EXAMINATION

October 2019

Subject F206 – Banking
Specialist Applications

SOLUTIONS

QUESTION 1

You are the Retail Product Head for a bank in South Africa, ABC Bank. Your bank has a full-service banking offering and the bank holds roughly 25% market share across all products and all market segments. At this stage the bank does not offer any insurance products aside from simple credit life cover. Your bank has an effective rewards program.

Mega Insurance holds a large share of the insurance market across medical, life and general insurance and has applied for a banking licence. Mega Insurance initially intends to create a transactional account offering. The account will have no monthly account fees but rather only pay-as-you-use fees. Mega Insurance will target retail customers and market the account as “free banking”. The bank offering will only utilize digital platforms, which are their online banking platform and their existing mobile application and will integrate with their current rewards program.

i. Describe how you would develop a strategy to counter the competitive and other business risks that could arise because of this. [22]

ABC Bank would need to perform an overall assessment of the strategic risks posed to it because of the new entrant coming into the market. There are many tools and frameworks available to assist with performing a structured analysis of the risks posed – two examples are the SWOT (strengths, weaknesses, opportunities, threats) analysis and the PESTEL (political, economic, social, technological, legal, environmental) framework which have been used here to create a structured review of the new competitive landscape.

Using the results of these analyses ABC Bank can then develop a counter strategy if it believes one is required.

SWOT Topics:

Relative Strengths:

- *ABC Bank has been in the banking industry for many years and as a result has expertise and institutional knowledge which will give it a competitive edge compared to Mega Insurer*
  - *It already has a 25% market share and this customer base could be loyal to the brand*
  - *Convincing this base of customers to move part (or all) of their banking across to this new provider could be quite challenging – especially for customers that do not have any relationship with Mega at this stage*
  - *The bank would have experienced staff and many frameworks, systems and models already in place which would allow it to effectively adjust to the competitive environment in an informed way. Mega Insurer would have to build up much of this intellectual property over time (or*

pay a premium for it) and as such it could take the new bank some time to get all capabilities in place.
    - *ABC Bank should have developed a good level of trust and credibility with customers, capital markets, and industry and regulatory stakeholders.*

- *ABC Bank has a full-service banking offering from a product perspective*

    - *This means that it can appeal to and address all customer financial needs as a banking institution (although it has little to no insurance presence – so it is not a full financial services provider across the board)*
    - *Customers that have multiple products with an institution are more likely to be remain with the service provider for the convenience it affords and may be less inclined to switch to a new provider (especially one that can only address one specific set of needs, i.e. the transactional account)*
    - *Having a credit offering and a cash investment offering is a requirement for many customers; it also allows ABC Bank to appeal to a much broader market than Mega*
    - *Offering many product lines (which are often not completely correlated through economic cycles) may give ABC Bank smoother profits over time and allows ABC Bank to be far more flexible in determining what pricing and other strategies to implement given the wide array of income streams*

- *This full service offering also gives ABC Bank a good deposit base that provides relatively cheaper funding for the purposes of acquiring credit assets in the industry – this should in turn allow it to price more competitively in the credit space should Mega Insurer look to enter this market down the line*
- *ABC Bank also presumably banks all types of customers: across both Retail, Business and Corporate, and as such can also provide complementary services to business owners*
- *ABC Bank presumably operates across all interaction channels (has a branch network, digital channels like online and mobile application, has a contact centre and an ATM network) while Mega Insurer is only looking to offer Digital Banking*
    - *ABC would appeal to much wider target market as different customers prefer different ways to interact with their banks.*
    - *The marketing capabilities of Mega Insurer would be more limited (as having a Branch and ATM network creates a visual presence)*
    - *These channels can also be used for proactive marketing, cross sell opportunities and can give the customer the human interaction that is often a requirement of a customer (for advice, for example)*
    - *Customers of mega Insurer will have to draw or deposit any cash required using one of the Branches or ATM's of the other big 4 banks*

– which would be quite an inconvenience. In the South African market cash usage is still quite prevalent in the economy

Relative Weaknesses:

- *Mega Insurance is a new bank and potentially will be making use of the latest computing and other digital technologies on its platforms. This should afford it many efficiencies from both a cost perspective as well as a customer experience and operational efficiency perspective*
  - *It can use best practices from the entire industry with respect to the design and workings of its Online platform and the added mobile application functionality*
  - *It will not need to deal with the complexity of integrating several platforms of differing technology*
  - *It is also very likely that ABC Bank will take longer to implement changes / enhancements to their product offerings because of an older more elaborate architecture. This means they will take longer to respond to offerings that Mega develops.*
  - *However if Mega Insurer chooses to leverage off its Insurance systems (or has to integrate its banking and insurance platforms) this will create some complexity (in addition it has already stated it will be working off the mobile application that is already in place – which may not be as efficient or user friendly as it could be and may require significant work to rectify*
- *Mega Insurance as a monoline business will have a far simpler operation to develop, manage and maintain relative to both ABC Bank and all other competitors. The banking model will be simpler and have a lower inherent risk profile based on the simple product offering.*
  - *By way of example, there is little to no credit risk, as there is no credit offering. This alleviates a lot of reporting, technical modelling, and systems required to manage all these products and risks. This allows Mega Insurer to keep its costs down while still delivering a banking offering at attractive yet profitable fees*
  - *Financial risk would mostly relate to the investment made to establish Mega Bank (if the product does not take off as is hoped or modelled then the investment may not achieve the requisite returns).*
- *Mega Insurance has its own customer base and associated goodwill that it has established through its existing offerings*
  - *It is likely that Mega Bank will focus on its own existing customer base to drive growth initially*
  - *Mega bank would have opportunities to integrate the transactional service offering with their existing product suite (via their electronic channels and/or their rewards programme) to create a differentiated offering that ABC would not be able to replicate*
  - *Focus on a narrower market segment (as opposed to ABC's wider focus) may be a relative advantage for Mega when it comes to*

    - *developing products and services that meet specific market segment needs*
    - *ABC Bank does not currently offer financial services in the Insurance market and as such it does not have access to the market or the diversification of earnings that this would afford.*

Opportunities:

- *Mega Insurer has only just applied for its banking licence. This could take 12 to 18 months to be approved by the relevant authorities, plus it could take the insurer even longer to complete all the required system and other development before it can start operating as a bank. This allows ABC Bank the time to understand the new competitor and build strategies to counter what this bank brings from a business risk perspective*
    - *In addition to this – there is the chance the Mega Insurer's licence does not get approved or that the regulatory bodies impose some conditions with respect to the licence*
- *ABC Bank can look to enter the Insurance market to extend its financial services offering to compete directly with Mega in those markets*
- *ABC Bank can also review inefficiencies and reduce its cost base and be more competitive once Mega starts servicing the banking industry.*
- *ABC Bank could use media attention resulting from Mega's launch to highlight the wider products and services it has available*

Threats:

- *Mega Insurer is one of the largest (and hence presumably well known) Insurers in the country. Although it will be new to the banking industry, it will already have a loyal insurance client base that could be convinced to switch to bank with them*
    - *This could be especially so if their rewards program heavily incentivises customers to hold their transactional account with the insurer in addition to their current insurance product holding*
    - *In addition, as a large medical insurer, they may be able to convince entire companies to switch staff payrolls (and hence staff and their banking accounts) onto this new platform to see further benefits for the staff.*
    - *This loss of the transactional accounts has many negative effects for ABC Bank:*
        - *It reduces the relatively low risk income stream from the transactional product*
        - *It loses the additional customer behavioural insights that can be gleaned from the transactional account (to assist with providing clients with the right banking services, but also for collections and other purposes)*

- *Mega Insurer is only looking to start its bank with one product at this stage. However, it is likely that should the initial offering be successful Mega will look to extend to other products and markets*
- *In a market that is already competitive, having a new player coming into the market would further price pressures (even if it is purely off the transactional account base for now) which will lead to better banking costs for consumers (but lower profits for the banks overall)*
  - *Although the other banks may look to adjust their pricing for other banking products to help soften the impact on their profits of this new provider that is coming into the market*
  - *If this new banking model works well in the South African context it may open opportunities for more competitors with a simple offering to enter the market, making it an even tougher competitive environment*

PESTEL Topics (additional content to above):

Political:

- *The political environment in South Africa sees the banking industry being put under continuous scrutiny in terms of profits, access and practices. There are often calls for fees to be reduced and for the cost of credit to be reduced for customers. These pose risks to the future competitive landscape and the ability of banks to set fees at levels that they deem are appropriate for the relative services provided.*
- *Given this context it is highly likely that Mega's application for a banking licence will be approved and that it will be a good thing overall for the industry (as it will create more competition and reduce noise around fees and possible other avenues that the government could explore to level the playing field).*

Economic:

- *The South African economy has been struggling for many years now, and the short-term outlook is still uncertain. As a there is less opportunity for Mega Bank to grow profit share off the back of a growing economy, they will be required to take profit share from the other big banks.*
- *In addition to this, there may be other banks that are looking to enter the local economy too which will put further strain on them to compete with the banks already in place to get a sizable share of the profit pool*
- *Unemployment rates are also particularly high, and as a result customer have less disposable income and a lower ability to repay debts. Mega Bank could see two benefits here:*
  - *They are only creating a transactional account product. If this does not include a credit element, then the unemployment risk will impact them less than peers. They will be targeting the product with little risk of losses but promise of revenue if accounts are retained.*
  - *A result of the poor economic outlook is that customers are always ideally looking for value for money when it comes to both insurance*

and banking products. If Mega Insurer can convince the consumer it is cheaper than its peers, then customers are quite likely to consider switching brands.

Social:

- *In South Africa there is a drive to create jobs, if not at least retain the jobs that are currently in place. Mega Insurer being a largely digital provider will clearly require less staff to run and manage the operations of the bank than the other competitors. This could put pressure on other banks to push their digital strategies and hence reduce staff, leading to job losses, which will not be well received in the market (especially by the Unions and government).*

Technological:

- *There is a large drive worldwide to digitise many financial services and Mega Insurer would fit right into this strategy by being a 100% digital bank. With improvements in AI, machine learning, BOTS and Chat environments, the bank may even be able to create capabilities that mask human interaction without the associated costs and inefficiencies.*
- *However, it has been generally accepted that at this stage the best banking model from a customer experience perspective is one that gives the customer the ability to choose to interact digitally or with humans based on their needs and preferences. ABC Bank can take advantage of its less digitised channels to enhance the experience for the appropriate clients which will give it a competitive edge.*

Legal:

- *Both worldwide and in South Africa the regulatory and legal framework is continually changing and is getting more complex and challenging to manage. Mega Insurer has a good opportunity to come into the banking space and develop best practice processes and systems. However, with its proposed banking model it will find some elements difficult to fulfil – for example KYC requirements.*

ii. You have been tasked to estimate the value of ABC Bank business potentially at risk to Mega Bank. Discuss how you would estimate the value of the business at risk. [9]

ABC Bank would ideally look to identify the size of the revenue or profit pool that is at risk of being lost to this new competitor because of the offering proposed and this new bank coming into the market.

This would be done by understanding which existing customers are likely to switch to this new bank because of the financial benefits to the customer as well as the target market based on functionality of the offering and how it will integrate with other products held with the insurer.

In addition to this it would be worthwhile for ABC Bank to try to understand how much future new business it will lose because of this new competitor and offering coming into the marketplace.

ABC Bank should look to understand the details of the transactional offering this new competitor will bring to the market (the pricing structure thereof amongst other things).

- *By understanding the pricing structure of this product, ABC Bank can compare its own product offering to better understand how significantly different the two offerings are and to see how much of a real differentiator this offering will be*
    - *If the offering does not appear to offer a significant financial benefit to clients then chances are there will be a lower risk of customers switching, and vice versa*
    - *It would be a worthwhile exercise to compare the banking fees of the current base using the current fee structure of ABC Bank and comparing to that of the new competitor. This will assist the bank to understand the revenue at risk as well as to understand the size of the client base at risk (based on the relative fee differentials for the new product offering)*
    - *If possible, the bank can try to quantify the additional benefits that the customers may realise on the rewards program offered by the life insurer to see if this in addition to any fee benefits might be the element that swings customers to switch.*
    - *How feasible this is, and at what stage this can be done, will all be determined by what information is available to the market at this stage with respect to the offering from Mega.*

- *Ideally the bank should also look to understand whether the new competitor will be offering overdraft or credit facilities off the back of the transactional account,*
- *whether it will allow customers to make use of the transactional accounts for the purposes of savings. This would include understanding the interest rate that would be offered on the product for any deposits sitting within the transactional account.*
    - *Depending on the answers to above, a smaller or larger proportion of the current transactional account base may be at risk (and some of the cheaper funding held via transactional account deposits may also be at risk).*
    - *Once this is established, the bank can specifically examine the portion of the transactional account base that, for example, does not have an overdraft with the bank, and analyse the impact of the attrition of this portion of the transactional account base to the new bank (or some percentage thereof) based on the relative savings these customers may enjoy with the new provider.*

ABC Bank would also need to understand the potential target market the new bank is likely to be looking to attract

- *The target market can be determined by understanding the a few important metrics with respect to the current market that the insurer pushes it products to:*
    - *Based on inherent risk measures such as credit ratings*
    - *Based on income brackets (lower, middle, upper based on level of cover offered)*
    - *The bank only has digital platforms available to it – and specifically mobile application and Online. Any clients wishing to either use Contact Centres or Branches or non-smart devices to engage with the bank will not have these opportunities with this institution and hence are to some extent at reduced switching risk*
    - *One thing to note, especially for customers that deal largely in cash, is the lack of a branch or ATM network specifically. This will force customers to still engage with other banks for cash transactions and specifically will cause these types of clients to incur additional fees for transacting (which may supplement lost income for ABC Bank as well as be quite a large barrier to entry for the new bank)*
    - *These deliberate strategic choices will already reduce the size of the base at risk to Mega Insurer*

Mega Insurance currently holds a sizable market share across the insurance industry and as such would have significant opportunities to cross sell this new transactional account product to their current base (without having to invest in significant marketing or advertising).

- *It would be very useful to try to determine what percentage of this insured base banks with ABC Bank to better understand what portion of its own client base may be at risk from the cross-sell opportunities, in addition to the added rewards they will receive by switching*
- *This could be done in a few ways:*
    - *The bank can analyse debit orders running off customer accounts to understand what percentage of its base has products with Mega Insurance.*
    - *The bank could analyse the larger employers making use of the Mega Insurance medical scheme to link these to the employees and hence customers of the bank*
    - *The bank could do a simple survey across a portion of its client base to understand who they use as their primary insurer (among other things) to understand the cross-sell risks involved.*

The bank should look to estimate the potential losses in revenue or costs that it may incur because of any strategic or product changes that it may make in response to this new competitor. For example, if it looks to offer directly competing low cost digital offering this will cannibalise some of its own fee revenue. This impact is worth understanding and estimating in addition to the pure loses incurred because of the new entrant alone. These changes will be an additional risk to the bottom line of ABC Bank.

iii. Suggest strategic and product options that could be implemented based on the strategic and risk analyses you conducted in response to the new competitor bank. [7]

The strategy employed, and the relative amount of effort exerted in the strategy designed to directly counter the new banks offering will be largely determined by the size of the base (numbers of customers, value of revenue) at risk to ABC Bank as well as the size of the business risks identified (short and long term).

If the value at risk is small and the bank believes it has a compelling all-round offering, then very little may be done tactically to specifically counter the new bank offering (it would be business as usual and the bank would continue with the normal tactical plays to counter all competitors). Mega Insurer would just be a new competitor in the mix. If the bank discovers during the analysis that the impact could be large, then there are several tactical changes that it could implement to reduce the risks to risk adjusted profitability.

ABC Bank could augment its current transactional account offering by developing a product that is priced very similarly to the new offering from the insurer to compete directly.

- *ABC Bank would need to understand how this could impact its current product offerings as it could cannibalise some of the current revenue*
  - *It would need to weigh up the benefits of holding onto these customers with a lower level of revenue versus allowing them to move (if they choose to do so)*
  - *An example might be to offer free banking if it is done via one of the banks Digital Channels only*
- *The bank could look to create an offering that is more competitive for its client base and their relative banking behaviour (to not only defend its base but to look to grow the base by taking customers from other institutions). For example, ABC Bank could look to increase interest rates on deposits sitting within the transactional accounts to keep the offering appealing.*

ABC Bank could adjust its reward program to benefit customers more richly if they hold a transactional account product with ABC Bank in addition to other products (credit and investment products). This could encourage customers to hold a more tailored basket of goods with the bank and help reduce transactional accounts migrating to the new provider.

ABC Bank could look to adjust the pricing of some of its other product lines (for example the mortgage product) to make it more beneficial for customers to hold a transactional account in conjunction with the other product. After closing the transactional product the interest rate could be adjusted upwards for credit and downwards for investment products. This adjustment may not be applicable for current credit that has been contracted, but perhaps for new deals written.

- *This does not create much of a defence for the banks current book, however concessions could be agreed with customers already with credit on the books (this would result in slightly reduced profits, but this impact could be less than the impact of losing the client in totality).*

ABC Bank could look to increase its cross product holding by driving more cross selling opportunities to deepen customer relationships.

ABC Bank could look to adjust its operational processes to look to directly counter any account switches that it identifies before the paperwork is completed. For example, if debit order switching forms are received an outbound call could be made to specifically profitable customers to see if the client could still be retained.

ABC Bank could also look to reduce its cost base to allow more competitive pricing and help mitigate the impacts on its profits.

Another alternative is for ABC Bank to look to enter the insurance market to directly compete across all fronts with Mega Insurer. The bank already offers simple credit life which means there are some levels of capability within the bank already and possibly some simple systems in place.

Some of these strategic changes may also hold other benefits to ABC Bank in the sense that in the short term their adjusted overall offering could allow them to obtain additional market share from competitors currently already in the market. As such there may be added benefits to the more competitive offerings that will be created.

QUESTION 2

Your bank wrote large volumes of long-term retail assets at a time when liquidity spreads were very low. Many of these assets are still on the bank's balance sheet. Discuss what this might mean for the banks ALM risk position and what the potential responses are. [12]

The liquidity spread is the additional spread or liquidity premium that an investor requires over and above the base rate to compensate the investor for locking in their funds over a specific period. The longer the period typically the larger the spread because of the longer period over which the investor must commit to an investment (and hence the more the investor exposes themselves to risk of underperformance of the investment made as well as the whims of the market). It also means the investor is unable to access the funds in the event of an emergency without potentially taking a large haircut in value if there is a need to realise these funds. In addition, the spread will be larger if the future expectations of returns are more volatile (as risk is thus larger).

Liquidity spreads have typically grown larger over the last several years off the back of a few events:

- *The 2008/2009 banking crisis where poor matching of assets and liabilities, and the large liquidity squeeze caused the failure of several banks.*
- *The advent of Basel III and the additional liquidity requirements of the regulations that require banks to make more of a plan to match funding and assets more closely. Both result in longer dated funding being more expensive as there is more demand for this funding.*

The impact on the ALM profits depends on several elements:

- *The extent of the miss-matching of the assets and liabilities by term, nature (fixed or floating) and currency (presumably the same currency).*
    - *If the liabilities matched the assets closely especially by term, then the actual ALM profitability impact would be small as the funding would have been locked in at the lower spreads. Whether this occurs contractually or based on the ultimate behaviour of the assets and liabilities will also impact the ultimate net position.*
    - *If the mismatching was large (which was often the case in the past where short dated funding was used to fund long term assets, and then was rolled over), the ALM profit impact could show quite a large drop in profits and ROE. The book itself may still be profitable – but the margins would have been significantly compressed compared to the margins at inception.*
- *The relative size of this book of long-term retail assets (relative to the total asset portfolio held by the bank currently).*
    - *The bank may have subsequently written more differing durations of assets and large volumes of these assets*
    - *There may be large pre-payment on this product relative to the contractual terms at inception*
    - *This would result in the percentage of the remaining under-priced book being relatively small compared to when it was written. This would reduce the relative negative impact on overall ALM profitability.*
- *The contractual nature of the assets with respect to how often they can be repriced (if at all – perhaps at draw down of a facility), if terms or instalments or pre-payments can be modified or not. The more flexible the contracts the more potential responses the bank will have around reducing the impact of these long-dated assets. In addition, the types of contracting from a repayment point of view will determine how long the assets remain on the book. For example – if the repayment is largely interest only with a large bullet payment due at the end of the contract – then these assets will negatively impact the banks ALM profits for an even longer period.*
- *The level of pricing contracted at inception for the assets. If the assets were priced assuming that the liquidity spreads would remain the same, then they will be under-priced now (in reality). However, if they were priced with additional margins built in, then although the ALM profit will be lower now than before, the product will still yield a fair or decent ROE / profit.*

The bank may not be able to do much about the back book of assets that it has already written. The focus may have to be a forward looking one where the focus is on adequate pricing for new business (if possible with a small added margin) to compensate for the lost profits on the back book. It can also focus on generally identifying more stable and cheaper funding (like Retail deposits) to look to reduce the impact of the less profitable back book by being more prudent on the new business written. It may even do this by "buying" more

Retail funding by offering better rates (as this will still be more cost effective that holding for example wholesale funding).

There are several strategic responses that the bank can take to help reduce the future lower returns on this portion of the book. The extent to which the bank can make amends for past under-pricing and mismatching depends on the contractual obligations agreed to on assets and the types of assets sold. It will also depend on the future expectation of liquidity spreads.

- *Remove or reduce undrawn facilities and access portions of mortgages that are available to customers to make use of (at the lower pricing or rates). The feasibility thereof would depend on the contracts agreed to when the assets were written and how customers may respond to this*
- *Encourage early settlement of the debts (especially if their ROE's are unacceptably low). It may even be worth offering the customer some sort of small "bonus" for settling early. The ability of customers to take advantage of this would depend on relative free income and affordability. This solution may only be feasible in a small percentage of scenarios.*
- *Encourage top ups of the assets or further loans (and hence repricing of the assets) – for example by offering customers opportunities to draw down on current mortgages or get top ups on other loan assets (in order to afford the bank the opportunity to reprice, should the customer benefit from the new product structure). Newer valuations on the underlying security would also assist with pricing more effectively.*
- *The bank could look to ensure that it has a proper appreciation and understanding of its funding requirements and the behavioural tenure of both assets and liabilities. It may turn out that some of the funding (like retail deposits) may be far more stable than seen before and as such these could be used to at least supplement some of the funding shortfalls for these longer dated assets (as opposed to for example assets that match based on contractual tenure). This will only assist if the bank has not done this adequately in the past.*
- *If the bank believes that the current liquidity spreads for longer dated funding is too high (i.e. currently over-priced) the bank could choose to continue funding using relatively short dated funding in the expectation that the spreads will decrease in the future. This will prevent the bank from locking in higher funding costs now. However, there are a few considerations:*
    - *There is a risk the liquidity spread increases further, compounding the current issue. This is more likely than not as available liquidity is unlikely to increase in the medium term.*
    - *The bank can mismatch for this portfolio to some extent but will need to ensure that while doing so it still meets all the other liquidity requirements and metrics under Basel III and any of its own internal thresholds that are in place.*
- *The bank could look to sell off the older book that is yielding lower returns than would have been required (based on ROE's). This could be done via a securitisation arrangement. Although this under-pricing would likely reflect in*

the amounts they would receive for the sale of the assets (being lower than ideal), it would at least free up funding and capital to make more prudent investments going forward. The bank would have to weigh up the opportunity cost of making this decision.

QUESTION 3

i. Discuss the concept of expected and unexpected credit losses in the context of a Bank's capital requirements. [5]

Banks' normal course of business involves exposing themselves to risk of loss due to customer loan defaults for credit risk. It is not possible to know in advance what the extent of loss in the next 12 months (or any period) will be.

Banks estimate the average level of losses they expect to incur over the next budgeting period based on their historical experience adjusted for current realities and outlook. This is the bank's expected losses as described by loss drivers PD, EAD and LGD.

Losses will vary from one year to the next, often closely correlated to the economic cycle. This could also be a factor of the bank's risk appetite or policy changes where the bank could have written higher risk business from for a certain period.

The extent of exposure also varies, from "AAA"-rated exposure to lower rated exposure, by type of customer and product. The extent of collateral provided by a loan customer also dictates the level of loss.

The level of expected loss dictates the nature of future business. For example, since it is part of the cost of doing business, expected loss levels will influence:

- *The level of future balance sheet expansion and lending levels;*
- *The rate of interest charged to customers.*

Banks must also, however, account for unexpected losses. It is possible for actual loss rates to far exceed expected loss rates. This could be due to changes in the environment causing historic experience to not repeat. For example, if historical rates were used to estimate expected losses and the last 5 years had seen the economy booming with the central bank raising interest rates. This does however depend on the level of conservatism built into the EL models.

It is these unexpected losses that banks require a buffer of capital to absorb. This buffer must be enough to absorb losses and remain above the regulatory minimum. For Credit Risk Capital, this involves the estimation of 1 in 1,000 events.

Regulators require this minimum to protect depositors.

Unexpected losses are harder to estimate than expected losses as they are less frequently observed events.

ii. Bank capital management should be articulated formally in a policy standard. Describe what would be included in a Bank's capital management policy. [8]

The policy template would cover the following items. It should be noted that different banks operate differently and so some of the below may or may not apply to all banks:

- *Governance considerations*

    o the policy should cover the roles and responsibilities of the Finance, Risk and Treasury teams. The support they provide to executive committees and the ultimate approval by the Board through delegated Board Committees.

    o Given the importance of accurate financial plans for the calculation of capital demand and capital supply, the policy may also dictate certain processes to ensure a proper integration between strategic business plans, financial articulation of those plans, risk assessment on those plans and treasury planning as a result.

    - *Escalation procedures to the Board and SARB in the event of risk events.*

- *Capital targets*

    o the bank should generally monitor and report its forecast regulatory capital base and risk-weighted assets (RWA) per business line to Finance and Treasury.

    o the responsibility for regulatory reporting typically lies with the finance department with input from the different risk type owners.

    o the bank's current operational targets in terms of Capital classes must be articulated:

    - *Core Tier I: [ ]%*
    - *Total Tier I: [ ]%*
    - *Total capital: [ ]%*
    - *Ito regulatory minimum and internal risk appetite*

    o The Finance department will generally maintain a three-year rolling forecast and report this to ALCO.

    o Forecast or actual breaches of the internal capital ratios and ultimately the *regulatory capital ratios will be reported to the Head of Treasury and to ALCO as well as the regulatory authority.*

o A regulatory breach should be very rare and the bank's risk management processes will require escalation prior to such an event. Upon escalation, management actions will be considered to rectify the position.

o The Treasury department will generally undertake capital stress testing to assess the potential capital impact of changes in firm-specific and market-wide business conditions.

o Where the test results indicate a potential breach of target ratios, this must

be reported to ALCO.

o Mitigating action should then be undertaken after approval from ALCO.

o the actions considered to rectify any capital adequacy positions will also be

tested during the stress testing exercises. There, actions range from the

improvement of business processes, the change in growth ambitions, the

reduction in dividend payments, the change in business strategy to the sell

down of assets or a rights issue to obtain more capital. Each action may have

wide ranging impact and therefore needs to be considered in detail.

Link to dividend policy

Large exposure considerations compared to Regulatory limits

- *Risk-weighted assets and economic capital demand*

o RWA balances (i.e. the regulatory Pillar I view of risk) and economic capital

demand (the internal view of risk) must be reported to Finance, Treasury

and the business lines.

o the frequency of reporting may vary from inter-day to monthly depending

on the type of risks. RWA forecasts are prepared at month-end; any inconsistency with the Finance general forecast must be reported to ALCO.

o The RWA forecast should be in line with the bank's capital allocation process.

The impact of any business line transaction, whether asset or liability, that is

likely to result in a reduction in capital must be reported immediately to ALCO.

o the process applied is similar in nature to the actuarial control cycle.

- *Business restructuring*

    o the transfer or disposal of any asset or business line, or any such reorganisation that has an impact on regulatory capital and / or RWAs, must be approved in advance by ALCO.

- *Business line profit*

    o The net profit after direct and indirect costs of each business line must be transferred to the Treasury book at year-end.

    o This is a direct equity transfer.

- *A subset of the capital management policy is the capital resource management policy. The object of this document is to articulate formally how each business line will meet its requirements about adherence to the capital management policy standard. This may include sections with: capital allocation standards and performance metrics.*
    - *Treatment of endowment benefit*

QUESTION 4

You are the Retail Credit Head for a large bank within Southern Africa. Currently your Retail Unsecured portfolio consists of Credit Cards, Overdrafts, Unsecured Loans and Pay Day Loans. These portfolios are run independently of one another and clients at the application stage are risk scored separately for each product offering requested. All product offerings are made independently of one another. To simplify the sales process, and to allow the customer choice, the Sales Head requests a single ratings model be built to assess a customer at application stage for all products simultaneously.

i. Outline criteria by which a credit ratings model, such as a scorecard, should be evaluated

[2]

- *Data permitting, statistical performance on out-of-sample and out-of-time experience using statistical criteria such ROC curves, Gini coefficients, Confusion matrices, K-S statistics to establish ranking ability/ the ability to discriminate good and bad outcomes*
- *Analysis of the potential population that will be approved but were declined previously (the “swap-ins”) to evaluate the size of this new class of business relative to the business’ risk appetite*
- *Data permitting, statistical calibration of actual default rates over different time periods should be evaluated to ensure the impact of changing economic*

and business environments on the performance of the ratings model is understood.

- *A review of the stability of the model over time should be conducted to ensure that unexpected changes in key-drivers do not unexpectedly reduce the effectiveness of the model*
- *An evaluation of the compatibility of the model design with its intended use to ensure these are aligned*
- *A review of the underlying drivers contributing to the final score to ensure that:*
    - *relationships follow economic causal patterns and are in-line with expectations*
    - *avoid highly correlated inputs*
    - *avoid factors that may perpetuate structural biases (e.g. gender)*
    - *the drivers are available for implementation, not subject to manipulation and factually verifiable*

ii. Describe how you would build a customer level application scorecard and implement the combined offering for the business. [12]

To build a customer level scorecard, one first needs to decide which products to include in the scorecard, presumably all the Unsecured products should be included in this instance.

A customer level definition of default needs to be developed that encompasses the overall arrears status of the customer. For example:

- *Being in default (3 payments in arrears or more) on any of the products linked to the customer may result in the overall customer being in default*
- *A customer that is for example 2 payments in arrears in two or more products may also be identified as a default*
- *Certain products may be excluded – for example the pay day loan may be excluded if it is believed this will unfairly reflect a default status for what is a performing customer. This would only be the case if there are strange behaviours linked to any of the products which could result in "false defaults" because of the product design.*
- *Likely all products that will be risk scored as part of this overall single view of the customer should be included in the modelling*

Internal data should be augmented with bureau data to give a complete view of the customer's product holdings and default experience (across all debts held – whether they are internal or external to the bank). Each time the client takes up an additional product the client needs to be scored again and the performance of the client tracked from that point onwards.

This new default definition (for use in scoring model development) must be tracked and checked for stability to ensure that only a small percentage of clients hitting this definition of default ever cure from this status (ideally it must be as absorbing a state as possible for scoring model development purposes).

The default experience must also be tracked over the performance period to understand the impact the macro and micro economic environments have on the experience. The default rates may need to be adjusted to make allowances for any trends observed

The application scorecard would be built using normal scorecard development processes (logistic regression techniques, amongst others), looking to maximise the ranking of the scorecard. The target variable would be the customer level default definition.

- *Ideally internal variables that are created at customer level should be tested for use within the scorecard, hopefully covering a mix of client product holdings and behaviour over several time periods, with differing leads and lags (to track movements and changes)*
- *Variables from fields generated using bureau information should also be included (to include behaviour with other credit providers)*
- *Special care will need to be taken to ensure that variables that perpetuate structural biases are excluded (for example, gender or race). In addition, special care would be required to remove any variables that may be a strong proxy for these variables – for example suburb could be a strong proxy for race.*
- *Most explanatory variables should be incorporated, and co-linearity avoided*

Once the scorecard is built the scorecard could be calibrated to the customer level definition of default experience. Alternatively, the scores generated by the scorecard can be calibrated to the default experience of the customer for the individual products making up the scorecard (for the products for which the scorecard will be applied).

- *If the scorecard is calibrated to the overall customer level default rate, the relative product level default rates must be compared to the customer level one to see how much these are misaligned. This will allow the different product areas the opportunity to properly understand the risk for their products and the relative facilities that they can assign based on the real underlying product level risk.*
- *An additional important check is to test the ranking of this customer level scorecard for each of the individual products. If the scorecard does not rank for specific products this will either require rebuild or adjustments to the scorecard. Alternatively, the business will have to offer more conservative facilities or price slightly higher on those products to compensate for the higher misaligned risk.*

Policy filters or additional over-arching decline and refer rules will need to be developed (probably making use of the original rules that currently exist per product) to create a good mix of filter rules for this customer level scorecard. The business or individual products may choose to have rules that are specific to their products (over and above the customer level rules built).

After the build and calibration of the scorecard it would be very valuable to run previously scored applications through this new version of the scorecard. This would add value in the following ways:

- *Old applications received (applications used for generating the default experience):*
    - *This will allow the business to see what the swaps sets will look like (so for example which applications previously approved will now be declined)*
    - *In addition, the old versus new offers can be compared (in terms of facility size, rates offered) along with the relevant default rates (this will allow the business to potentially calculate the default experience benefit of the new scorecard).*
- *Recent applications received:*
    - *This will allow the business to understand how the new scorecard and offerings will impact the latest approval rates, volumes written, risk mix, and average fees and rates expected to be earned. All this information will assist with potential adjustments to the facility offerings as well as the risk appetite limits (if the new offerings will result in potential breaches).*

Once the scorecards have been calibrated the offers to be made to the customer need to be adjusted based on the new outputs of the scorecard as well as based on the risk appetites that are in place for each product. Facility sizes and rates will need to be decided both independently (based on required ROE's and ROA's per product) as well as possibly at customer level (to try to reduce the challenging conversation where rates and offers differ significantly at the point of application across products).

There may be some risk appetite thresholds that need to be created at a customer level if these do not already exist within the framework (for instance total debt to income or max overall unsecured debt exposures relative to income or risk bands).

Affordability assessments would need to be performed at a customer level across all products that are available to the client, and these would need to dynamically change based on the facility sizes selected across the potential product holding (as well as based on any term of repayment selected by the customer).

iii. Discuss some benefits and challenges you may encounter because of using customer level scorecards [5]

Benefits:

- *There should be some cost benefits to scoring a client once for multiple products instead of scoring a client multiple times at the point of application*
    - *Will only make a single call to the central credit bureau*
    - *Potentially a single set of paperwork and less time spent in the process*
    - *There may be some cost reductions that could be realised because of consolidating the analytical and support teams sitting in the individual product areas into a single team*

- *The customer experience at point of application should also be far improved as the full potential product offering for the client can be displayed immediately*
- *Having a single score card may allow greater exposure control, thereby limiting losses when customers default*
- *More product sales might be made (as a customer will not just be declined for the credit they requested but at the same time will be offered other alternatives if the client qualifies). All potential available offerings will be displayed and will hopefully result in the customer taking the product offering that is best suited to the customer needs*

Challenges:

- *There is a risk that with a single customer score being generated that the overall ranking of the scorecard may not be better than that of the individual product level scorecards (at customer level). This could result in anti-selection and mispricing of individual products (even if the scores are calibrated to the relevant product experience).*
- *There may be significant system development required to allow a customer to not only be scored across multiple products simultaneously but in addition to then be offered several products simultaneously, allow the client to accept several products simultaneously and then to ensure the overall client affordability is sufficient across the mix of selected products and facilities. There could be large costs involved and extensive timelines to achieve this*
- *In addition, the bank is likely to want to allow debt consolidations or settlements for other institutions to take place at the point of application (again will add to the overall complexity of the single process – although if developed correctly this will add significant value).*
- *A customer that knows of personal circumstances that have changed (and that intends to deliberately select against the bank) could potentially more easily extract more credit than normal as the client would be offered the overall maximum amount that the bank is willing to give them (without having to apply several times across several products)*
- *The business will need to be very cognisant of TCF principles when determining which products to offer first or to recommend (if any recommendations are made at all). Determining the right mix for a customer based on their personal situation would require careful consideration.*

{Credit given for relevant other benefits / challenges noted by the candidates}

iv. The bank completes the new customer level scorecard and offering platform, and this goes live on 1 January 2017. The table that follows shows the financials and other information for the Credit Card, Unsecured Loans and Pay Day Loans portfolios for the 2015/2016/2017 calendar years (in R'm). It is worth noting that no deliberate changes were made with respect to the risk appetite, pricing, capital or provisioning policies of the bank over the 2017 calendar year (with the implementation of the new scorecard). The expectation from business is that all products will perform similarly if not slightly better with this implementation. You can assume nothing significant changed on the Overdraft portfolio.

Total Unsecured Portfolio			
Annual Financials	**Calendar Year**		
	2015	**2016**	**2017**
Book Size: Limits Booked (R'm)	R 55 000	R 57 750	R 63 525
Book Size: Total Outstanding Balances (R'm)	R 52 604	R 55 812	R 56 354
New Business: New Limits Approved (R'm)	R 4 200	R 4 326	R 6 835
New Business: Total Balances Utilised and Disbursed (R'm)	R 24 550	R 26 057	R 27 023
Bad Debt Charge For The Year (R'm)	R 5 260	R 5 609	R 5 588
Interest & Fee Revenue For The Year (R'm)	R 8 675	R 9 161	R 9 296

Credit Card Portfolio			
Annual Financials	**Calendar Year**		
	2015	**2016**	**2017**
Book Size: Limits Booked (R'm)	R 55 000	R 57 750	R 63 525
Book Size: Total Outstanding Balances (R'm)	R 19 250	R 20 790	R 24 775
New Business: New Limits Approved (R'm)	R 4 200	R 4 326	R 6 835
New Business: Number Of Limits Approved	165 000	169 125	186 038
New Business: New Limit Drawn Exposure After 1 Year (R'm)	R 1 050	R 1 082	R 3 759
Bad Debt Charge For The Year (R'm)	R 850	R 910	R 870
Interest & Fee Revenue For The Year (R'm)	R 2 100	R 2 268	R 2 767

Unsecured Loans Portfolio			
Annual Financials	**Calendar Year**		
	2015	**2016**	**2017**
Book Size: Total Outstanding Balances (R'm)	R 33 000	R 34 650	R 31 185
New Business: Total Value Of Loans Disbursed (R'm)	R 15 000	R 16 050	R 13 803
New Business: Number Of Loans Disbursed	400 000	420 000	470 400
Bad Debt Charge For The Year (R'm)	R 3 500	R 3 745	R 3 708
Interest & Fee Revenue For The Year (R'm)	R 5 300	R 5 554	R 5 110

Pay Day Loan Portfolio			
Annual Financials	**Calendar Year**		
	2015	**2016**	**2017**
Book Size: Total Outstanding Balances (R'm)	R 354	R 372	R 394
New Business: Total Value Of Loans Disbursed (R'm)	R 8 500	R 8 925	R 9 461
New Business: Number Of Loans Disbursed	1 000 000	1 051 000	1 115 111
Bad Debt Charge For The Year (R'm)	R 910	R 955	R 1 010
Interest & Fee Revenue For The Year (R'm)	R 1 275	R 1 339	R 1 419

Based on the information provided per portfolio, evaluate how is the new scoring and offer system performing and detail any potential courses of action based on this evaluation.

[18]

It would be worth looking at the outcomes per individual product to see if there are any specific trends that are evident, as well as overall for the full portfolio. Ratios that are worth calculating for insights are the average revenue as a rate, bad debt charge, book and new business growth rates (all as percentages of appropriate base values). Average facility, loan sizes as well as utilisation of limits is also worth investigating. ROA is an important measure to see the net effect of the new scorecard on each book and the overall portfolio.

The candidate is not expected to generate the entire table below as only parts thereof are required to glean the required insights.

Total Unsecured Portfolio			
Averages / Possible Useful Info			
	2015	2016	2017
Growth In Marked Limits		5%	10%
Drawn Exposure Growth		6%	1%
New Business: Drawn Exposure Growth		6%	4%
Bad Debt Charge Percentage	10.00%	10.05%	9.92%
Revenue Percentage	16.49%	16.41%	16.50%
ROA / Margin	6.49%	6.36%	6.58%
Rand Delta In Margin Year on Year		R 137	R 157
Credit Card Portfolio			
Averages / Possible Useful Info			
	2015	2016	2017
Growth In Marked Limits		5%	10%
Drawn Exposure Growth		8%	19%
New Business: Utilisation	25%	25%	55%
Bad Debt Charge Percentage	4.42%	4.37%	3.51%
Revenue Percentage	10.91%	10.91%	11.17%
ROA / Margin	6.49%	6.53%	7.66%
Average Facility Granted	R 25 455	R 25 579	R 36 740
Unsecured Loans Portfolio			
Averages / Possible Useful Info			
	2015	2016	2017
Growth In Total Book Exposure		5.0%	-10.0%
New Business: Loan Value Growth		7.0%	-14.0%
New Business: Loan Volume Growth		5.0%	12.0%
Bad Debt Charge Percentage	10.61%	10.81%	11.89%
Revenue Percentage	16.06%	16.03%	16.39%
ROA / Margin	5.45%	5.22%	4.50%
Average Loan Size	R 37 500	R 38 214	R 29 343
Pay Day Loan Portfolio			
Averages / Possible Useful Info			
	2015	2016	2017
New Business: Loan Value Growth		5.0%	6.0%
New Business: Loan Volume Growth		5.1%	6.1%
Bad Debt Charge Percentage	10.7%	10.7%	10.7%
Average Loan Size	R 8 500	R 8 492	R 8 484

<u>Candidate Solution:</u>

The overall portfolio performance as well as the individual product performances need to be compared between the 2016 calendar year and the 2017 calendar year (effectively this gives a good comparison between the pre-and post-new scorecard and new operational strategies).

This will allow the bank to see if any of the products are being negatively impacted by the new combined scorecard and strategy, as well as to assess the success of the changes on the overall Unsecured portfolio

<u>Credit Card Portfolio:</u>

The first most notable change for Credit Card is the large jump in the facilities approved for the year as well as how high the year 1 utilisation is in 2017 (unusually high). This probably demonstrates that much of the new business lost by the Unsecured Loans portfolio is moving to the Credit Card portfolio (as the new facilities are being drawn down very early on – effectively treated like an Unsecured Loan).

- *This may have resulted from the customer getting an offer on both products at the point of application as opposed to getting an offer purely for the product applied for (previously). The customers clearly prefer the Card offering (could be a function of facility size or even the rates charged that results in this preference)*
- *It should also be noted that the average facility size increased significantly (while that for Unsecured Loans decreased significantly). This too points to some of the business from Unsecured Loans now migrating to the Credit Card product offering. This is especially so of the larger loan amounts (probably lower risk loans)*

There is also a significant reduction in the bad debt charge (despite the large jump in new business and the utilisation thereof), while the total fee and interest income have increased slightly.

- *This means that the effective margin (ROA) of the product has improved while the product has increased sales significantly (this combination is unusual as a significant increase in sales usually results in an increase in bad debts or reduced margins)*
    - *Although it is possible that the defaults may emerge in the second and third years on book for this new business that has been written*
- *This outcome probably points to significantly improved risk ranking of the new scorecard that is being used for the Credit Card portfolio when compared with the previous product level scorecard*
- *Alternatively, it could point to the better risk Unsecured Loans customers moving across to the Credit Card offering (to some extent selecting against the Unsecured Loans product by moving to a product which is likely to have a better rate)*

The overall outlook for this product itself on the new scorecard seems to be very good (based on the year 1 impact), so no potential suggestions or changes necessarily recommended based on this info that has been provided.

<u>Unsecured Loans Portfolio:</u>

The new business written has altered significantly with the implementation of the new scorecard. The total value of the loans disbursed significantly reduced but at the same time the volume of loans written increased significantly (presumably approval rates increased for *higher risk customers). In addition, these changes resulted in the average loan size reducing significantly (again pointing to more higher risk clients being approved for the product).*

The bad debt charge increased significantly (despite reduced loan values being written), in addition the average interest and fees increased only marginally. Because of these changes, the ROA of this product has reduced quite significantly.

There could be many reasons for the resultant outcomes thus far:

- *Most notable is the decrease in business volumes, while seeing the bad debt percentage increase by a larger margin than the interest and fees charged. Ordinarily a new scorecard would look to move at least one of these metrics positively for the bank, however all 3 have gone the wrong way*
- *This clearly points to either product anti-selection (which could the case as customers are clearly choosing to take a credit card ahead of the loan) or to the new scorecard ranking for this product being weaker than it was in the past. Both would result in unexpectedly higher risk clients taking out loans while no additional risk premium lands up being charged for this extra risk.*

The overall outlook for this product is poor especially given the reduction in the ROA for the product. It may be worth exploring scoring customers on both the new customer level scorecard and the previous Unsecured Loans scorecard. Limits and offers are then assigned based on the outcomes of the loan's scorecard for the loans product, and the Credit Card and Pay Day Loans offers are based on the new client level scorecard.

Pay Day Loans Portfolio:

There is very little notable change in the performance of the portfolio between 2016 and 2017. It seems as if all scoring and operational changes have not impacted this portfolio at all since all the year on year metrics have remained largely unchanged.

Total Unsecured Portfolio:

Analysing the financial metrics for the overall Retail book shows an interesting picture. The overall drawn exposure increases marginally, limits booked increased. However, the bad debt charge has reduced slightly (14 basis points) and the revenue has increased slightly (1 basis point). Overall this results in the margin of the business increasing by 14 basis points.

While this amount is not large for one year, it results in an increase of R103m between the total revenue and bad debt charge (without any other notable changes in the book and in fact a decrease in the risk of the portfolio).

The new scorecard appears to be assisting the overall Retail book quite significantly (and if this trend continues over the next few years the overall margin of the book will continue to improve). The book is slowly switching from a book focused on Unsecured Loans towards a more balanced Credit Card and Unsecured Loans portfolio. Based on the total book performance it seems the new scorecard has generated some good benefits to date.