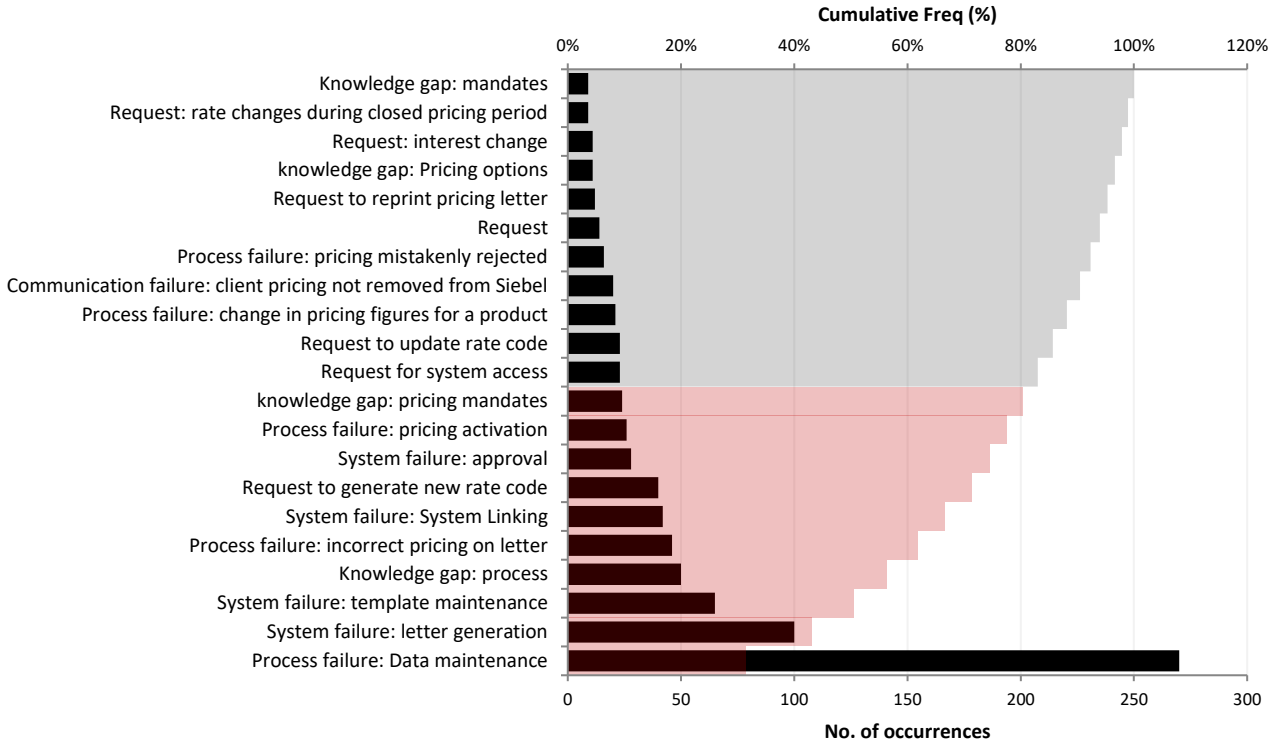


FIGURE 6: PARETO ANALYSIS OF FRONTLINE QUERIES ON PRICING GURU

The 80/20 (Pareto) principle, named after Italian economist Vilfredo Pareto, after his observation that 20 per cent of the people of Italy owned 80 per cent of the wealth (Dunford, et al., 2014), is used to identify those process failures or bottlenecks which have the greatest impact on the ability to execute the pricing process effectively and efficiently.

Data maintenance: The corporate and commercial segments of banking operates on a customer franchise structure. The First Rand franchise structure below is used for illustrative purposes.

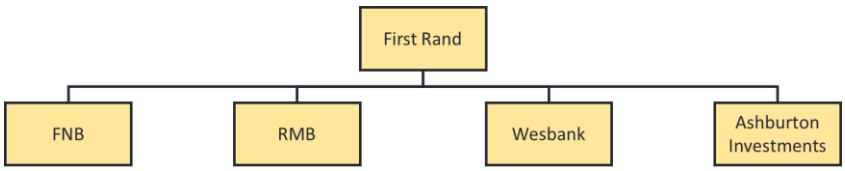
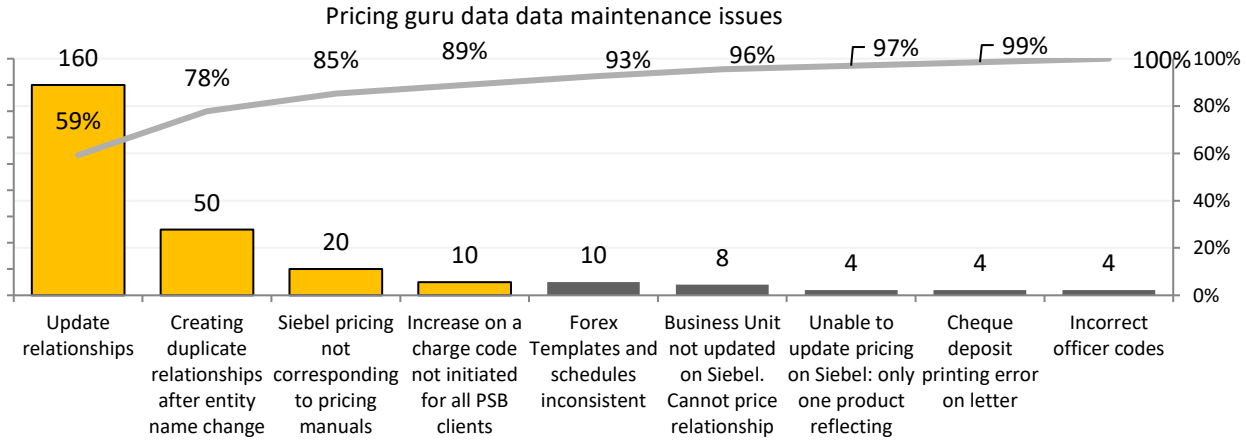


FIGURE 7: FIRST RAND FRANCHISE STRUCTURE

If First Rand was bank XYZ's client, bank XYZ would have to ensure the following data is kept up to date before pricing commences (see figure 8 on a breakdown of the root causes for data maintenance):

a) The franchise data structure set up is correct on the pricing system (update relationship structure) and there are no missing franchise data structures.
b) There are no duplicate franchises and duplicate data on the system and all inactive relationships are archived.
c) All franchises are visible and active on the system. Any changes which may have occurred in the franchise structure during the year should have been accounted for in the data structure set up.
d) Each franchise has the correct products and services appearing on the pricing system (as per the previous pricing cycle agreement with the customer) and any changes which may have occurred throughout the year have been effected on the pricing system.
e) Each relationship data structure is allocated to a Relationship Manager.
f) Each franchise has contact information pertaining to the individual selected to negotiate pricing on behalf of the franchise.
g) Where applicable, pricing is conducted at 'parent company' level and franchise level.
h) Franchises are allocated to the correct segments based on their annual turnover (Business Unit field should be updated correctly)



PSB – Public Sector Banking

FIGURE 8: ROOT CAUSE ANALYSIS FOR DATA MAINTENANCE CHALLENGES

Analysis and interpretation of quantitative results will be discussed in relation to the annual pricing process – section 8 in this paper (figure 4).

If any of the above information is incorrect or incomplete, the pricing system immediately rejects any new pricing changes and frontline will not be able to price a business entity. This results in steps 6 to 10 of the pricing process having to be rerun for those business entities that have failed the 'data quality' test. It also suggests that frontline staff must re-negotiate pricing with the business entity once the data is accurate, resulting in rework, pressurized timelines and poor customer satisfaction.

System failure: letter generation: Letter generation is step 9 in the pricing process. Refer to figure 4. Once pricing has been negotiated, frontline staff need to provide the business entity with a pricing letter listing all their products and services and the old and new pricing per product. This letter serves as a contractual agreement between the bank and the customer for the following financial year. The prevalent reasons the pricing system prohibits frontline from generating letters is due to the volume of data which needs to be processed to populate a single pricing letter. This creates a lag in the system which results in frontline being unable to print letters or the system printing incomplete or inaccurate letters.

Template maintenance and system linking: The design of a pricing letter is based off a template. The accuracy of these templates (step 7) depends on how accurate the design of the template structure was and if this design mirrors the pricing structures which were developed on the pricing system in step 3. Templates are maintained in a separate environment from the pricing structures. However, once designed, they need to mirror the product pricing structures developed on the pricing system. These templates will then be used for integration with the pricing system to read off and populate data onto the template. Once the data is accurately populated, frontline can then proceed to generate a pricing letter for the business entity.

Incorrect pricing on letter, charge and rate codes: Incorrect pricing occurs on a pricing letter when the extraction, transformation and loading (ETL) of data (step 8) is done. This also because the ETL process is done in a separate environment to that of the pricing system. Data is extracted from the pricing system and placed in a BIU environment for manipulation purposes. During the enrichment of customer pricing data with new pricing information, failures occur such that the wrong pricing fields may be updated or the wrong amount updated or a misinterpretation of charge codes and rate codes applied. Each type of product and service offered by the bank is represented by a charge code (which is typically a four-letter code e.g. MXBL). Bank XYZ has over 1600 charge codes. Each charge code has a list accompanying rate codes (a two-letter code, e.g. C9), which relate to the physical amount to be charged to a customer.

Rate codes are created to allow frontline staff negotiability within a set boundary for a single charge code. Therefore, one charge code can have multiple rate codes and one rate code can belong to multiple charge codes. Charge codes and rate codes introduce a significant amount of complexity into the system and the calculations which need to take place to apply the increase amounts to customer data. This complexity results in letters being given to customers with incorrect pricing due to the wrong charge and rate codes applied to a customer's products and services, resulting in financial losses to the bank.

Knowledge gap - pricing mandates: Frontline are required to price customers based on a limited number of rate codes within a single charge code. However, this is not always the case. A single charge code can exist for both corporate and commercial segments but with differing rate codes and therefore different amounts charged to the customer. Likewise, a single rate code can cater for multiple charge codes across the two segments.

This creates a lot of confusion for frontline staff as to which charge codes and rate codes to apply for a customer in a segment. Over time, frontline staff will move rate codes and charge codes between segments based on how they would like to price their customers. This also means that pricing mandates and covenants for each segment are diluted, signaling a weakening of pricing controls and monitoring and a lack of clear pricing strategy.

Logging of process failures: Due to there being multiple systems for logging queries in Bank XYZ, frontline log pricing related issues on the wrong system/s. Figure 9 highlights a large percentage of the pricing related queries that were incorrectly logged onto other systems. This increases the turnaround time pricing teams have for resolving these queries. These queries prohibit frontline staff from being able to correctly price their customers. Incorrectly logged queries would need to be logged or routed to the correct system for resolution.

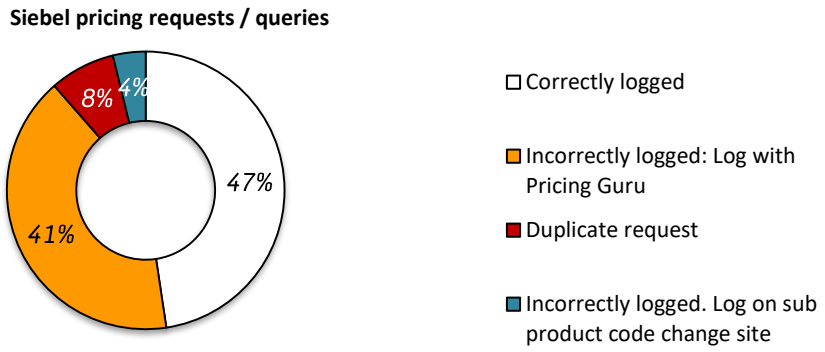


FIGURE 9: PROPORTION OF INCORRECTLY LOGGED PRICING QUERIES

Other process related challenges: the annual pricing process is plagued with multiple handovers between departments. Figure 10 illustrates the convoluted process with respect to process handovers. These handovers involve the passing over of information and data. The challenges posed by this process is:

1. There are no minimum quality criteria for handing over information or data in a structured, consumable format.
2. This process is manual in nature and there are multiple waste activities.
3. The process stakeholders don't have a clear understanding of the dependencies between departments and the key importance of communicating clear timelines and milestones to all persons involved. The lack of knowledge around the process leads to missed deadlines and pressurized time constraints.
4. There is no thorough end to end testing conducted on the process and pricing data. When timelines are shortened, the time allocated for 'silo' testing is significantly reduced, resulting in pricing errors.
5. The process lacks a well-documented risk assessment and mitigation strategies in the event of process failure or missed milestones.
6. There is no clear ownership of the end-to-end process or a pricing strategy in place driven by a Steering Committee around project management and pricing objectives.
7. There is no accountability (responsibility and accountability matrix) or consequences brought against stakeholders who fail to deliver timeously and within the right quality specifications.

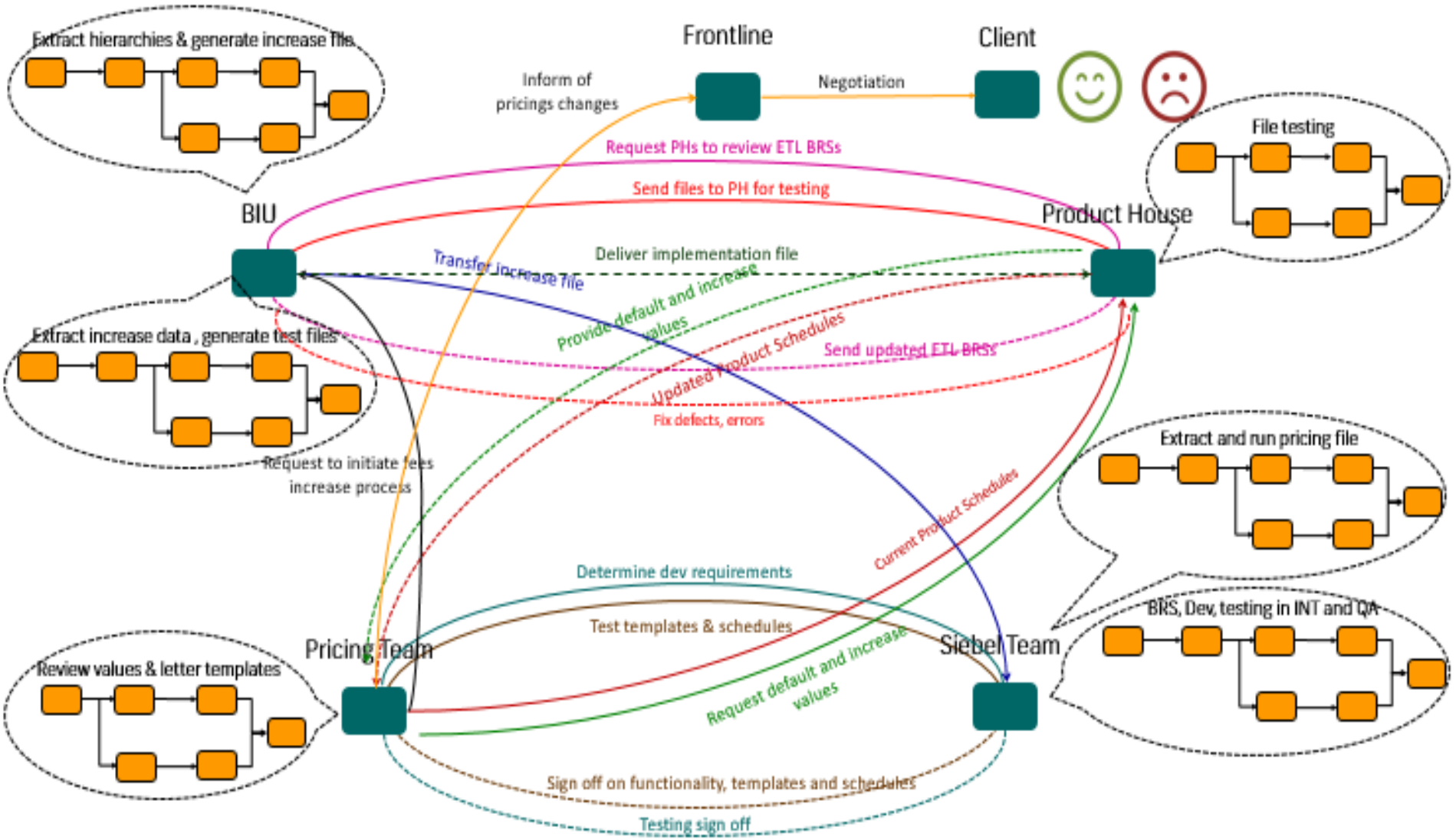


FIGURE 10: DEPICTION OF PROCESS HANDOVER

4.5 Analysis and interpretation of qualitative results -survey

Alignment and effectiveness of budgeting on pricing process

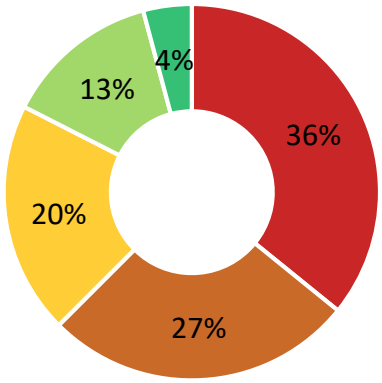


FIGURE 11: EFFECTS OF BUDGETING ON PRICING PROCESS

Results from the survey indicate a misalignment between the budgeting process and the product and customer pricing process (66 per cent of responses received highlight this disjoint, whilst only 17 per cent believe the processes are aligned – figure 11). The budgeting process should drive how products and customers are priced, thereby also driving the way products are structured on the pricing system. Responses also highlight that bank XYZ currently employs no mechanism for performing variance analysis between budgeted figures, priced products and customer pricing. The absence of such, leaves a gap for further revenue generation and revenue leakage prevention. This is also indicative of a lack of well-defined pricing strategy informed by reliable analytics.

The ease with which we price products

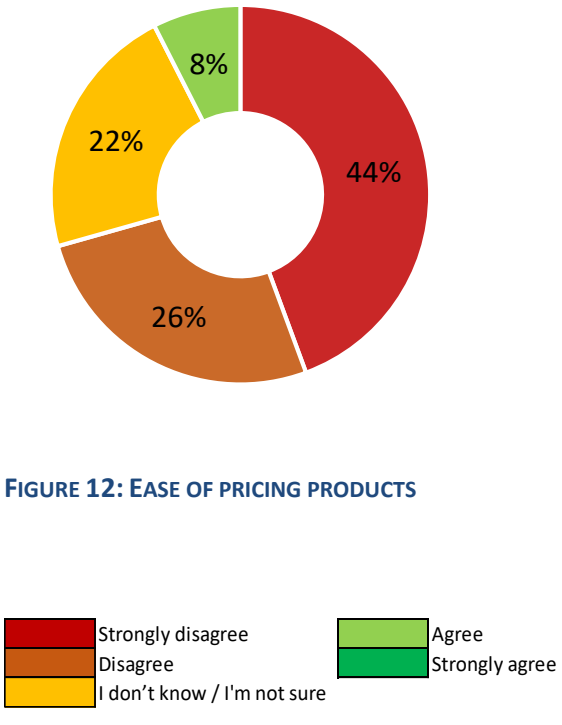


FIGURE 12: EASE OF PRICING PRODUCTS

Stakeholders strongly believe the pricing process can be improved. In fact, figure 12 shows that at least 70 per cent of respondents believe the current pricing process presents difficulty when pricing a product, it doesn't allow for Product Houses to load and price their products on the system – they have no training on the system, nor do they believe products are standardized across all segments. The complexity of the pricing system, in some instances, prevents stakeholders from effecting small changes to pricing, and therefore the knowledge of central pricing teams, and in some instances, development teams, is required to effect those changes. 22 per cent of respondents have no knowledge of the complexity of pricing on the system because they are dependent on central pricing teams to load and price products on their behalf.

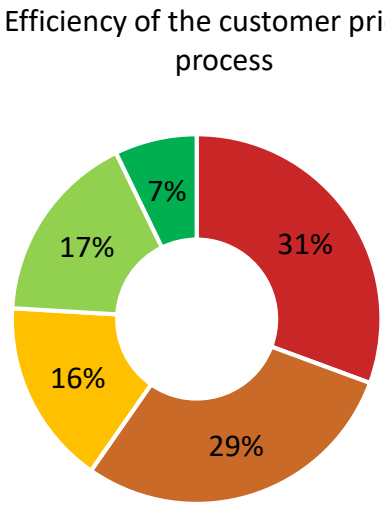


FIGURE 14: EFFICIENCY OF THE PRICING PROCESS

A glaring 60 per cent of respondents emphasise the customer pricing process is not efficient (figure 13). Pricing a customer has many challenges due to the extraction, transformation and loading of customer pricing data. Respondents have indicated it is during this process when customer pricing letters show the incorrect figures, and the effects of a lack of an end to end testing strategy are felt. Furthermore, respondents also believe the pricing letter is lengthy (up to ten pages) and not easy to read. Respondents suppose a short summary of the letter highlighting only those products and services used by the customer and the new pricing would suffice. Responses also confirm that no statistical analysis is completed for pricing which could drive a pricing strategy. Only 24 per cent of respondents indicate satisfaction with the current customer pricing process.

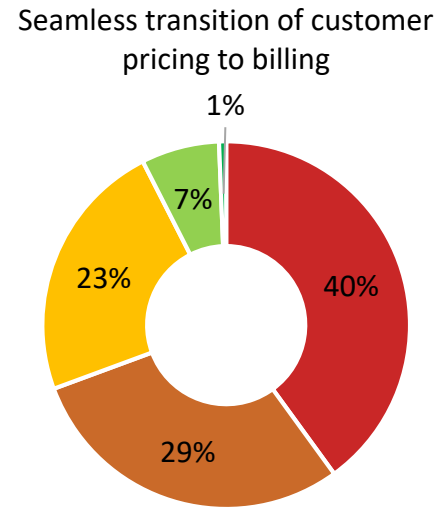
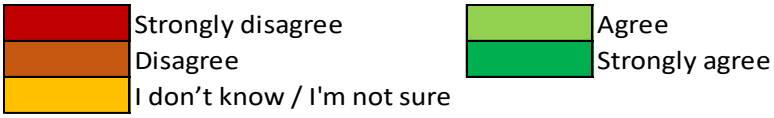


FIGURE 13: TRANSITION OF PRICING TO BILLING

As many as 69 per cent of respondents highlight a poor transitioning process between customer pricing and billing. This finding indicates that what customers are priced is not always a true reflection of what they will be billed – which speaks to the absence of integration points between the pricing and billing systems. As high as 23 per cent of respondents have no knowledge of what this transition process ought to entail and only as little as 8 per cent of respondents believe there is seamless transition between customer pricing and billing. The current process details that files are sent to billing houses for them to place into their systems. This represents a risk, as these files need to be aligned to requirements set out by billing houses for ease of consumption. There is no direct extraction made by billing systems from the pricing system.



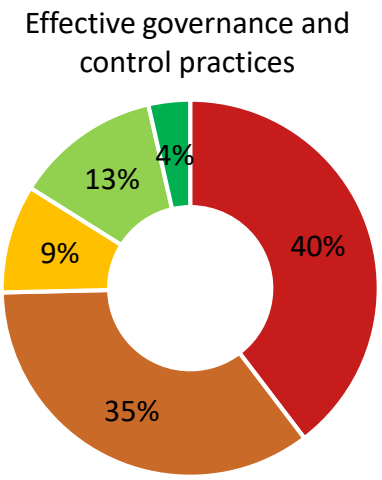


FIGURE 15: GOVERNANCE AND CONTROLS

Respondents disclose that 65 per cent of the time, queries aren't resolved timeously and there appears to be a knowledge gap around the process and the pricing system (figure 15). The process is also wrought with key man dependencies which create a bottleneck in query resolution with limited resource capacity. Only 22 per cent of respondents emphasise the flexibility and quick query resolution of the process. Even so, there are no service level agreements in place for query resolution and therefore 'speed of response' is open for interpretation.

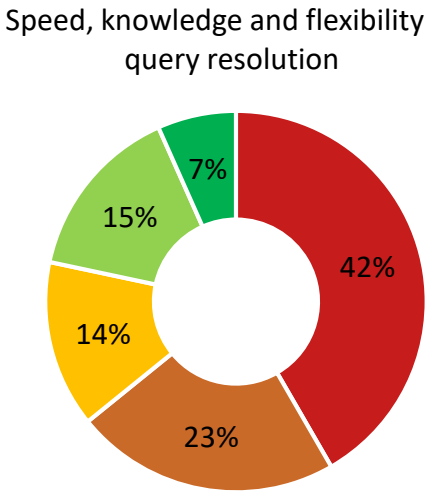
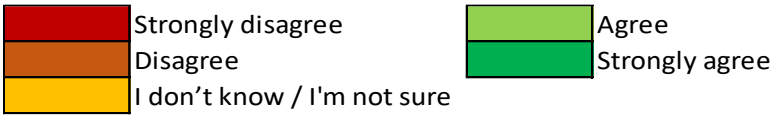


FIGURE 16: QUERY RESOLUTION

The survey stresses the weakening of governance controls in the annual pricing process. A staggering 75 per cent of respondents expressed a lack of clear accountability and ownership of the pricing process, the absence of a pricing strategy, diminishing controls in deadline management and the deficiency of a well-articulated pricing process, with risk assessments, timelines and dependencies, and quality criteria for measuring outputs. Other respondents (9 per cent) were not sure of the governance controls in place (if any).



4.6 Risk Assessment / Prioritisation Model

From the quantitative data analysis (figure 6 above) and other problem areas identified within the process, a risk assessment rating is created (see table 4 below). Failure points are rated (on a scale of 1 to 10) on severity (denoted 'S' on the table and relates to the level of severity the failure has on the process, end customer, project timelines and/or financials); Frequency of occurrence (F); and Detection (D – how soon can the failure be detected). This information was gathered in a workshop session, with participants being requested to rate each failure based on the three indicators. Table 4 highlights the aggregated results. The Risk Priority Number (RPN) is a product of the three indicators. The higher the Risk Priority Number, the greater the risk.

TABLE 4: RISK ASSESSMENT

Process step	Failure Mode	Root causes	Effect	S	F	D	RPN
1. Generate pricing letter	Incorrect pricing on letter leading to incorrect billing Inability to generate pricing letters	a. System complexity / intelligence - system doesn't prompt frontline to input new pricing if they've removed current pricing for editing purposes b. Incorrect increase values provided by Product Houses c. Errors due to BIU file transmission	Client priced incorrectly - revenue leakage / overpricing a client (reputational damage - loss of future revenue)	9	9	7	567
2. Generate pricing letter	Cannot generate a pricing letter	a. Poor system response times b. High volumes c. Frontline Batch generating letters	Unable to supply client with a pricing letter in time	8	7	9	504
3. Extract Hierarchies, product schedules, statuses and pricing data	Poor Relationship Data Maintenance	a. Poor maintenance of data - hierachies not updated. No active profiles b. Hogan and Siebel linking is poor. Relationships appearing correctly on Hogan but not on Siebel c. Duplicate profiles on Siebel d. Clients not appearing on Siebel e. Clients segmented incorrectly	Unable to price a client. Not all relationships will be reflected on the system and pricing letters will not be generated	10	9	9	810
5. Submit updated product schedules	**Knowledge Gap around process:** 1. Late product schedules 2. Lack of process accountability 3. Frontline not pricing according to mandates	Product Houses not held accountable for submitting late product schedules	Development timelines are affected, essentially affecting the entire value chain (timeframe allocated for negotiation is reduced)	10	8	9	720
6. Development for billing	**Siebel Development** a. Extensive development phase b. Errors in development c. Poor system integration	a. Unclear business rules and integration points between Siebel and Business Intelligence b. Product Houses not testing increase files with immediate effect - no accountability c. Inability to unpack requirements between Business and ETL Developer	a. Reduction in the time available for testing, resulting in development errors. Revenue leakage (under-recovery) b. Costly development	10	8	7	560
7. Update Letter Templates	**Template Maintenance** a. Incorrect templates used b. Incorrect wording, rate codes and fee description on letter templates c. Foot notes on schedules not appearing on templates	a. Letter templates not maintained - lack of clear accountability b. Hard coding on templates d. Segment inter-dependance on testing and migration of templates	Cannot generate pricing letters timeously	9	9	7	567
8. Process Management	Hand-offs and key man dependancies	many functional units have various roles and responsibilities. These roles and responsibilities arent clearly set out and also no accountability on the entire End-to-End Pricing Process	Long turnaround times. Ineffective process	9	9	9	729

4.6.1 Discussion of survey results

Results from the quantitative and qualitative methods are summarized in the Prioritisation Model (Table 4). The key issues which require resolution (rated on highest to lowest RPN) are:

1. *Poor customer data maintenance (RPN = 810).*

   The inability to host accurate customer data pertaining to the correct customer hierarchy structures, unique customer profiles, accurate customer segments, validation of products and services which a customer currently has with the bank, and the correct pricing attached to those products and services, invariably leads to customers not being priced on the system, affecting profitability and customer engagement.

2. *Poor process design and management (RPN = 729).*

   The pricing process is executed with multiple manual hand offs of information to various stakeholders for purposes of extraction, transformation and loading. Additionally, there is a lack of quality measures to assess accuracy, format and completeness of information. This could also be attributed to a lack of governance controls and a pricing strategy driven by accountability. The process requires a complete overhaul and redesign with less complex processes, handovers and a single point of pricing and billing to meet targeted deadlines.

3. *Submission of product schedules (RPN = 720).*

   Annually, Product Houses are required to submit complete and accurate product schedules which determine the product pricing structure i.e. flat fee pricing, tiered pricing, value or volume-based pricing. These schedules have a development requirement and therefore the late submission of schedules or incorrect structure set up delays the entire pricing process significantly. The process redesign needs to drive the capturing of quality information at source to annihilate rework.

4. *Updating of letter templates and generation of pricing letter (RPN = 567).*

   Letter templates require standardization. The current process has over 100 letter templates for various combinations of products for customers. This creates complications and an incorrect template can be used for a customer, resulting in incomplete or inaccurate pricing being populated, or a customer allocated and charged for products and services which they do not use. A generic template needs to be created that populates data based on the products and services a customer has

with the bank. A decision-making tool should be incorporated in the process, removing the risk of human error.

5. *Development for billing (RPN = 560).*

   System development for product structures and billing is a bottleneck in the pricing process. Each product requires unique development Siebel and the Business Intelligence Unit also performs development to meet the needs of the various billing systems. These timelines are quite extensive and require accurate and clear business rule documentation and system functional specifications to effect development. This bottleneck reduces time available to perform other subsequent functions in the pricing process, such as the time available to have quality engagements with the customer on negotiated pricing.

The pricing process has critical functions which are subsequent in nature. The delay of one function affects the timely delivery of pricing to the customer. It also poses the risk of pricing errors which have a financial and reputational impact on the bank. It is crucial this process is executed with minimal error to avoid reimbursements to customers and poor customer engagement.

Chapter 5: Proposed solutions / recommendations

This chapter discusses the solutions generated and the effectiveness of each in resolving process failures.

The following solutions have been proposed from the second workshop session:

5.1 Solution 1: The purchase of an off-the-shelf, configurable banking pricing solution.

Several consulting companies have built bespoke pricing IT platforms for the banking industry. These solutions are built using the complexities of banking pricing models, which cut across different customer segmentations, such as retail, commercial and corporate banking. The benefit of these pricing IT platforms is the speed with which pricing of a customer can be effected on the system. They represent a single point of engagement for all pricing and billing interactions (consolidation of pricing and billing onto a single system), the reduction in the cost and effort required to maintain multiple systems linked to pricing and billing, a single point of data maintenance for frontline, and the reduction of multiple handovers of information processing across multiple functional areas.

Base functionality of these systems includes the creation, reading, updating and deletion of products and customers. They can also be configured for a bank's needs. Additionally, these solutions are built on process logic as opposed to IT development, therefore they are easy to use and don't require a specialized skillset to maintain or update pricing information.

Figures 17 and 18 depict the current data flow map (as per As-Is process – wrought with multiple data streams and the burdensome task of central pricing teams capturing pricing information into the pricing system and Business Intelligence pushing billing files into multiple billing systems for consumption) and the proposed data flow map based on the purchase and implementation of a pricing and billing software (able to perform both pricing and billing on one system) respectively.

Challenges that a bank may face in the purchase of these IT solutions are the length of time required for implementation (3 to 5 years), the exorbitant cost of implementation, licensing and support costs. Furthermore, one bank's bespoke solution can easily be offered and implemented at another bank (the solution becoming a part of the suite of standardized solutions offered to the financial services industry) resulting in one bank losing its advantage over another with respect to the value created for the customer by the pricing function. However; this solution has multiple benefits listed in the following section.

5.1.1 Current Process Data Flow Map

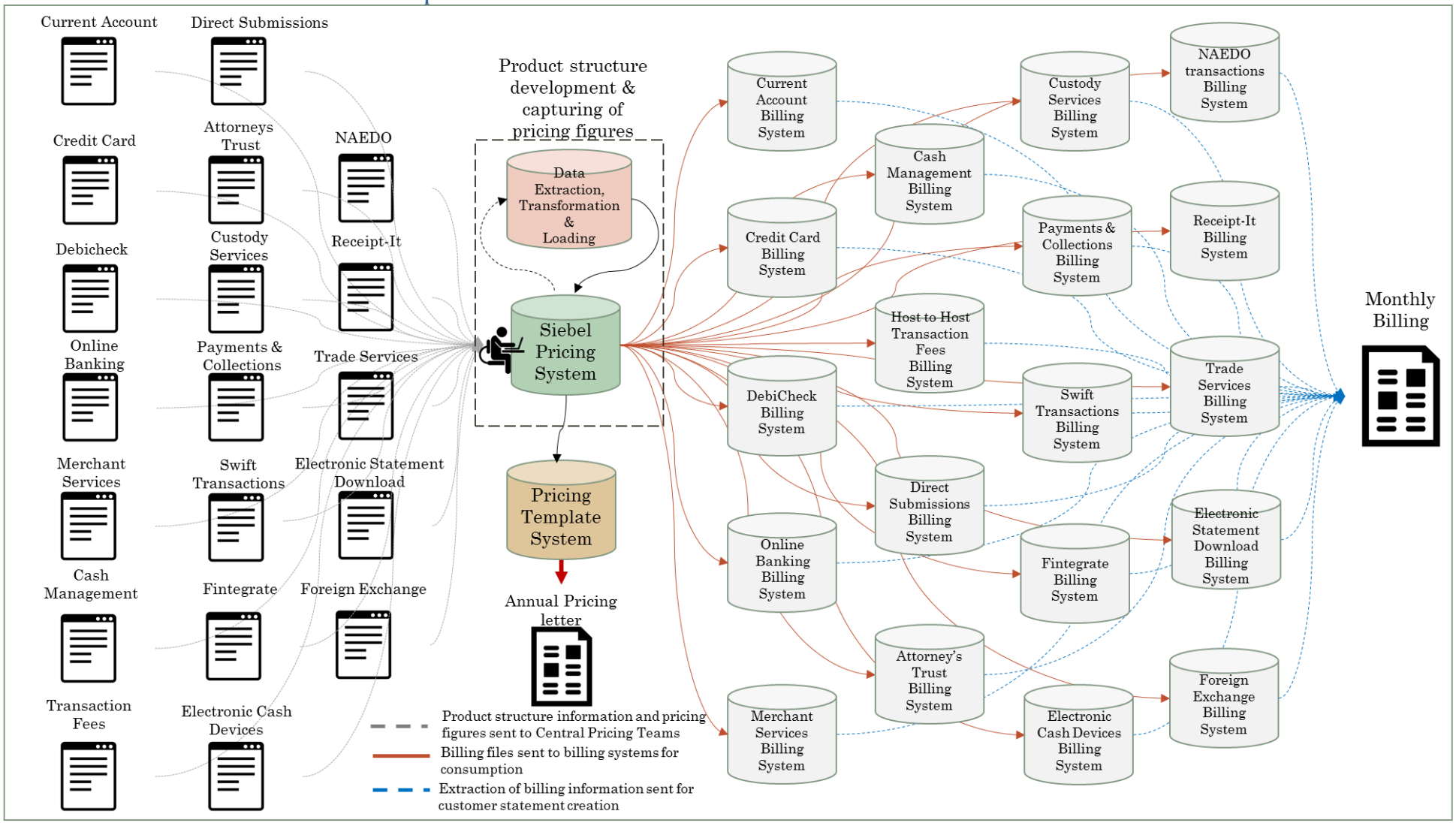


FIGURE 17: DATA FLOW MAP (CURRENT PROCESS)

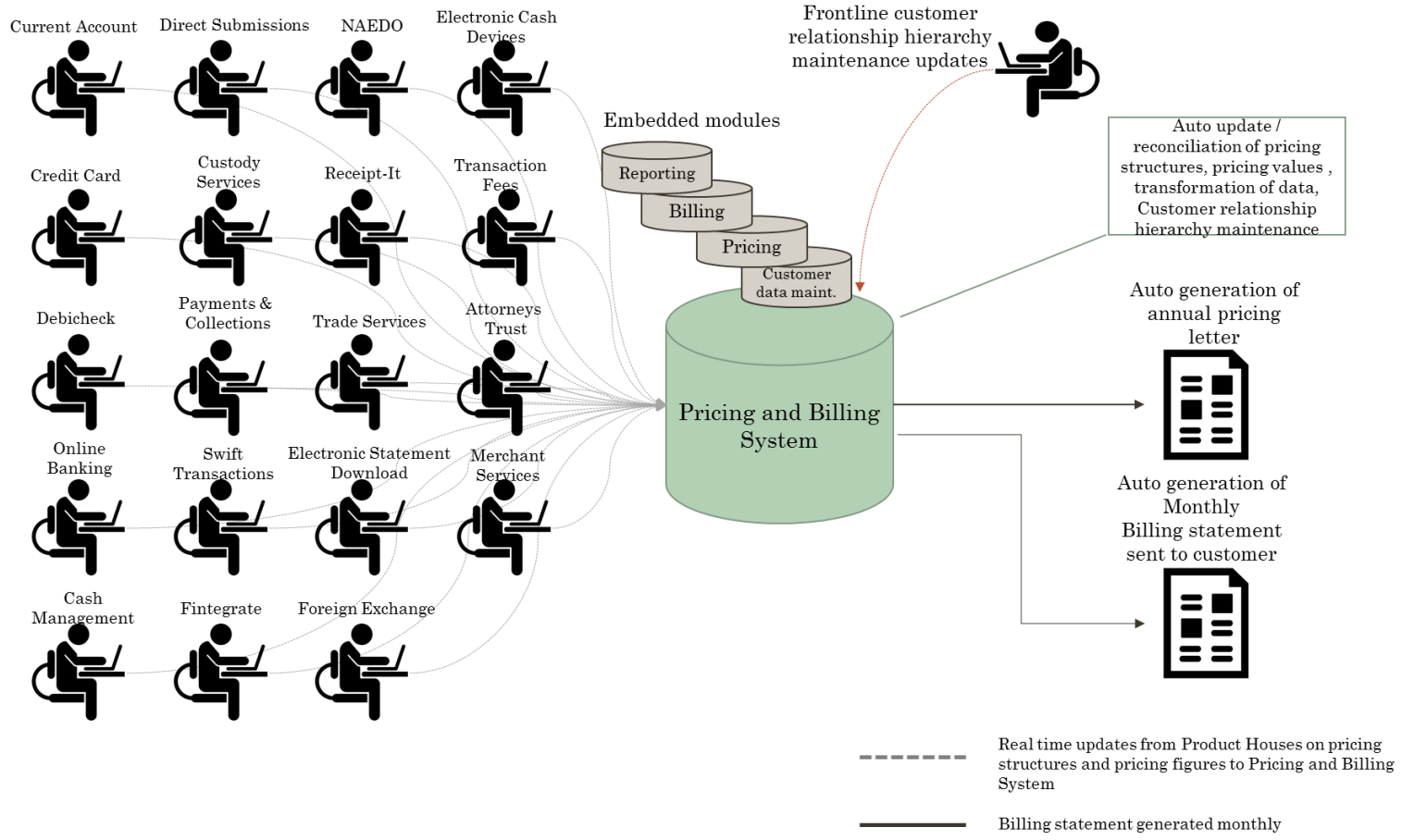


FIGURE 18: SOLUTION 1: PROPOSED PRICING AND BILLING SYSTEM DATAFLOW MAP (NO ETL AND BILLING PROCESS)

The above suggested solution requires existing Pricing Specialists in Product Houses to be trained and given access to update their own pricing and product structures on one system, and for Relationship Managers to maintain customer relationship hierarchies on the same system. This system will then overlay the pricing updated by Product House Pricing Specialists onto customer relationship hierarchy data, thus allowing Relationship Managers to negotiate pricing and have oversight of billing on their customers. It hosts multiple modules with core capabilities, including Relationship data maintenance, pricing, billing, and reporting.

5.1.2 Proposed process for a configurable off-the-shelf system

This section takes a stepped approach to depict the process to be followed when:

1. Pricing Specialists implement annual pricing for a segment's customer base;
2. Transaction data becomes available for pricing and billing as and when customers perform transactions;
3. A customer takes up a new product – how this data will be consumed.

5.1.2.1 Implementing annual pricing

The proposed Pricing and Billing Engine will comprise of modules for:

1. Capturing default pricing for all products;
2. Setting price parameters for customer negotiation for all products;
3. Setting up pricing structures for all products;
4. Maintaining Customer Relationship Hierarchy data.

Each of these modules will reside and be maintained in the Pricing and Billing engine (seen in figure 19 below). In the current process, each of these modules represent systems which operate independently of one another, creating complexities in the maintenance of customer data, existing and new pricing data as well as challenges with generating accurate pricing letters. The centralization of all these modules into a single system will achieve not only efficiencies, but also accuracy of data. The output of all the parameters input in the system will enable the generation of pricing letters from data housed in a single repository.

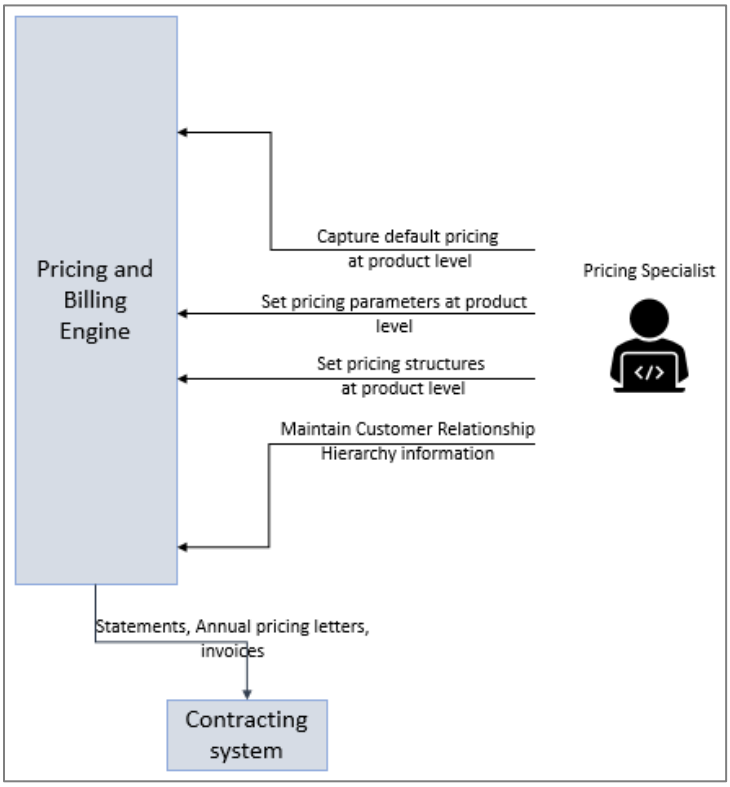


FIGURE 19: PRICING MODULES FOR ANNUAL PRICING

Proposed screens for capturing pricing

Product pricing:

Figure 20 below illustrates the front-end view for Pricing Specialists when capturing and executing new pricing for all customers for a segment. Pricing Specialists will be able to select a product (e.g. current account) and apply a blanket percentage increase for all customers who have the product on their profile who are currently sitting on default pricing. A separate, or similar percentage increase will be applied to customers sitting on negotiated pricing (that is, pricing outside of default pricing) who have the same product. In the 'Current Account' context, the percentage increases will cover services such as: cash withdrawals; cash deposits; card-related fees; cheques; statements; and transfers.

Underlying services pricing:

Alternatively, a Pricing Specialist may want to apply different percentages to each underlying service contained within the product. In this instance, the Specialist can select the product (e.g. current account), and a separate screen will appear, listing all the service charges linked to the product. The Specialist can apply new pricing to each service individually (see figure 21 below) and populate a date indicating when the new pricing must come into effect for all customers with the product in a specific segment.

Service level pricing structures:

Figure 22 depicts the pricing structures for a service linked to a product. Pricing Specialists can capture and implement pricing at this level based on the structure of the product - that is, whether the product pricing structure is tiered in nature or a flat fee application. Each customer segment may have a different pricing structure for the same product. Pricing structure changes for all products should be approved by the Pricing Heads in Product Houses.

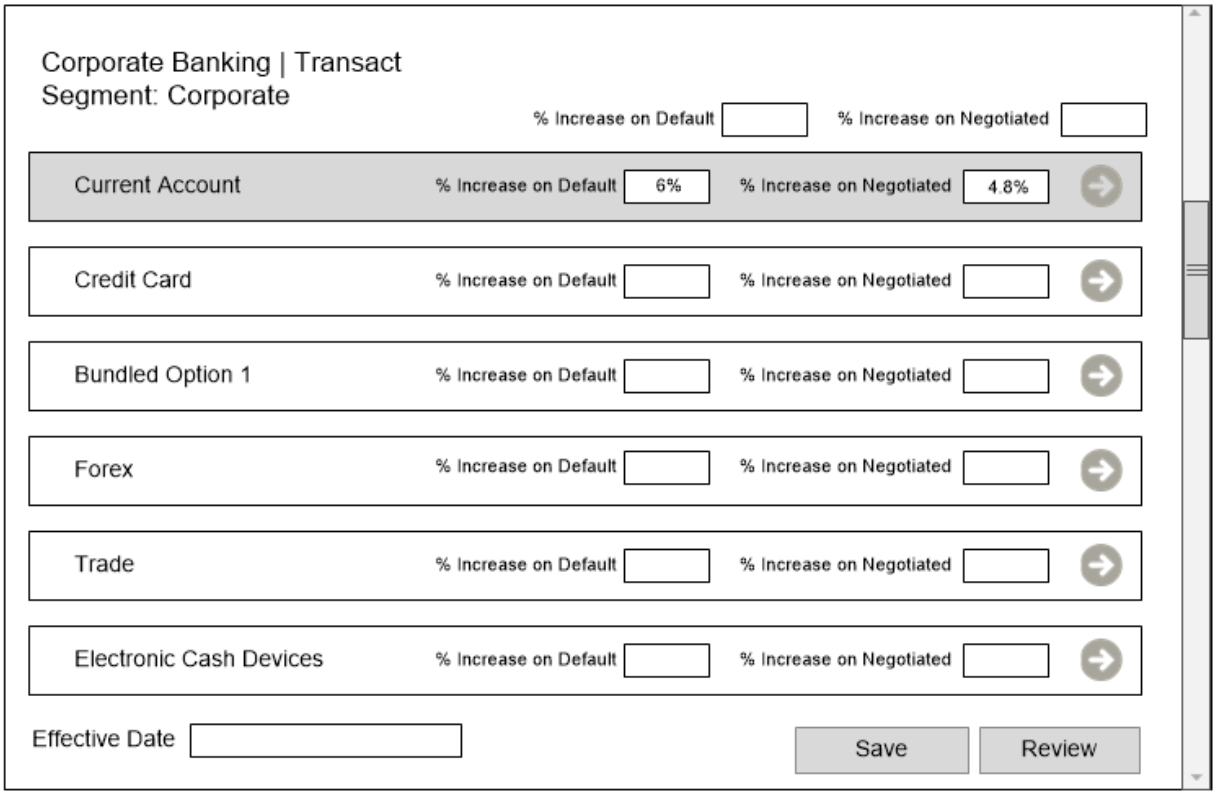


FIGURE 20: DESIGN FOR CAPTURING ANNUAL PRICING ON THE PRICING AND BILLING ENGINE – PRODUCT LEVEL PRICING

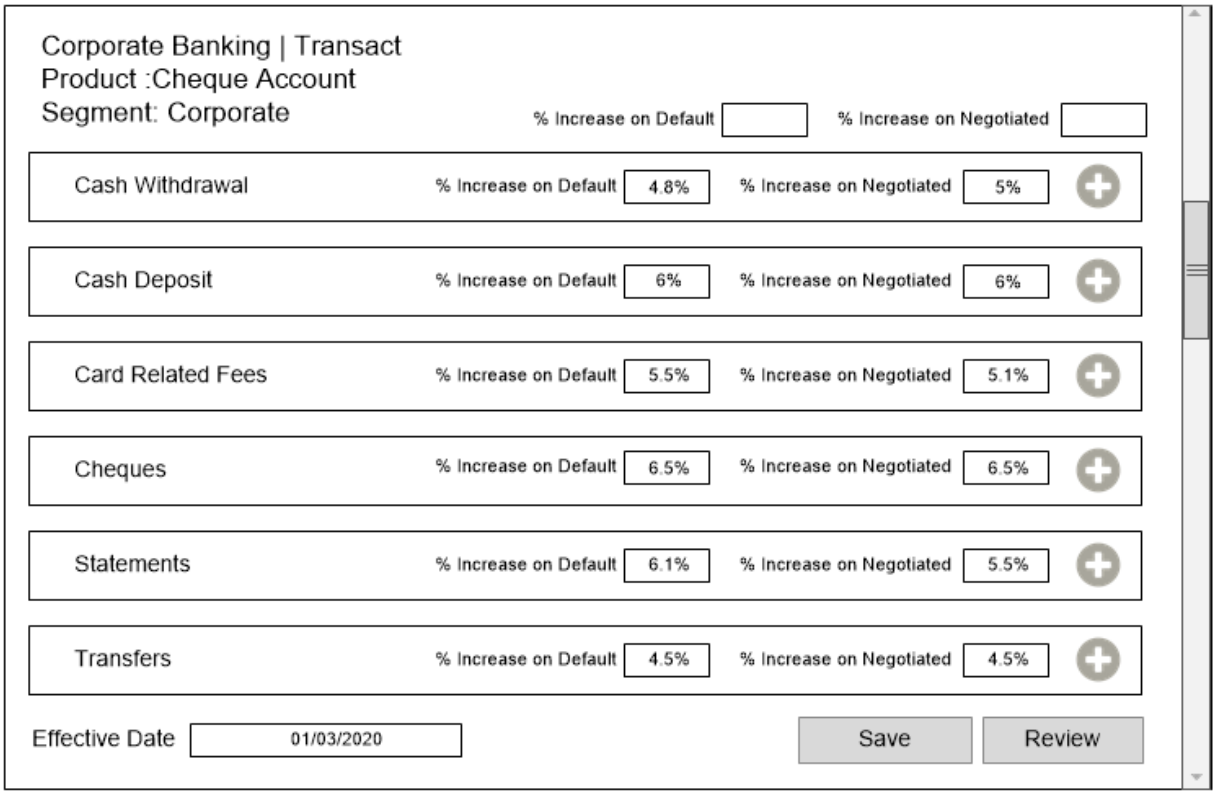


FIGURE 21: CAPTURING PRICING FOR SERVICES RELATED TO A CURRENT ACCOUNT – SERVICE LEVEL PRICING

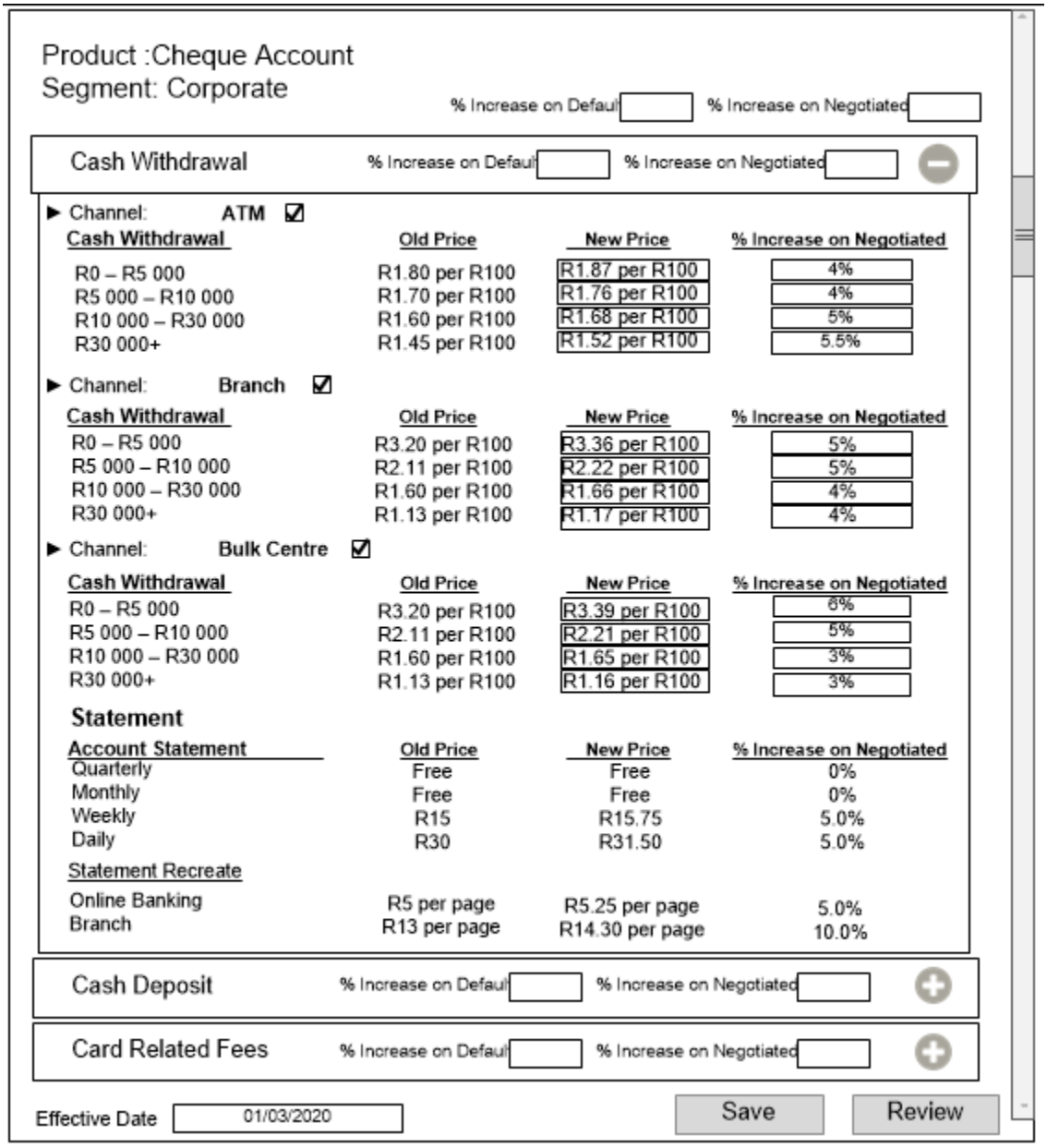


FIGURE 22: CAPTURING PRICING AT PRICING STRUCTURE LEVEL – SERVICE LEVEL PRICING

Availability of customer and transactional data to drive new price points for annual pricing

A bank needs to continually review the effectiveness of its current pricing structures and price points. The best way to do this is analysing the nature of transactions, the channels through which they were effected, and the volume and value of customer transactions. This would give the bank a clear understanding of customer behavior. The Pricing and Billing engine allows for the bank to leverage this data to improve on its value offerings. Additionally, it allows for transparency between the bank and customer on billing. Figure 23 below illustrates how data will be consumed in the pricing and billing engine to drive or set new pricing strategies for implementing the annual pricing process. As a customer performs a transaction via various channels such as branch banking; digital banking; a merchant device;

or an Automated Teller Machine (ATM), data about the customer; the channel used to orchestrate a transaction; the product used for the transaction (e.g. a debit or credit card); and the associated account number is published to a 'Data Lake,' which is a data repository used for classifying, aggregating and consolidating transactional data per customer, real-time. This data is then consumed by the Pricing and Billing engine, which directs each transaction to the relevant product, and product structure (as per figure 22 above). At the end of each month, each customer's transactions can be aggregated on a volume or value basis (based on the price driver for the product i.e. the volume of transactions or value of transactions for the month) resulting in the accurate pricing applied for the month and billing reflected in the customer's monthly statements. This process of pricing not only ensures that there are no revenue leakages or refunds to be levied to the customer, but also allows for analytical insights to be drawn around the efficacy of existing pricing models and product structures and transparency around pricing and billing. An additional benefit is that it reduces the bank's cost of maintaining multiple billing systems and human errors in pricing as the process of applying pricing and billing would be automated and centralized in a single system.

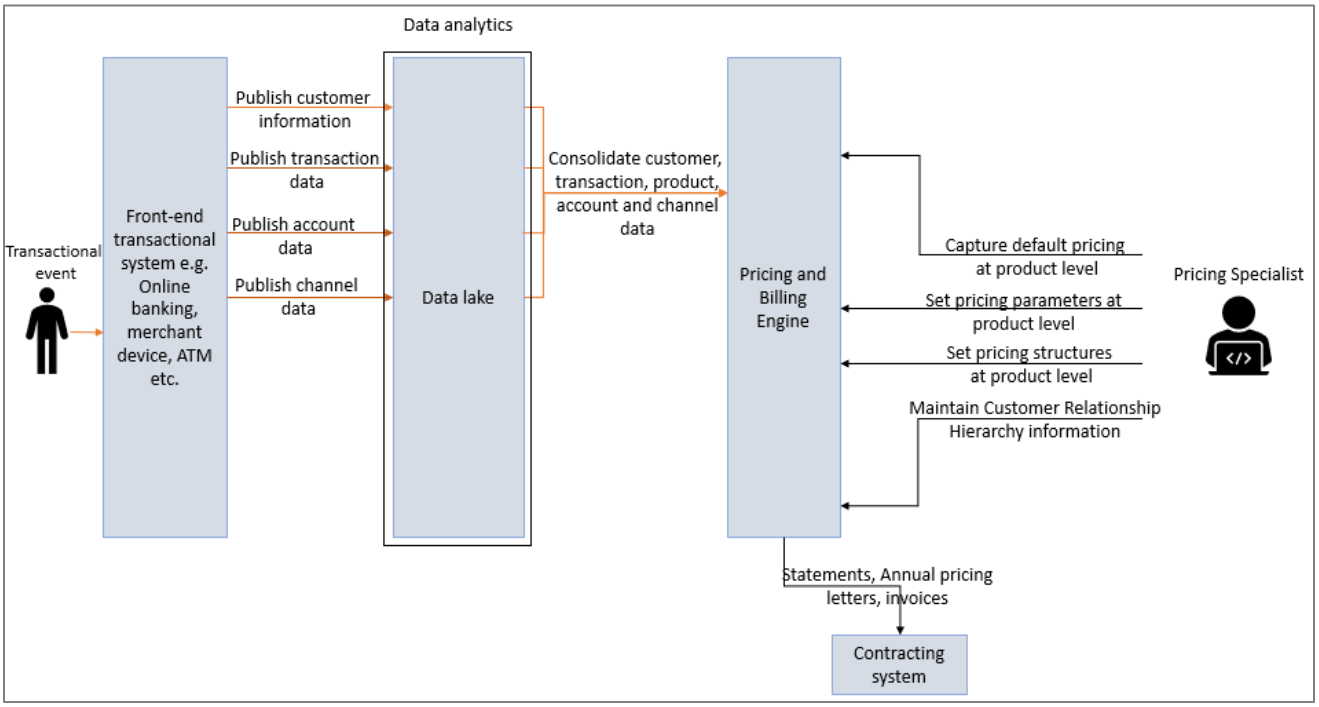


FIGURE 23: INTERFACING TRANSACTION DATA WITH THE PRICING AND BILLING ENGINE

New product take-up for a customer

In the event that a customer applies for a product via any channel, the customer will be scored for affordability of the product using the bank's current scoring engine (see figure 24 below). Upon approval, the product and its pricing structure will be loaded to the customer's profile / hierarchy

structure in the Pricing and Billing engine via an integration point of the two systems. Business rules will necessitate that default pricing is applied for that product under the said customer's relationship hierarchy structure until transactional data is made available (through product usage), which means that new pricing can be applied. The system will also provide functionality for a Pricing Specialist or Relationship Manager to override default pricing and apply negotiated pricing for a customer if the customer's current relationship profile is favourable to the bank.

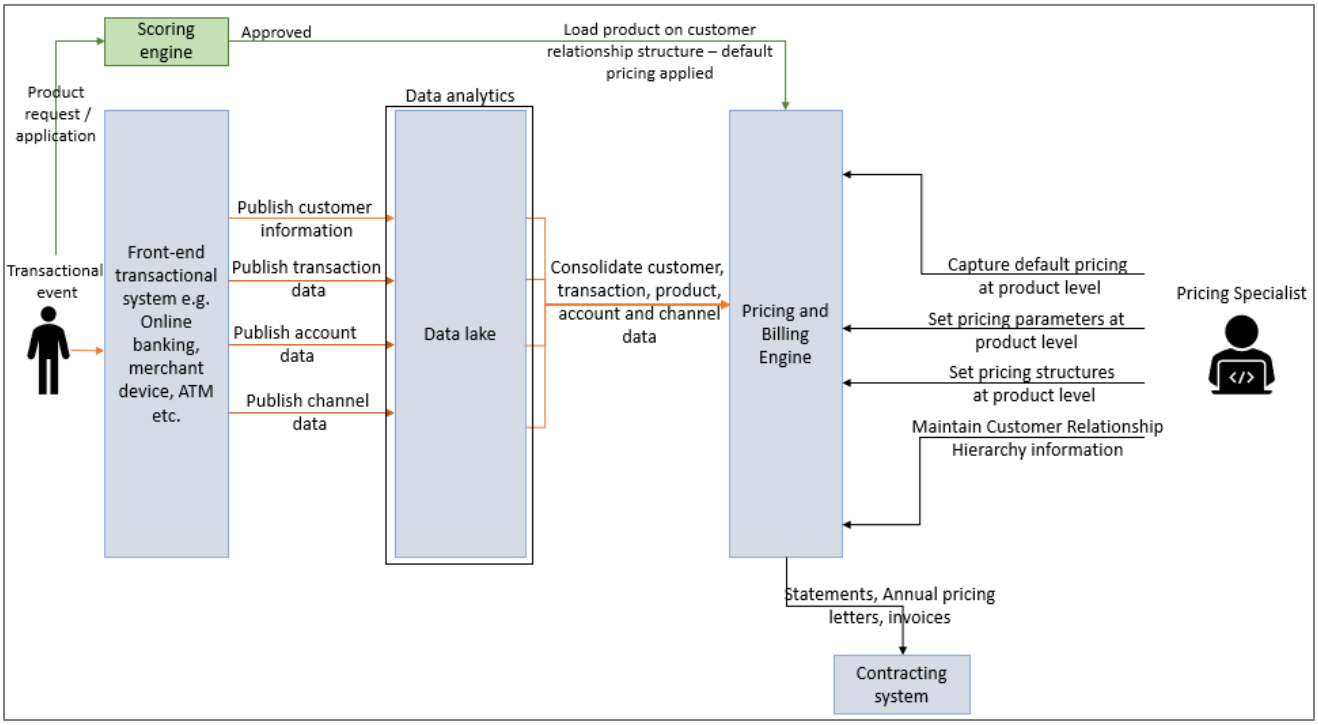


FIGURE 24: PRODUCT TAKE-UP FUNCTIONALITY

5.2 Cost-benefit analysis of Pricing and Billing Engine (Solution 1)

Table 5 below reflects a projected cash flow analysis of the proposed Pricing and Billing engine over a ten (10) year period. The initial capital outlay for the engine is projected to be R253 957 780 expensed over a four-year period (reflected as a negative cash flow as the bank pays over these funds to the vendor). This capital requirement covers implementation costs; initial re-configuration of the engine; loading products, product pricing structures and services and customer relationship hierarchy data structures. Operational costs associated with running the system (that is, annual licensing fees, product configuration and customer data maintenance fees) are expensed over the remainder of the projected period and adjusted annually to account for inflation (five per cent is used as a realistic and reasonable measure for all costs to be incurred). System development costs are also accounted for, to integrate the

Pricing and Billing engine to existing systems in the bank, such as the contracting system used to generate customer statements; the Data Lake, a central repository for consolidating and classifying transactions to be consumed by the engine, as well as the bank's scoring system.

The engine will benefit the bank financially from a cost saving perspective. Current expenses to be reduced include costs associated with the current pricing system and the 19 billing systems in use. These are reflected as positive cash flows as the bank will no longer be incurring these costs in the Income Statement. These costs consist of the current annual licensing fees for the pricing and billing systems in use today. The pricing system licensing fees will no longer be incurred from the fourth year as the Pricing and Billing engine is set to be fully implemented and operational in the fourth year. A phased approach will also be used to decommission billing systems as certain products and services come online during the implementation phase of the Pricing and Billing engine. The full benefit of these decommissions will be realised from the sixth year. Financial benefit will also flow from the reduction in development effort spent on the current pricing and billing systems, especially during the annual pricing process. Product Houses are encouraged not to make any major structural changes to their products which may require significant development work, unless the changes are necessary to maintain or gain market share. These development costs are therefore linked to staff costs, to be fully realised from the fourth year, and adjusted for inflation to account for annual staff increases.

Due to the centralization of pricing and billing data, the bank can also expect a reduction in revenue leakages which are incurred because of the current operating model.

Figure 25 reflects the net benefit of the cash flow statement from Table 5. This project is expected to generate net positive cash flows within a five-year period. The Net Present Value (NPV), which is the difference between the present value of cash inflows and the present value of cash outflows over a period (ten-years is used in this calculation), discounted at a twelve (12) per cent rate (the bank's preferential rate for undertaking large projects), is R11 029 604. This indicates the project is feasible as the NPV is positive. The Internal Rate of Return (IRR), a measure indicating the attractiveness of a project and the rate at which the NPV of cash flows is equal to zero, is 13 per cent (a percentage point higher than the bank's preferential rate of 12 per cent on projects). This solution not only produces positive financials but can also embrace the bank's future aspirations around strategic positioning, transparency, effective and efficient processes and customer satisfaction, which will impact sales growth in future.

TABLE 5: COST BENEFIT ANALYSIS FOR A CONFIGURED, OFF-THE-SHELF SOLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Capital Outlay	**-R 30 402 000**	**-R 94 967 154**	**-R 77 725 959**	**-R 50 862 667**	**-R 24 767 298**	**-R 26 005 663**	**-R 27 305 946**	**-R 28 671 243**	**-R 30 104 806**	**-R 31 610 046**	***-R422 422 782***
Proof of Concept and costs associated to vendor selection	-R 30 402 000	R -	R -	R -	R -	R -	R -	R -	R -	R -	***-R 30 402 000***
Installation and licensing fees	R -	-R 66 532 000	-R 28 753 120	-R 25 482 180	-R 26 756 289	-R 28 094 103	-R 29 498 809	-R 30 973 749	-R 32 522 437	-R 34 148 558	***-R 302 761 245***
Configuration, product, services and customer data loading	R -	-R 23 286 789	-R 39 127 542	-R 21 894 277	R 1 988 991	R 2 088 441	R 2 192 863	R 2 302 506	R 2 417 631	R 2 538 513	***-R 70 779 665***
Integrations to other services and systems	R -	-R 5 148 365	-R 9 845 297	-R 3 486 210	R -	R -	R -	R -	R -	R -	***-R 18 479 872***
Cost savings											
Operational expenditure on current pricing system	**R -**	**R 336 154**	**R 2 874 265**	**R 1 706 088**	**R 33 518 536**	**R 35 194 463**	**R 36 954 186**	**R 38 801 896**	**R 40 741 990**	**R 42 779 090**	***R 232 906 669***
Annual licensing costs	R -	R -	R -	R -	R 31 727 144	R 33 313 501	R 34 979 176	R 36 728 135	R 38 564 542	R 40 492 769	***R 215 805 267***
Annual development and maintenance costs	R -	R 336 154	R 2 874 265	R 1 706 088	R 1 791 392	R 1 880 962	R 1 975 010	R 2 073 761	R 2 177 449	R 2 286 321	***R 17 101 402***
Operational expenditure on current billing systems	**R -**	**R 423 567**	**R 1 798 628**	**R 17 363 303**	**R 22 666 543**	**R 65 799 870**	**R 69 089 864**	**R 72 544 357**	**R 76 171 575**	**R 79 980 153**	***R 405 837 859***
Annual licensing costs (19 billing systems)	R -	R -	R -	R 14 610 397	R 17 775 991	R 60 664 791	R 63 698 031	R 66 882 932	R 70 227 079	R 73 738 433	***R 367 597 653***
Annual development and maintenance costs	R -	R -	R 1 009 105	R 1 426 716	R 3 498 052	R 3 672 955	R 3 856 602	R 4 049 432	R 4 251 904	R 4 464 499	***R 26 229 266***
Revenue leakage reduction	R -	R 423 567	R 789 523	R 1 326 190	R 1 392 500	R 1 462 124	R 1 535 231	R 1 611 992	R 1 692 592	R 1 777 221	***R 12 010 940***
Annual savings on operational expenditure	***R -***	***R 759 721***	***R 4 672 893***	***R 19 069 391***	***R 56 185 079***	***R100 994 333***	***R106 044 050***	***R111 346 252***	***R116 913 565***	***R122 759 243***	***R 638 744 528***
Net Benefit (Loss)	***-R 30 402 000***	***-R 94 207 433***	***-R 73 053 066***	***-R 31 793 276***	***R 31 417 781***	***R 74 988 670***	***R 78 738 104***	***R 82 675 009***	***R 86 808 760***	***R 91 149 198***	***R 216 321 746***

NPV @ 12%	R11 029 604
IRR	13%
Payback period	within 5 years

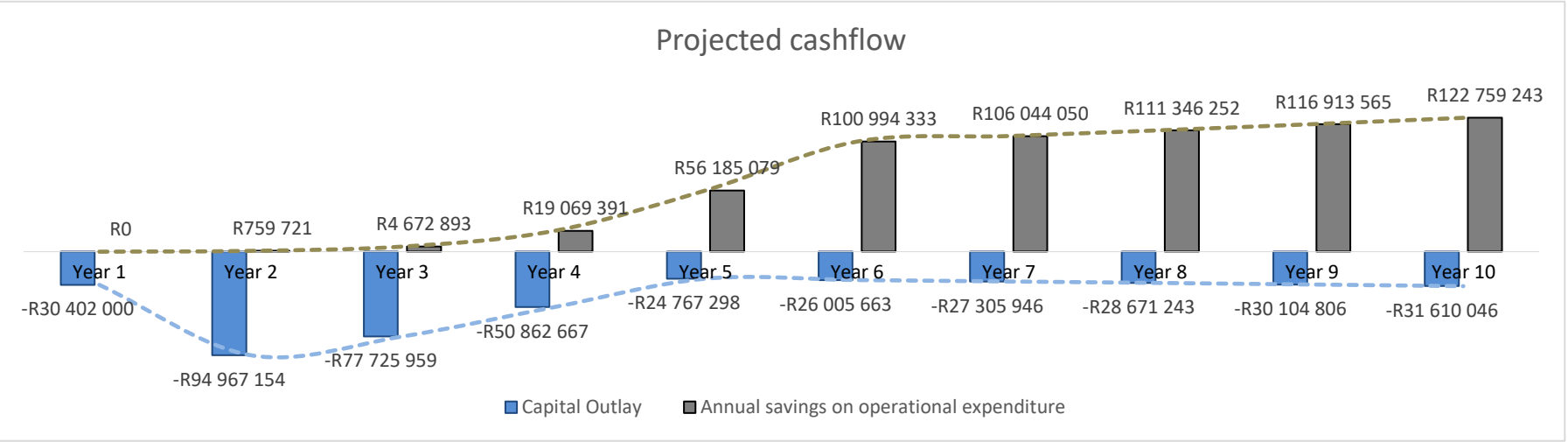


FIGURE 25: CASH FLOW ANALYSIS OF THE PRICING AND BILLING SYSTEM IMPLEMENTATION

5.3 Implementation approach of a Pricing and Billing Platform

The Pricing and Billing platform is expected to be implemented over a four-year period. The implementation approach can be seen from the below Gantt Chart. The first year will be used to solicit business and functional requirements, vendor assessments and selection, and evaluation of a Proof of Concept (POC) from the chosen vendor. The second year will be used for product and customer data uploads and configuration of the solution. The third year will focus on integrating the system with other back-end systems within the bank (such as the Template Management System) in preparation for testing the annual pricing process. Although the annual pricing function will be complete in the third quarter of the third year, the implementation of this process can only occur in accordance with the bank's financial year end, which means execution will have to be carried out in the fourth year. The fourth year's focal point will be integrating front-end systems (such as App, Online Banking, and Branch systems) to the Data Reservoir which will further be integrated into the Pricing and Billing Engine, so as to feed real-time transactional data into the engine for aggregation and billing. End-to-end testing for the solution will be undertaken before going live in the first quarter of 2024.

TABLE 6: IMPLEMENTATION APPROACH OF THE PRICING AND BILLING ENGINE

	2020				2021				2022				2023				2024			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
High level requirements solicitation																				
Request For Proposal : vendor sourcing																				
Analysis of solutions																				
Vendor selection																				
Detailed Business Requirements																				
Functional Specification Design																				
Architectural design																				
Proof of Concept																				
Product Structure upload																				
Customer data upload																				
Current pricing upload																				
Pricing module configuration																				
Billing module configuration																				
Template Management System configuration																				
Integration to Template Management System																				
Template Management System testing																				
Annual pricing implementation test																				
Front-end systems configuration																				
Data Reservoir configuration																				
Front-end to Data Reservior integration																				
Integrations testing																				
Data Reservoir to Pricing and Billing Engine integration																				
Integrations testing																				
End -to-end testing																				

5.2 Solution 2: Empower Product Houses to implement their own pricing on the current pricing system.

The current pricing process for Bank XYZ doesn't allow for Product Houses to initiate and fulfil their own pricing function on the pricing system (Siebel). The initiation and fulfillment of the pricing objective sits outside Product Houses, which creates complexity and multiple data errors. The alternative solution proposed (see figure 26 and 27 for the process) is the provision of access and training to Product House Pricing Specialists to use the pricing tool (Siebel) to implement their own default pricing parameters for products on the system. The fundamental change in process here, is the exclusion of the Business Intelligence Unit for extracting pricing data from the pricing system, applying it to customer data on another system, and loading the appended customer and pricing data onto the pricing system again. This is step 8 of the process in figure 4. Comparisons of this proposed process and the current process (Appendix C) can be made. The Extraction, Transformation and Loading of data process (integration from Siebel onto a Business Intelligence Unit and back into Siebel) would cease to exist as this functionality can be developed onto Siebel, with no integration requirements with other systems. This will reduce process complexity, the dependency and amount of work central pricing teams must do in relation to uploading default pricing parameters for the entire bank, the multiple pricing errors generated from the ETL process, the turnaround time for effecting pricing and improve on the overall project management of the pricing process. The proposed solution still carries the risk of updating multiple billing systems with pricing information. It therefore doesn't solve billing-related issues or financial leakages emanating from incorrect billing.

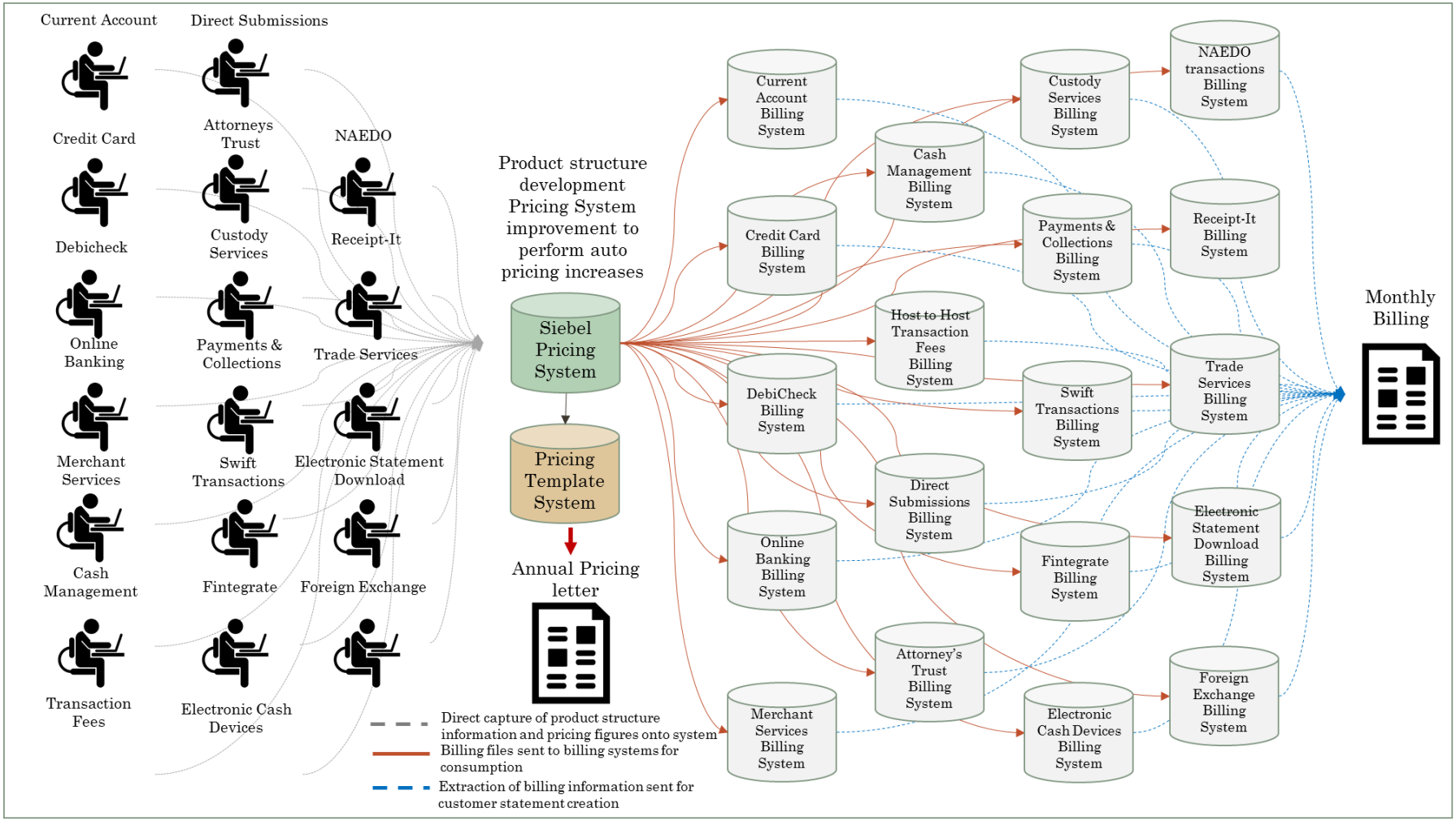


FIGURE 26: SOLUTION 2: PROPOSED DATA AND PROCESS FLOW MAP (NO ETL PROCESS)

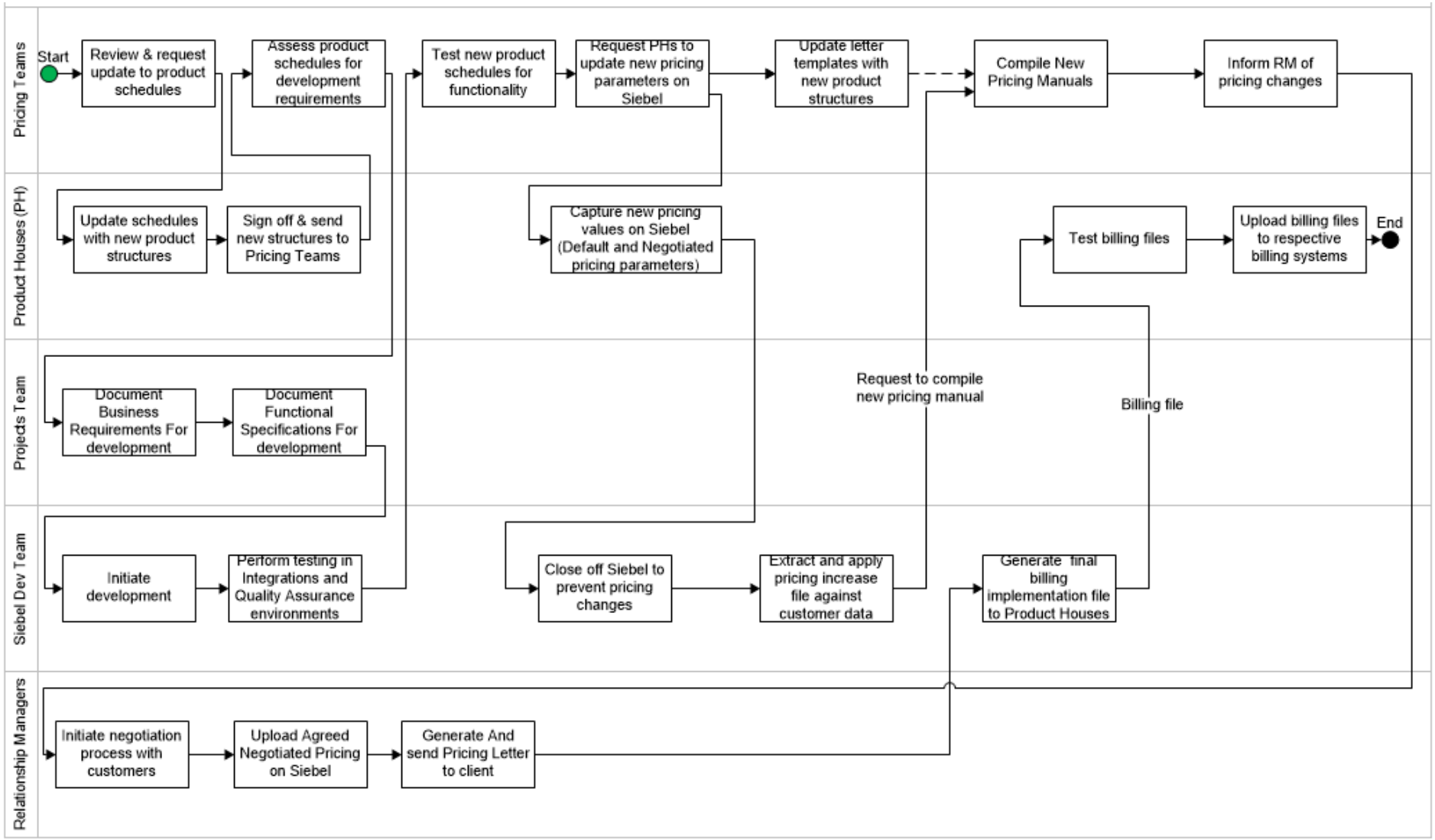


FIGURE 27: PROCESS FOR ALTERNATIVE SOLUTION. NO ETL PROCESS

5.2.1 Cost-benefit analysis of empowering Product Houses to implement their own pricing on the current pricing system

From a financial point of view, this solution provides no real benefits to the bank. Table 6 below highlights the operational costs incurred in the pricing process (reflected as cash outflows / negative cash flows). These are licensing fees for both the current pricing and billing systems as well as annual development costs on all systems involved (development and maintenance costs are calculated using the cost to company information of staff; sixty per cent of which is allocated to annual pricing whilst the balance is allocated to other projects). This solution only has an impact on operational costs and requires no capital funding or new system implementation. The only financial benefit (which has very minimal impact on the overall financials of the pricing process and represented as a cash inflow / positive cash flow) from the change in process can be seen in figure 28 – the reduction in costs associated with the Extraction, Transformation, and Loading process. These figures are represented as cash inflows or positive cash flows as they are a cost saving to the business (also represented in table 6 noted as 'ETL Process'). These are the current ETL costs expensed for the annual pricing process and are adjusted for an annual five per cent inflation over a ten-year analysis period. The same period of analysis will be used to compare all solutions.

This solution has also been evaluated against three metrics (for which it has failed all three), they are: Net Present Value (NPV) – outflows of cash consistently outweigh the inflows and therefore a negative NPV is calculated (-R516 068 238); Internal Rate of Return – cannot be determined due to the perpetual outflows of cash; and the Payback period – also cannot be determined because of the negative NPV. It also cannot be reasonably assumed this solution will reduce revenue leakage and sufficiently address customer pain points. This solution is therefore not a viable option as it fails to address financial leakages, customer concerns, and does very little to redress the effects of a poorly designed process.

TABLE 7: COST BENEFIT ANALYSIS OF SOLUTION 2

Expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Operational expenditure on current pricing system	**-R 26 077 996**	**-R 27 906 896**	**-R 29 853 491**	**-R 31 897 416**	**-R 34 043 536**	**-R 35 745 713**	**-R 37 532 999**	**-R 39 409 649**	**-R 41 380 131**	**-R 43 449 138**	***-R 347 296 966***
Annual licensing costs	-R 24 604 213	-R 26 359 424	-R 28 228 645	-R 30 191 328	-R 32 252 144	-R 33 864 751	-R 35 557 989	-R 37 335 888	-R 39 202 683	-R 41 162 817	***-R 328 759 882***
Annual development and maintenance costs	-R 1 473 783	-R 1 547 472	-R 1 624 845.71	-R 1 706 088	-R 1 791 392	-R 1 880 962	-R 1 975 010	-R 2 073 761	-R 2 177 449	-R 2 286 321	***-R 18 537 084***
Operational expenditure on current billing systems	**-R 48 544 464**	**-R 50 971 687**	**-R 53 520 272**	**-R 56 196 285**	**-R 59 006 100**	**-R 61 956 405**	**-R 65 054 225**	**-R 68 306 936**	**-R 71 722 283**	**-R 75 308 397**	***-R 610 587 054***
Annual licensing costs (19 billing systems)	-R 47 532 451	-R 49 909 074	-R 52 404 527	-R 55 024 754	-R 57 775 991	-R 60 664 791	-R 63 698 031	-R 66 882 932	-R 70 227 079	-R 73 738 433	***-R 597 858 062***
Annual development and maintenance costs	-R 2 877 856	-R 3 021 749	-R 3 172 836	-R 3 331 478	-R 3 498 052	-R 3 672 955	-R 3 856 602	-R 4 049 432	-R 4 251 904	-R 4 464 499	***-R 36 197 364***
Revenue leakage reduction	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	***R -***
ETL Process	R 1 865 843	R 1 959 135	R 2 057 092	R 2 159 947	R 2 267 944	R 2 381 341	R 2 500 408	R 2 625 428	R 2 756 700	R 2 894 535	***R 23 468 373***
Total operational expenditure	***-R 74 622 461***	***-R 78 878 584***	***-R 83 373 763***	***-R 88 093 701***	***-R 93 049 636***	***-R 97 702 118***	***-R 102 587 224***	***-R 107 716 585***	***-R 113 102 414***	***-R 118 757 535***	***-R 957 884 019***

NPV @ 12%	-R516 068 238
IRR	NPV is Negative, no IRR
Payback period	No payback period

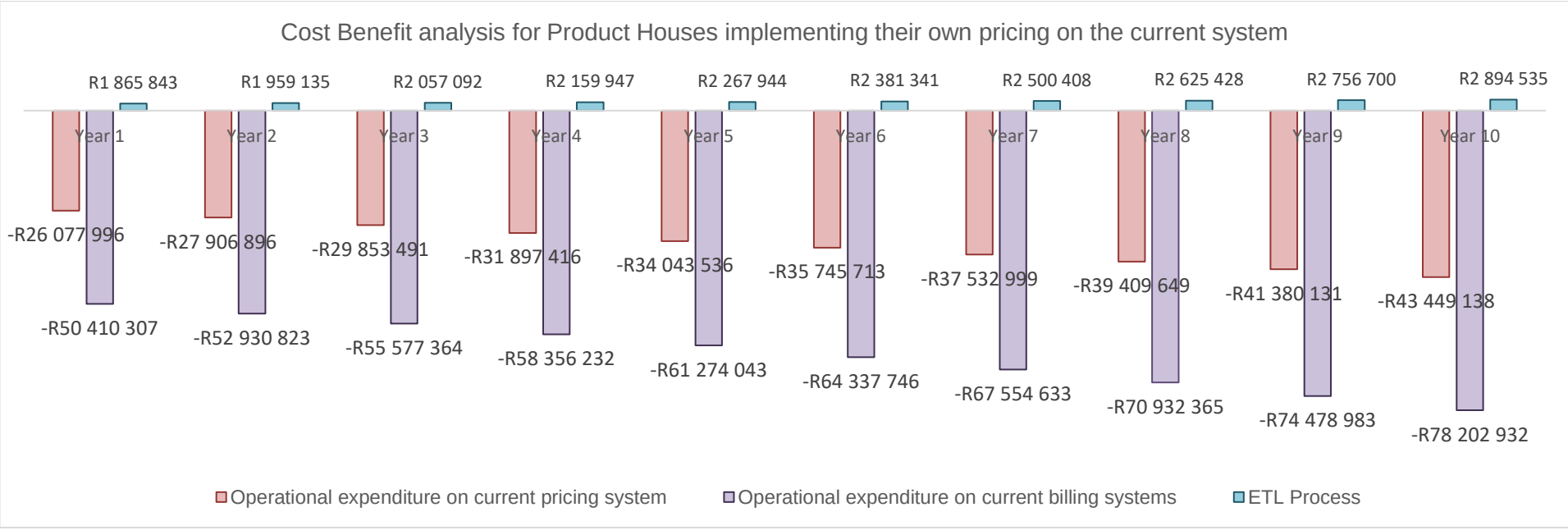


FIGURE 28: COST BENEFIT ANALYSIS OF SOLUTION 2

5.2.2 Implementation plan for solution 2: empowering Product Houses to implement their own pricing on the current pricing system.

This solution requires business case approval, solution design, and development and testing. This type of system development would follow the SDLC (System Development Life Cycle) framework. Table 7 below depicts the projected timelines for implementation. This solution would take eleven (11) months to implement as significant development to the current system and training to Pricing Specialists in Product Houses would be required. This solution is attractive from a 'time to implementation' perspective and to drive short-term, tactical objectives. However; it doesn't provide competitive advantage over other banks, nor does it drive long-term strategy or resolve errors relating to incorrect billing.

TABLE 8: IMPLEMENTATION PLAN FOR SOLUTION 2 - IMPLEMENTING ETL PROCESS INTO CURRENT PRICING SYSTEM

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Business Case and approval												
Business Requirements Specification												
Functional Specification Design												
Development												
Functional and Regression Testing												
Training												
Change Management & Implementation												

5.4 Solution 3: Shifting from a federated pricing model to one with multiple streams.

The federated pricing process currently employed is designed such that all segments (Corporate, Commercial and Public-Sector Banking) are serviced by central pricing teams. All resources, from Project Management Teams, Business Intelligence, Siebel IT development and Central Pricing Teams are dedicated to servicing all three segments. The proposal is to segment these teams and run three separate pricing processes, each independent of the other, and each fully capacitated or resourced. Benefits to this model are clear separation of duties and reduced workloads for each functional team and the supposed reduction in pricing and billing errors. However; such a model in not without its drawbacks, some include increased operational expenditure associated with increased human capital, no tangible process improvements, and potentially no reduction in financial losses. This solution mainly improves the governance, management, and accountability of the pricing process, with minimal to no impact on the bottom-line, but it may also result in different pricing strategies emerging from the segments. See the proposed model below.

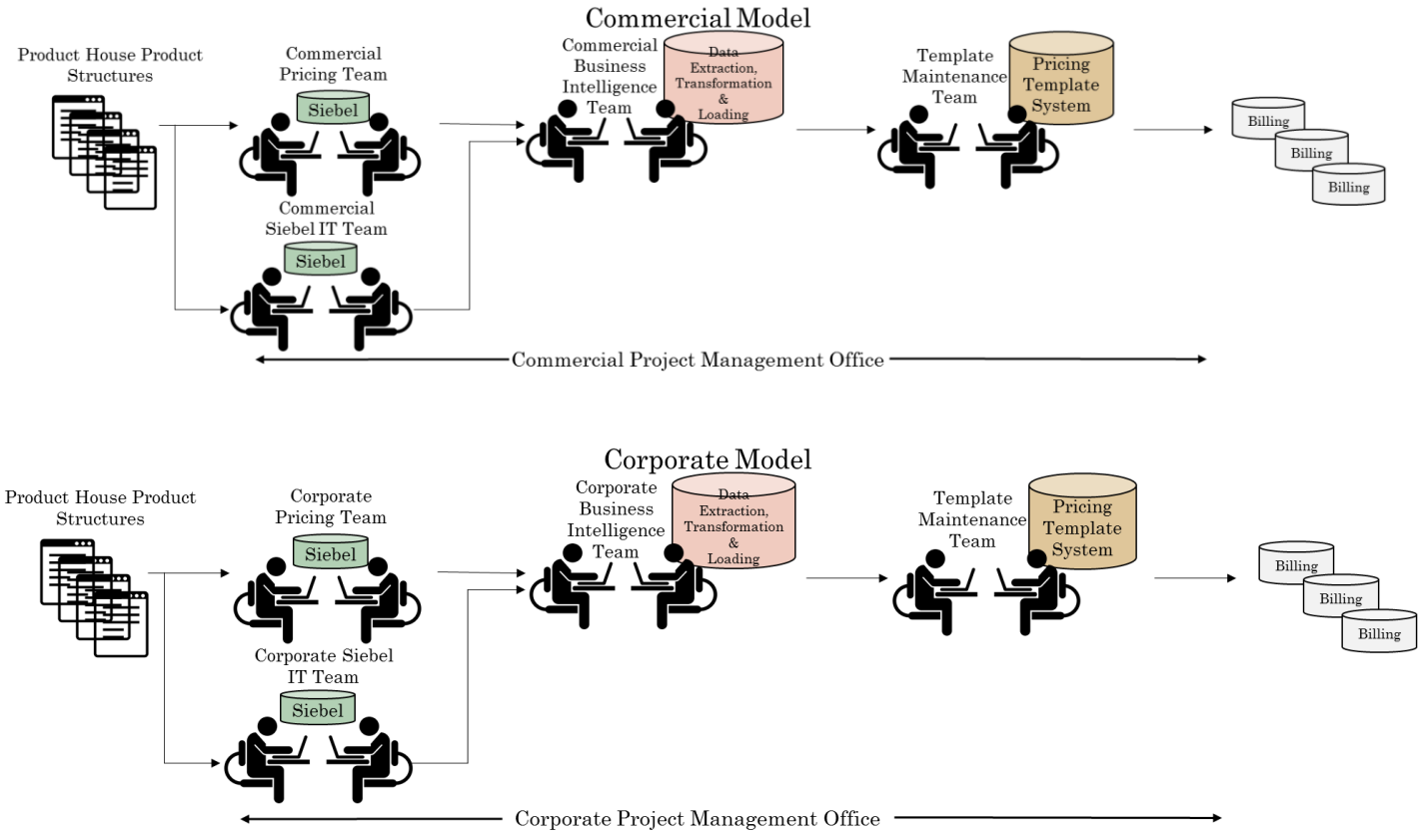


FIGURE 29: SOLUTION 3: IMPLEMENTATION OF SEPARATE WORK STREAMS.

5.3.1 Cost-benefit analysis of implementing multiple streams to execute the current pricing process

Implementing multiple streams to execute the annual pricing process fundamentally changes the organisational structure currently in use. Table 8 and figure 30 illustrate the human capital impact of setting up two structures, each running pricing in the corporate and commercial segments independently, and wholly allocated to annual pricing. For example, two Heads of Pricing would be required in each segment, with each Head being supported by two Central Pricing Specialists. The current Siebel and ETL Development Teams would need to be split and an additional head count acquired in each team so that the new operating model is supported by two Developers (one for Siebel and the other for ETL) and two Testers in each segment. The Project Office currently has three staff members for annual pricing, these include the Programme Manager, Project Manager, and Business Analyst. This structure would need to be duplicated for a separate pricing stream, as would be the case for Risk and Compliance Officers and Change Managers who engage with frontline on changes to pricing and the process.

This proposed solution attracts an additional cost of R7.42 million, a 64 per cent increase in human capital costs and 64.7 per cent increase in headcount associated with executing the pricing process. However; the cost-benefit analysis of this solution cannot be represented as a cashflow analysis (as represented in the other solutions) as there is no surety of positive cash flow generation from this solution. Although the financial benefits cannot be quantified or projected (and therefore cannot be assessed for NPV, IRR, or payback period), this solution has non-tangible benefits such as better governance, accountability, oversight and execution.

TABLE 9: COST BENEFIT ANALYSIS OF MULTIPLE PRICING STREAMS

	Current headcount	Current cost	Proposed headcount	Projected costs	Additional costs
Central Pricing Specialists	3	R 1 950 000	4	R 2 600 000	-R 650 000
Head of Pricing	1	R 1 050 000	2	R 2 100 000	-R 1 050 000
Siebel Development and testing	3	R 2 160 000	4	R 2 880 000	-R 720 000
Project Office	3	R 2 040 000	6	R 4 080 000	-R 2 040 000
Risk and Compliance	2	R 1 120 000	4	R 2 240 000	-R 1 120 000
ETL development and testing	3	R 2 160 000	4	R 2 880 000	-R 720 000
Change management	2	R 1 120 000	4	R 2 240 000	-R 1 120 000
Total	**17**	**R 11 600 000**	**28**	**R 19 020 000**	**-R 7 420 000**

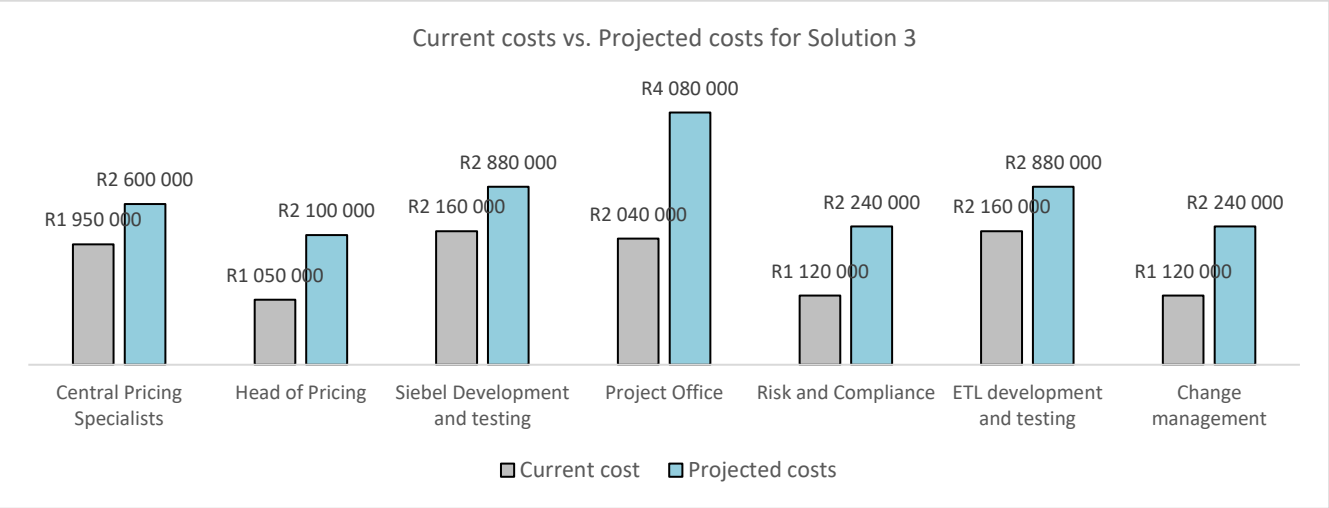


FIGURE 30: FINANCIAL IMPACT ON HUMAN CAPITAL

5.3.2 Implementation plan for Solution 3

Recruitment and training of additional staff to execute the pricing process in a separate segment is estimated to take eight months (see table 9 below). A business case detailing the need for additional staff and job specifications of each role would need to be put forward to the Human Capital Director and Chief Financial Officer for approval. Upon approval, the recruitment process can commence. A project management framework and administrative tasks would need to be undertaken to ensure governance, and general management of this stream of work. As with solution 2, this solution is attractive from a tactical standpoint, but is more beneficial to the bank (resolution of internal challenges) as opposed to benefitting the customer. It cannot be determined what tangible value the customer can extract from this solution.

TABLE 10: SOLUTION 3 IMPLEMENTATION PLAN

Activity	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Business Case Justification to Human Resources								
Developing job specifications								
Job postings								
Candidate sourcing								
Interviews and Recruitment								
Project administration and set up								
Training								

5.4 Solution Assessment Matrix

Over and above assessing the solutions from a financial and 'time to implement' approach, it is important to evaluate the solutions with subject matter experts on other sets of criteria (critical success factors) to form a blended view of tangible and non-tangible benefits. It is important to note this project seeks not only to benefit the bank, but the end customer as well. The solution selected should be sustainable and have strategic intent.

A rating scale of 1 to 10 is used to evaluate each criterion, the rationale for each value is given in Table 11. This rating scale is used to assign value on how effectively each recommendation can address the customer's needs.

TABLE 11: RATING SCALE FOR EVALUATING SOLUTIONS

Value	Rationale
1	Does not meet customer requirements nor does it address root causes
2	Barely meets customer requirements and barely addresses root causes
3	Meets very few customer requirements and addresses very few root causes
4	Meets some customer requirements, but not clear on how it will address root causes
5	Partially meets some customer requirements and reduces risks associated with root causes, however, no significantly impact
6	Moderately meets customer requirements and moderately addresses root causes
7	Satisfactorily meets customer requirements and addresses root causes, however, the risk is not negligeable
8	Exceeds customer requirements and addresses root causes sufficiently
9	Clearly exceeds customer requirements and effectively addresses root causes
10	Substantially exceeds customer requirements and clearly addresses all root causes permanently - a significant step change in operations

Table 12 below illustrates the assessment criteria (identified in the second workshop session) and rationale or explanation for each criterion. This assessment criteria are used for assessing the recommendations, which will be Chapter 6 of this report. In table 12 below, participants allocated weightings to each criterion based on what they deem to be more important. The weights given below are averages from the 40 participants. Each solution is rated against its ability to address the customer need identified via the assessment criteria.

TABLE 12: MEASUREMENT CRITERIA AND RATIONALE FOR CRITERIA

Nr.	Criteria (Critical Success Factor)	Rationale
1	Easy to price a product and a customer	1. Can the solution execute pricing at product level and that pricing filter through and applied at customer level? 2. Can pricing be effected immediately upon capturing or does it have to pass through multiple areas for updating or is there a delay between capturing pricing and execution?
2	Allows for effective customer negotiation	1. Can the Relationship Manager obtain a portfolio view of the customer and simulate different price points and product bundling options for a customer during negotiation at the customer's premises?
3	Correct and effective pricing and pricing letter	1. Is billing reflective of pricing? Can a customer's pricing be adjusted based on usage? 2. Is there sufficient transparency between pricing and billing and will the customer be able to make this link? 3. Is the pricing letter system integrated to the pricing system?
4	Easy to bill a customer and provide billing statement	1. Can a statement easily be provided to a customer upon request? 2. Is there integration between the pricing and billing solution presented?
5	Reduction in revenue leakage	1. Does the solution pro-actively address revenue leakage? 2. Will the solution prevent high volumes of refunds to customers thereby improving customer experience?
6	Good reporting capability	1. Can the solution produce reliable, accurate reports on pricing and billing at regular intervals without having to perform extensive data mining exercises? 2. Can the solution produce standard reports with varying specifications provided by multiple users?
7	Streamlined process with reduced complexity	1. Does the solution depend on multiple sub-processes to be executed before the main process can be executed? 2. Will he solution reduce the number of stakeholders required to effect change or execute process?
8	Easy to implement	1. Is the solution easy to implement? 2. Will the solution take a significant amount of time to implement?
9	Cost efficient	1. Will the solution provide cost efficiencies?
10	Addresses data maintenance problems	1. Does the solution house all data in a central repository? 2. Is it easy to update pricing or customer information?
11	Reduces risks associated with template maintenance	1. Is the solution dynamic and intuitive enough to populate pricing letter templates based on the products a customer has?
12	Reduced dependency on development	1. Does the solution require extensive development when a Product House wants to change its product structure e.g. from tiered pricing to flat fee pricing?
13	Reduces risks associated with handovers	1. Does the solution reduce risks associated with passing of information or data from one functional area to another?

TABLE 13: SOLUTION ASSESSMENT MATRIX

Solution Assessment Matrix														
	Assessment Criteria													
Solution \ Criteria	Easy to price a product and a customer	Allows for effective customer negotiation	Correct and effective pricing and pricing letter	Easy to bill a customer and provide billing statement	Reduction in revenue leakage	Good reporting capability	Streamlined process with reduced complexity	Easy to implement	Cost efficient	Addresses data maintenance problems	Reduces risks associated with template maintenance	Reduced dependancy on development	Reduces risks associated with handovers	
Weighting	**12%**	**8%**	**10%**	**8%**	**9%**	**6%**	**11%**	**6%**	**5%**	**9%**	**4%**	**4%**	**8%**	***Weighted Score***
Purchasing a pricing IT solution underpinned by process	8	6	9	9	8	7	9	3	3	7	6	8	8	***7.35***
Re-engineer pricing process removing Business Intelligence function and ensuring Product Houses perform their own pricing on the current pricing system	7	4	7	3	6	4	7	9	9	6	3	4	6	***5.94***
Shifting from a federated model to a segment based pricing model	4	8	4	3	7	4	4	10	5	2	2	5	5	***4.78***

The calculation of the weighted score is as follows:

For ***solution 1***: (8*12%) + (6*8%) + (9*10%) + (9*8%) + (8*9%) + (7*6%) + (9*11%) + (3*6%) + (3*5%) + (7*9%) + (6*4%) + (8*4%) + (8*8%) = ***7.35***

Assessment of the three solutions indicate that solution 1, purchasing and configuring a pricing and billing solution has the highest score, followed by that of the second solution, which improves the process by eliminating non-value adding activities (Business Intelligence function) and configuring the process so that Product House Pricing Specialists initiate their own pricing on the pricing system. The highest rated solution is most likely to give the greatest value in comparison with other solutions and addresses customer requirements, staff frustrations, and revenue leakage satisfactorily, whilst participants believe that having separate work streams in the pricing process will deliver very little, if no benefit.

Chapter 6: Discussion of solutions / recommendations

This chapter discusses the efficacy of the solutions relative to the critical success factors identified.

Solution1: Purchase of a Pricing IT solution configured to process requirements with the ability to price and bill in real-time.

Solution 2: Enabling Product Houses to perform their own pricing on the current pricing system with system enhancements to auto Extract, Transform and Load product pricing data.

Solution 3: Shifting from a federated model to a Segment – specific operating model.

6.1 Assessment of solutions against Critical Success Factors

TABLE 14: DETAILED SOLUTION ASSESSMENT

Critical Success Factor	Solution efficacy rationale
Easy to price a product and a customer (12% weighting)	*Solution 1* (8 points) represents an easy way for products to be priced and the increases in prices to filter through and apply to the customer database. This is because product and customer information are housed in a single repository. The pricing IT solution is embedded with the capability to Extract, Transform and Load data, thereby updating product and customer pricing in a real-time, seamless manner. *Solution 2* (7 points) also allows for the Extraction, Transformation and Loading of data to take place in a single database, however this is only constrained to product pricing. Customer data would still need to be extracted from a separate system and the changes in prices updated separately. Although the risk of incorrect pricing diminishes from a Product perspective, it still exists for customer pricing. *Solution 3* (4 points) bears no significant impact on the accuracy of product and customer pricing. This solution simply reduces the workload of pricing teams and may reduce errors in pricing minimally as the risks of applying incorrect product and customer pricing remain.
Allowance for effective customer negotiation (8% weighting)	*Solution 1* (6 points) moderately meets the requirement for a process which allows for effective customer negotiation. This is because frontline staff will still depend on Product Houses to price their products timeously on the Pricing Engine before negotiation can take place for customer pricing (Product pricing is a basis for customer pricing). This solution does, however, make it easier for Product Houses to price their products since the solution is dynamic enough for Product Houses to build their own product pricing structures without the need for development. *Solution 2* (4 points). It is not clear how this solution will address the pressurized timelines allocated to negotiation of customer pricing. This solution still requires system development (a bottleneck in the current process), and therefore doesn't free up more time for Frontline staff to negotiate with customers on pricing. *Solution 3* (8 points). Separate development teams allocated to each segment increases capacity for development and reduces the time required for

	development. This means product pricing can be completed sooner, therefore increasing the time available for effective negotiation with the customer.
Ability to effect pricing and generating an accurate pricing letter (10% weighting)	*Solution 1* (9 points). A pricing and billing engine allows for real-time updates to pricing and billing. This system is designed to effect pricing and billing changes at a single source, without dependency on multiple systems for pricing, billing and letter generation. It ensures quality of information is driven at source, therefore significantly reducing the possibility of poor or inaccurate information being captured and supplied to the customer. *Solution 2* (7 points). This solution will have significant impact on product pricing with regards to accuracy of loading of information, and the speed with which product pricing information can be loaded onto the current pricing system. However, this solution doesn't address the current challenges of generation of pricing letters and letter templates. *Solution 3* (4 points). The shift to a segment – specific operating model will have little effect on the ability to effect pricing in an efficient manner and generate accurate letters. This is because this model poses the same risks identified in the Risk Prioritisation Model as the current operating model. This model only minimally reduces the effects of these risks but does not mitigate them.
Easy to bill a customer and provide a billing statement (8% weighting)	*Solution 1* (9 points) Aligns both pricing and billing as it is a single system able to perform both functions autonomously. *Solution 2* (3 points) Cannot address this critical success factor as it still relies on separate billing systems to bill a customer and a separate system for pricing a product and a customer. *Solution 3* (3 points) Cannot address this critical success factor as it still relies on separate billing systems to bill a customer and a separate system for pricing a product and a customer.
Easy to identify and reduce revenue leakage (9% weighting)	*Solution 1* (8 points) Contains a Management Information System capability for analyzing potential revenue at various price points for a customer. This makes it easier to pro-actively manage potential revenue leakage. *Solution 2* (6 points). Automation of the Extraction, Transformation and Loading process into the current pricing systems will reduce errors in pricing and reduce the potential for revenue leakage. However, the effects are moderate, as customer pricing data remains a risk with this solution. *Solution 3* (7 points). A segment – specific operating model allows for dedicated resources to critically analyse revenue leakage for their customers and develop corrective actions for this. However, this model is re-active when compared to Solution 1.
Substantial reporting capability (6% weighting)	*Solution 1* (7 points). Due to the real-time data population nature of this solution. It allows for reporting on product pricing, customer pricing, customer billing and revenue/loss analysis at both customer and product level. This type of reporting capability will drive a pricing and billing strategy best suited for the bank and the customer. This platform also has the capability of simulating pricing and billing so that frontline staff do not negotiate with customers *'in the dark'* *Solution 2 and 3* (4 points each). These solutions are administratively intensive when it comes to reporting. Due to the lack of real-time data extracts, these

	solutions lack the capability of on-time reporting for tactical and strategic decision-making.
Streamlined process and reduced complexity (11% weighting)	*Solution 1* (9 points) A seamless pricing and billing process with a single engine facilitating product and customer pricing, billing and letter generation – with no system development requirements. It annihilates all complexities experienced with the current pricing system (coupled with multiple billing systems) and process. *Solution 2* (7 points) Addresses the complexities present in the Extraction, Transformation and Loading of data from one system onto another, and back into the initial pricing system. There is some level of comfort that this solution will solve for this complexity, however, it is only one area of complexity, amongst others, for which this solution doesn't solve. *Solution 3* (4 points) Has no tangible and quantifiable benefits as it only seeks to achieve a clear segregation of duties and increased capacity for processing of information and execution of the pricing process. It doesn't assist in reducing complexities in the process and systems involved
Ease of implementation (6% weighting)	*Solution 1* (3 points) Difficult to implement because it requires specification and configuration of an off-the-shelf system and it would take a considerable amount of time to implement. *Solution 2* (9 points) Requires some in-house development to the current system for improved process flow. *Solution 3* (10 points) Is easiest to implement as it requires more Human Capital, with very minor changes to system and procedure.
Cost efficiency (5% weighting)	*Solution 1* (3 points). IT Pricing platforms require a significant amount of capital expenditure. Banks ought to justify the capital expenditure based on potential for reduction in revenue leakage, improved customer experience leading to an increasing customer base. *Solution 2* (9 points) Is most cost effective. This solution attracts in-house development costs which can be termed as 'wooden dollars.' This solution is best to implement for a bank wishing to optimize process but is however, constrained by budget *Solution 3* (5 points) Is moderately costly as it increases capacity. The largest cost attraction here is additional human capital to be employed.
Address data maintenance problems (9% weighting)	*Solution 1* (7 points) Effectively addresses all current data maintenance issues. This is because all data will reside in one system and the obligation will rest on frontline staff to ensure data accuracy and validity. Due to the real-time nature of customer data, minimal errors may occur which may affect pricing and billing. *Solution 2* (6 points) Moderately meets requirements and addresses root causes for data maintenance issues. This is so because data still needs to be extracted and loaded onto various billing systems. The risk of data misalignments will therefore still exist. *Solution 3* (2 points) Barely meets the minimum requirements for data maintenance. Data for this solution will remain static and data issues will only be identified reactively.
Reduces risks associated with template	*Solution 1* (6 points) Moderately addresses the current challenges with templates. In this solution, a dynamic template is designed and auto - populated based on the products and services a customer has with the bank.

maintenance (4% weighting)	This solution removes redundancy of information on products for which a customer doesn't have. *Solution 2 and 3* (3 and 2 points respectively) Do not address the challenges faced with the current template formats. In these solutions, templates are still maintained on a separate system and would have to be updated on an annual basis depending on changes in product features and structures.
Reduces dependency on development (4% weighting)	*Solution 1* (8 points) This solution has no system development requirement for onboarding of new products and services. All pricing structures and combinations of structures are loaded onto the system IT Pricing platform. Users need only select the pricing structure they wish to introduce to a new or existing product. *Solution 2* (4 points) This solution lacks clarity on how it may address the dependency on development. It therefore scores lowest amongst all solutions. *Solution 3* (5 points) This solution still requires development for changes in pricing structures. However, the benefit here is that with increased human capacity, development may no longer represent a bottleneck in the annual pricing process.
Reduces risks associated with handovers (8% weighting)	*Solution 1* (8 points) This solution represents a single point for data creation and maintenance. This solution removes the need for handing over of information to multiple parties for processing. Instead, the processing of information is performed by a single system automatically. It therefore doesn't rely on human intervention for processing once the data is in the system. *Solution 2* (6 points). This solution reduces the number of handovers in the Extraction, Transformation and Loading of data only. It doesn't reduce other hand-overs in the process. *Solution 3* (5 points) This solution has multiple systems for data maintenance. At any point this creates challenges with the passing of accurate information and updates to multiple systems.

6.2 Functionality that makes Pricing and Billing system desirable

Not only does the Pricing and Billing system improve the pricing process, but it achieves the following objectives, over and above the other alternatives:

1. ***Rationalising relationship pricing***

   Relationship pricing means different things to different people. Some would define it as 'flexible pricing,' whilst others understand it to be the ability to price all businesses belonging to one customer or entity simultaneously. Neither would be wrong, but a key concept to relationship pricing is simulating the likely profitability of a customer at different price points for different products. A pricing and billing system can provide this simulation approach to assist Relationship Managers in making sound decisions about a costumer's profile. This simulation approach negates the effects of excessive pricing concessions and unjustified waiving of fees.

2. ***Improved ability to view pricing across a relationship***

   Bank XYZ currently houses fragmented customer pricing data. Each Product House owns and analyses customer and product data in isolation of the complete customer profile. This makes it difficult for a bank to maintain consistent pricing across a relationship. Pricing and billing systems can provide transparency and visibility on a relationship and identify pricing inconsistencies. These systems allow the bank to be more agile in implementing pricing and root out revenue leakage. The ability to develop a holistic view of the customer results in better service offerings which, in turn, enables the customer to better understand the value of the services they use.

3. ***Bundling services to create better value for customers***

   The ability to generate accurate pricing and profitability data, centrally housed by a pricing and billing system, means Product Houses can develop niche packages for customers displaying similar transactional characteristics. This system also services the bank as it will be able to measure the effectiveness of its packages and evolve them as business conditions change. A bank with such a solution would always be attuned to customer needs and at the forefront of developing the right products for the right customers.

4. ***Market segmentation based on behavioural indicators***

   Demographic segmentation is not the sole credible source of information anymore. This method of segmentation informs the bank more about the customer than it does about the customer's behaxviour. One cannot simply look at indicators such as annual revenue, industry codes, product offering and

geographic location to make assumptions about what products a customer may need and how to bundle and price these products and services, but indicators such as transaction patterns can provide more reliable information about a customer's future preferences and behaviour. Products and services can then be priced and packaged accordingly. These valuable insights can be obtained from a system able to host and aggregate all transactional information for a customer for analysis purposes.

Ultimately, over and above the rich data a pricing and billing system can provide to drive business decisions; a pricing strategy; and the efficient orchestration of a pricing process, it also benefits the customer in that it can answer the following questions that customers usually have:

1. *What do I pay for bank services?*
2. *What am I getting for what I pay and what is that worth?*
3. *Should I be paying for a mix of services?*

These questions can be answered by the need for a system which provides transparency in pricing and billing (a 'pay for what you use' principle), which allows for customization of products and services according to a customer's behaviour and needs. Customers would be able to quantify value for money if the above can be met via an effective and efficient process embedded in this pricing and billing system.

Chapter 7: Conclusions and Recommendations

The pricing process is one of the most important processes in banking. This process is directly responsible for revenue generation for a bank and it is therefore incumbent on a bank to ensure the seamless transition and processing of pricing related information in a transparent, efficient and accurate manner, failure of which results in financial leakages and disgruntled customers. The pricing process should not be seen in isolation from billing, as the two processes mark the customer journey with the bank and the customer experiences these two processes as one. This was indicated in the documentation of the end-to-end pricing process, results from the survey and is addressed in the selected solution.

Bank XYZ experiences a multitude of challenges in the annual pricing process, the effects of which are significant financial losses and reputational damage. Upon critical analysis of the process, and Relationship Management queries, evidence points to an inefficient process designed with unnecessary complexities over the course of time. Investigations have revealed that some challenges with running an efficient pricing process at Bank XYZ include, but are not limited to, poor maintenance of customer and pricing information; pricing errors in the Extraction, Transformation and Loading of pricing data leading to customers being priced incorrectly; incorrect billing due to multiple billing system updates and the collection of all this information for a single customer bill; multiple hand overs; a lack of accountability; and challenges with overlaying pricing information onto letter templates.

Authors have proposed that companies should focus on improving their pricing operations as opposed to spending a significant amount of money investing in pricing systems. However, in today's technological era, I firmly believe banks should invest in identifying customer needs, develop lean processes for addressing those needs and develop or purchase pricing IT solutions configured to meet customer needs and driven by process. This is born from the need for quick, responsive and accurate processes and systems to a changing banking environment. Improvements to the pricing process will ensure the bank retains its current customers, since the cost of maintaining a customer is invariably less than chasing a new one.

Additionally, I stand in agreement with literature suggesting that financial institutions should develop a Pricing Strategy embedded on a governance framework driven by a Chief Pricing Officer whose sole focus is to continuously improve pricing operations to deliver quantifiable value to the customer and keep abreast with pricing-related technological innovations to drive strategy and differentiation in the market. Results from this survey would lend support to the literature.

In the case of Bank XYZ, three solutions where generated, each believed to have an impact on process, people (staff and customers) and technology. These solutions where:

1. The purchase of a configurable Pricing and Billing engine – this is a long-term, capital intensive solution which addresses multiple system and people complexities seen in the current process.
2. Enablement of Product Houses to implement their own pricing, thereby housing customer and pricing data on the current pricing system as opposed to multiple systems used to maintain this data – addressing multiple process hand-overs, data integrity issues and lack of accountability.
3. Implementing separate structures to execute and monitor annual pricing. This solution allows for staff to focus solely on executing the process in a segment, addressing human capacity constraints and process governance and proper execution.

Each of these solutions were assessed for: capital requirements; operational expenditure, positive Net Present Value (NPV), acceptability of Internal Rate of Return (IRR), Payback period and the required time to implement. These indicators are believed to be sufficient for the financial evaluation of projects. The only solution which met all financial criteria, that is, a positive NPV, an IRR equal to or greater than 12 per cent, and a payback period within a projected ten-year analysis period, was that of the purchase and implementation of a pricing and billing engine. Although this solution will take the most amount of time to implement, it is believed to differentiate the bank from competitors as it leverages pricing and billing as a competitive advantage in the market with tangible and non-tangible benefits to both the bank and its customers.

Furthermore, additional assessment criteria were developed to evaluate each project based on stakeholder sentiment and experience with the current process and customer engagement. The assessment revealed favour towards the purchase and configuration of a pricing IT solution, designed to streamline process, address current problems associated with movement of information, reduce severe financial impacts and improve customer service. Although this may require significant capital investment, stakeholders believe it will place the bank in a favourable position with the customer. It is a significant administrative leap from archaic processes and IT structures requiring considerable financial muscle to maintain. This solution should enable positive, concrete financial results.

To improve long term customer relationships, enhance revenue and reduce risk, banks should consider purchasing software solutions which can turn pricing and billing into a source of competitive advantage. Today’s commercial customers expect more transparency from banks than ever before - due to tough

economic conditions. Billing customers correctly, from which they can ascertain value for services rendered by banks, can be a key element in cementing long term business relationships. This method of differentiation will not only contribute to better financial performance, but it will also improve the bank's ability to forecast and yield better quality information for making strategic decisions.

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Appendix A: Survey

Pricing Value Chain	Questions	1 Strongly disagree	2 Disagree	3 I don't know / I'm not sure	4 Agree	5 Strongly agree
Product House Budgets	1. Product House budgets inform product pricing and customer negoatiated pricing					
	2. We perform variance analysis of budgeted figures versus priced products (reflection)					
	3. We clearly communicate budget timelines and annual pricing project timelines so that all stakeholders understand their deliverables					
Product Pricing	1. We have a single, clearly defined process for pricing and billing					
	2. Product Houses are able to price products themselves on the system with minimal assistance from Central Pricing Teams and system development teams					
	3. Products and associated service offerings are standardised across Segments making it easier to price					
	4. It is easy to effect changes on product pricing structures and values					
Customer Pricing	1. It is easy to make updates to a customer's pricing (to add, remove products and change pricing options) on the system					
	2. It is easy to add a new customer on the system					
	3. We perform sufficient end-to-end testing on customer pricing data before generating pricing letters					
	4. Customer pricing letters are simple to read					
	5. The information populated on customer pricing letters is accurate					
	6. We perform accurate statistical reporting on customer and product pricing e.g customer and product profitability and this reporting forms the basis for the way in which we structure and price products and determine negotiation parameters					
	7. Negotiation mandates are clear					
	8. Negotiation mandates are effective					
Billing	1. There is integration between pricing and billing systems					
	2. When we update pricing and billing information for a customer, the updates are real-time					
	3. The system allows us to perform back-dated billing					
	4. Billing files containing customer information sent to Product Houses are accurate					
Service support	1. We have a single system for logging queries with the appropriate SLA management timeframes					
	2. The pricing process is free of 'key man' dependancies					
	3. Staff are well educated on how to price new products and service features on the system					
Governance and Control	1. It is clear who owns the end to end pricing process					
	2. We have a pricing strategy in place					
	3. We have clearly defined roles and responsibilities in the pricing process					
	4. The pricing process is well defined with key milestones / deliverables					
	5. Pricing deliverables / milestones have clear accountabilities					
	6. We always meet milestone deadlines					
	7. We regularly review the pricing process for failures and process improvements					

Appendix B: Survey results

Pricing Value Chain	Questions	1 Strongly disagree	2 Disagree	3 I don't know / I'm not sure	4 Agree	5 Strongly agree	Total Response
Product House Budgets	1. Product House budgets inform product pricing and customer negotiated pricing	7	11	16	6	0	40
	2. We perform variance analysis of budgeted figures versus priced products (reflection)	28	7	5	0	0	40
	3. We clearly communicate budget timelines and annual pricing project timelines so that all stakeholders understand their deliverables	8	14	3	10	5	40
Product Pricing	1. We have a single, clearly defined process for pricing and billing	21	11	5	3	0	40
	2. Product Houses are able to price products themselves on the system with minimal assistance from Central Pricing Teams and system development teams	31	7	2	0	0	40
	3. Products and associated service offerings are standardised across Segments making it easier to price	2	13	16	9	0	40
	4. It is easy to effect changes on product pricing structures and values	17	11	12	0	0	40
Customer Pricing	1. It is easy to make updates to a customer's pricing (to add, remove products and change pricing options) on the system	20	14	6	0	0	40
	2. It is easy to add a new customer on the system	3	5	8	19	5	40
	3. We perform sufficient end-to-end testing on customer pricing data before generating pricing letters	15	16	9	0	0	40
	4. Customer pricing letters are simple to read	23	11	5	1	0	40
	5. The information populated on customer pricing letters is accurate	14	14	6	3	3	40
	6. We perform accurate statistical reporting on customer and product pricing e.g customer and product profitability and this reporting forms the basis for the way in which we structure and price products and determine negotiation parameters	10	13	7	6	4	40
	7. Negotiation mandates are clear	1	3	6	19	11	40
	8. Negotiation mandates are effective	12	17	5	6	0	40
Billing	1. There is integration between pricing and billing systems	32	6	2	0	0	40
	2. When we update pricing and billing information for a customer, the updates are real-time	10	11	19	0	0	40
	3. The system allows us to perform back-dated billing	9	13	11	7	0	40
	4. Billing files containing customer information sent to Product Houses are accurate	13	17	5	4	1	40
Service support	1. We have a single system for logging queries with the appropriate SLA management timeframes	14	5	9	6	6	40
	2. The pricing process is free of 'key man' dependancies	28	12	0	0	0	40
	3. Staff are well educated on how to price new products and service features on the system	8	10	8	12	2	40
Governance and Control	1. It is clear who owns the end to end pricing process	23	12	5	0	0	40
	2. We have a pricing strategy in place	17	17	3	3	0	40
	3. We have clearly defined roles and responsibilities in the pricing process	4	19	4	11	2	40
	4. The pricing process is well defined with key milestones / deliverables	11	14	4	7	4	40
	5. Pricing deliverables / milestones have clear accountabilities	15	12	3	6	4	40
	6. We always meet milestone deadlines	27	11	0	2	0	40
	7. We regularly review the pricing process for failures and process improvements	14	13	7	6	0	40

Appendix C: Annual Pricing and Billing Process

