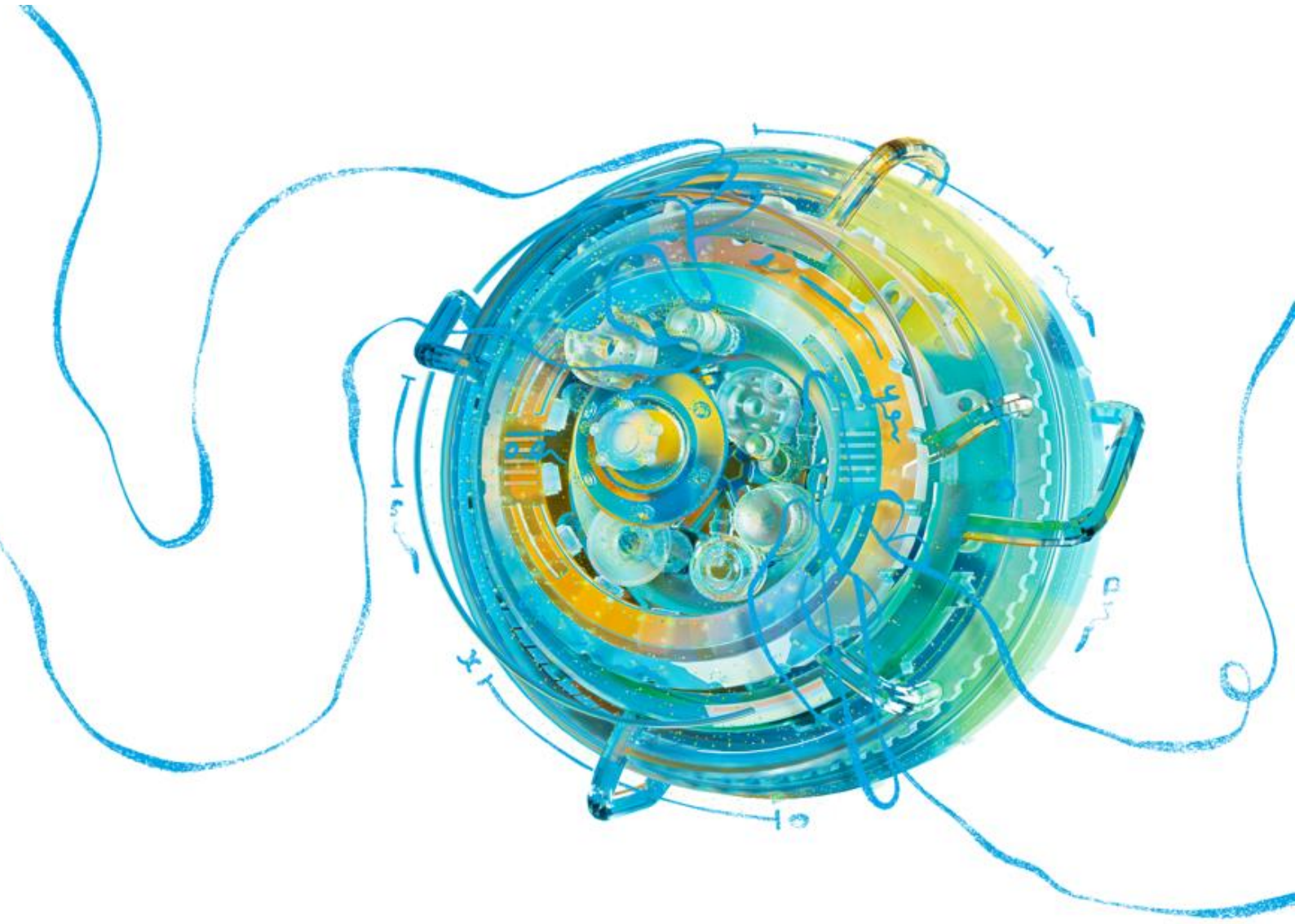
Alpha Capital Group 7 & 'I3C'

Executive Summary



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I. Why I3C

1. *Introduction*

This report presents a comprehensive approach to managing foreign exchange (FX) risk for I3C Tunisie, a leading electrical company with extensive international operations. The primary objective of our project was to mitigate I3C Tunisie's FX risk through innovative hedging strategies and sophisticated reporting tools. I3C Tunisie, headquartered in Tunisia, is a global leader in the consumer electronics sector. With a broad array of products and a global footprint, the company's operations involve dealing in multiple currencies. This exposure to foreign currencies creates a significant FX risk that, if not properly managed, can significantly impact the company's financial performance and stability.

As a part of Alpha Capital, our team has extensive experience in managing FX risks for multinational corporations. We leveraged this experience to propose a comprehensive solution for I3C Tunisie. Our approach focused on identifying the nature of I3C Tunisie's FX risk, proposing innovative hedging strategies to mitigate this risk, and developing a sophisticated reporting tool to monitor and manage the risk effectively.

2. *Company Selection*

The selection of I3C Tunisie was based on several factors.

a. Import/Export Volumes:

The 100% exportable business model of I3C makes it an appealing alternative for analysis. This criterion assures that the chosen company is tightly linked to international markets, resulting in high currency exposure.

b. International Market Presence:

Operating in the Construction Materials, Electrical Equipment, and Household Appliances sector with exportable commodities automatically places I3C in a strong worldwide market position. This component is critical for evaluating the company's broad variety of currencies.

c. Annual Revenue :

I3C's financial standing validates its selection, with an annual income of 29.7 million Dinar in 2022. This criterion assures that the selected organization is large enough to justify sophisticated FX risk management techniques.

d. FX Exposure Amount:

I3C's declared FX exposure of 9 million euros exceeds the required minimum exposure level of 1 million euros. This criterion assures that the chosen firm confronts significant FX risk, allowing for enough opportunity for strategic actions.

This exposure, when benchmarked against Carthage Cement, provides a comparative understanding of FX risk management strategies.

Ratios	I3C (2022)	I3C (2021)	Carthage Cement (2022)	Carthage Cement (2021)
Liquidity Ratios				
Current Ratio	1.41	1.2	0.91	0.84
Quick Ratio	1.26	0.81	0.48	0.45
Cash Ratio	0.41	0.21	0.06	0.04
Solvency Ratios				
Debt-to-Equity Ratio	0.44	0.59	1.79	2.44
Debt Ratio	0.1	0.07	0.35	0.41
Profitability Ratios				
ROA (Return on Assets)	3.63%	3.10%	4.14%	3.90%
ROE (Return on Equity)	15.52%	24.38%	21.29%	23.17%
Working Capital Ratios				
Working Capital Ratio	1.41	1.2	0.91	0.84
Net Working Capital	3,798,848	3,612,743	-25,797,343	-39,521,164

e. Financial Health :

I3C Tunisie has demonstrated a robust financial health. The company's liquidity ratios for 2022/2021 reveal that the current ratio has increased from 1.20 to 1.41, outperforming Carthage Cement. This, coupled with the improvement in I3C's quick and cash ratios, indicates an enhanced short-term liquidity. In terms of solvency ratios, I3C's debt-to-equity ratio has decreased when compared to

Carthage Cement, suggesting a more stable financial structure. Furthermore, I3C maintains a low debt ratio, indicating less financial leverage. On the profitability front, I3C's Return on Assets (ROA) has grown, signifying efficient asset usage. Although the Return on Equity (ROE) is lower than that of Carthage Cement, it still forecasts promising long-term returns.

f. Working Capital Efficiency:

The working capital ratios of I3C for 2022/2021 have improved, indicating an effective use of current assets to meet short-term liabilities. The growth in net working capital further signifies greater financial health and operational efficiency.

g. Strategic Considerations:

The selection of I3C offers a unique perspective on FX risk management solutions in the broader sector. The improved financial ratios of I3C are indicative of successful management practices, making it an intriguing subject for strategic research and action.

h. Potential for Improvement:

While Carthage Cement holds the position of the market leader, there is room for improvement in I3C's ratios. This presents a realistic scenario for implementing advanced FX risk management measures.

Our project was guided by the principle of aligning the client's financial objectives with the proposed strategies. We ensured that our proposed solutions would not only mitigate the FX risk but also contribute positively towards I3C Tunisie's short-term and long-term financial objectives. The project was divided into several steps, each aimed at achieving a specific goal. These steps ranged from building trust with I3C Tunisie, proposing services, creating a digital dashboard, computing FX risks, analyzing historical losses, preparing a presentation, collaborating with Citibank, and finally concluding the project.

In conclusion, I3C Tunisie was chosen due to its alignment with the project's objectives, significant FX exposure, improved financial health, and potential for strategic action. This choice provides a comprehensive and realistic case study for adopting cutting-edge FX risk management solutions in a competitive industrial environment.

II. Step 2: Engagement and Trust Building with I3C

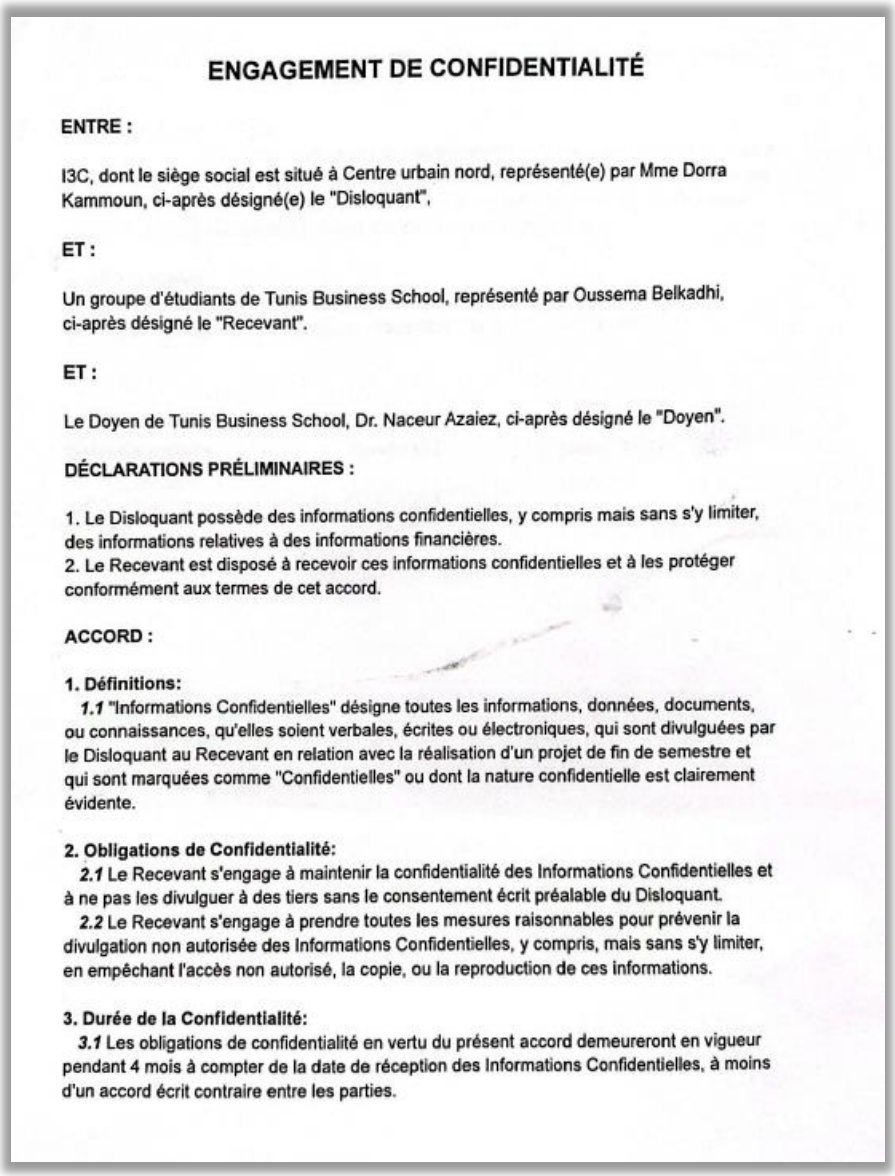
1. First contact and NDA signature

Once I3C Tunisie was selected, we initiated the process of engaging with the company. Our initial point of contact was the Administrative and Financial Director, Ms. **Dorra Kammoun**. Ms. Kammoun is a seasoned professional with a deep understanding of the company's operations and challenges. Her role allowed us to gain insights into the company's strategic direction and understand the broader context within which we would be working.

We prioritized establishing a strong working relationship with I3C Tunisie. To this end, we scheduled several interactive meetings with Ms. Kammoun and other key stakeholders from the company. These meetings served as a platform for not only exchanging ideas but also fostering trust, which we believe is a cornerstone of any successful partnership. Our commitment to open and transparent communication played a crucial role in building this trust.

Throughout these meetings, our primary goal was to gain a deep understanding of I3C Tunisie's specific needs and challenges in relation to FX risk management. We adopted an empathetic approach, listening attentively to their concerns, asking insightful questions, and leveraging our expertise to guide them towards effective solutions. We also took the opportunity to share examples of our past work, discussing how similar strategies could be beneficially applied to I3C Tunisie's situation.

Recognizing the importance of confidentiality in business dealings, we ensured to sign a **Non-Disclosure Agreement (NDA)** between Alpha Capital and I3C Tunisie during our first meeting. This step underscored our commitment to maintaining the privacy and security of the information shared during our collaboration.



ENGAGEMENT DE CONFIDENTIALITÉ

ENTRE :

I3C, dont le siège social est situé à Centre urbain nord, représenté(e) par Mme Dorra Kammoun, ci-après désigné(e) le "Disloquant",

ET :

Un groupe d'étudiants de Tunis Business School, représenté par Oussema Belkadhi, ci-après désigné le "Recevant".

ET :

Le Doyen de Tunis Business School, Dr. Naceur Azaiez, ci-après désigné le "Doyen".

DÉCLARATIONS PRÉLIMINAIRES :

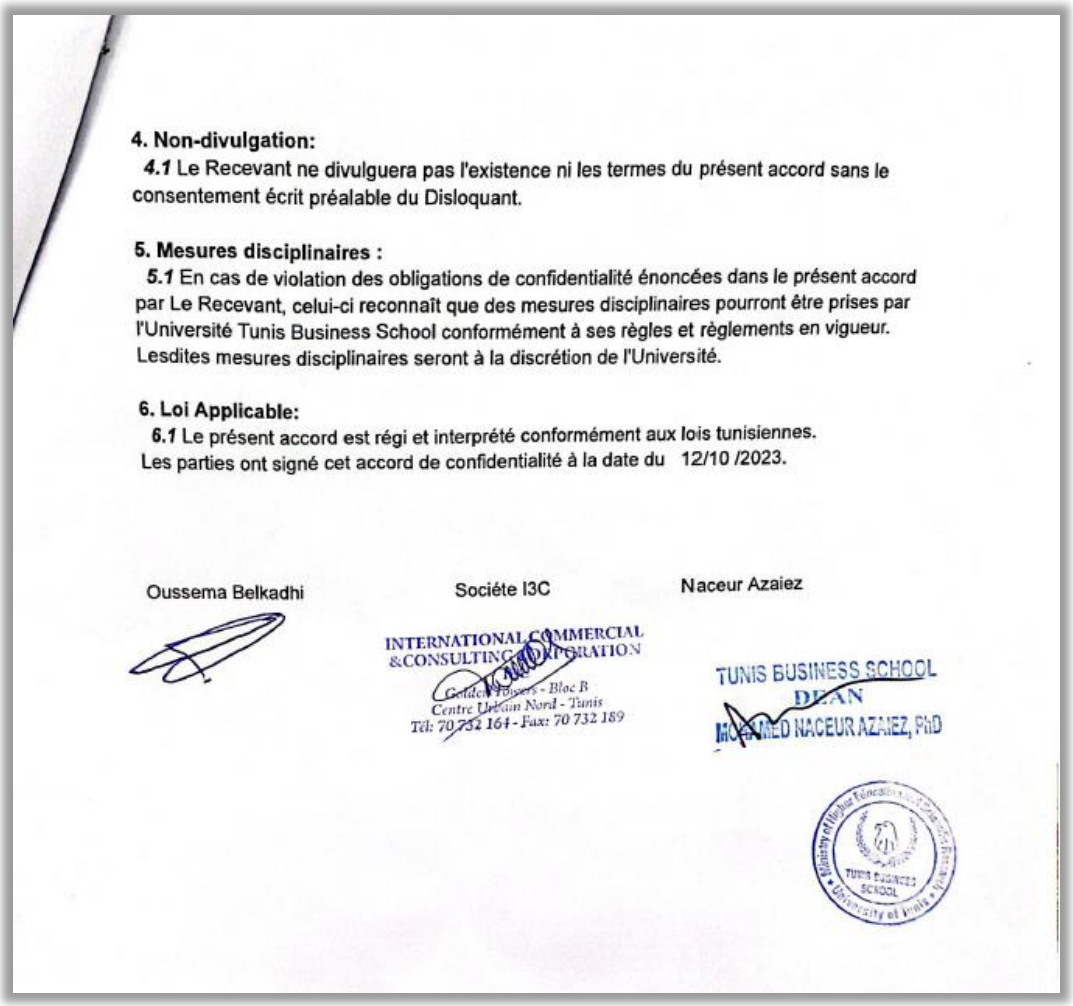
1. Le Disloquant possède des informations confidentielles, y compris mais sans s'y limiter, des informations relatives à des informations financières.
2. Le Recevant est disposé à recevoir ces informations confidentielles et à les protéger conformément aux termes de cet accord.

ACCORD :

1. Définitions:
1.1 "Informations Confidentielles" désigne toutes les informations, données, documents, ou connaissances, qu'elles soient verbales, écrites ou électroniques, qui sont divulguées par le Disloquant au Recevant en relation avec la réalisation d'un projet de fin de semestre et qui sont marquées comme "Confidentielles" ou dont la nature confidentielle est clairement évidente.

2. Obligations de Confidentialité:
2.1 Le Recevant s'engage à maintenir la confidentialité des Informations Confidentielles et à ne pas les divulguer à des tiers sans le consentement écrit préalable du Disloquant.
2.2 Le Recevant s'engage à prendre toutes les mesures raisonnables pour prévenir la divulgation non autorisée des Informations Confidentielles, y compris, mais sans s'y limiter, en empêchant l'accès non autorisé, la copie, ou la reproduction de ces informations.

3. Durée de la Confidentialité:
3.1 Les obligations de confidentialité en vertu du présent accord demeureront en vigueur pendant 4 mois à compter de la date de réception des Informations Confidentielles, à moins d'un accord écrit contraire entre les parties.



4. Non-divulgation:

4.1 Le Recevant ne divulguera pas l'existence ni les termes du présent accord sans le consentement écrit préalable du Disloquant.

5. Mesures disciplinaires :

5.1 En cas de violation des obligations de confidentialité énoncées dans le présent accord par Le Recevant, celui-ci reconnaît que des mesures disciplinaires pourront être prises par l'Université Tunis Business School conformément à ses règles et règlements en vigueur. Lesdites mesures disciplinaires seront à la discrétion de l'Université.

6. Loi Applicable:

6.1 Le présent accord est régi et interprété conformément aux lois tunisiennes.

Les parties ont signé cet accord de confidentialité à la date du 12/10 /2023.

Oussema Belkadhi

Société I3C

INTERNATIONAL COMMERCIAL &CONSULTING CORPORATION

Golden Towers - Bloc B
Centre Urbain Nord - Tunis
Tél: 70 732 164 - Fax: 70 732 189

Naceur Azaiez

TUNIS BUSINESS SCHOOL
DEAN
MOHAMED NACEUR AZAIEZ, PhD

2. *First meeting interactions with I3C:*

Our interactions with I3C Tunisie's representative, Dorra Kammoun, the Administrative and Financial Director, were insightful and productive. We initiated our conversation by expressing our excitement about working on this project and our primary goal of helping them manage their FX risk more effectively. Ms. Kammoun reciprocated our enthusiasm and acknowledged FX risk as a significant concern for their international operations.

To gain a better understanding of their FX risk, we requested data on their international transactions, specifically focusing on the currencies they deal with most frequently and the volume of these transactions. Ms. Kammoun confirmed that they primarily deal with USD and EUR and agreed to provide transaction data for the past three years.

We explained that this data would be instrumental in calculating their Value at Risk and Expected Shortfall for each currency, thereby providing a clearer picture of their FX risk. We also shared our plans to develop a digital dashboard that would offer insights into their FX risks, portfolio exposure, and the efficiency of various hedging strategies. We highlighted that this tool would integrate AI and machine learning technologies for sophisticated reporting and business intelligence.

When Ms. Kammoun expressed interest in our proposed hedging strategies, we elaborated on our range of tailored strategies. These included Rolling Hedging to adapt to market changes, Static Hedging for predictable cash flow patterns, and a personalized Hedging Program designed specifically for I3C Tunisie. Ms. Kammoun found these proposals promising and looked forward to seeing the results of our work.

The warm reception by the I3C representative and the team was noteworthy. They were extremely welcoming and professional, providing us with a comprehensive tour of the trading room and explaining their operations and strategies in detail. Their openness and eagerness to collaborate made us feel valued and respected, setting the stage for a productive and successful meeting. This positive environment further reinforced our commitment to delivering a comprehensive FX risk management solution for I3C Tunisie.

3. Client Onboarding Questionnaire I3C:

Our questionnaire (shared document) provided valuable insights into I3C Tunisie's foreign exchange (FX) and risk management practices.

Currency Configuration: I3C Tunisie's functional and reporting currency is the Dinar, meaning the company conducts its business transactions and reports its financial results in this currency. This is noteworthy as transactions or operations in other currencies could expose the company to FX risk due to currency fluctuations.

Treasury Organization: I3C Tunisie operates a centralized treasury organization, implying that the company has centralized policies and execution with daily monitoring to ensure policy compliance.

Subsidiaries and Payments: No subsidiaries but operates a branch in Burkina Faso. The company manages FX centrally in Tunisia, and payments are also centralized. Centralized payments management can help the company reduce transaction costs, improve control over cash flows, and manage FX risk effectively.

Import/Export Analysis: 100% export-oriented with 20% of its operations related to trade operations where both the client and supplier are outside Tunisia, and I3C Tunisie acts as an intermediary. The company deals in EUR and USD for its export transactions, exposing it to FX risk due to the volatility of EUR and USD against the Dinar.

Supplier / Receiver Finance and Expenses: This section appears to be incomplete, but it would generally cover aspects like supplier/receiver financing, fixed/admin expenses, and dividend repatriation practices, which could have implications for the company's cash flow management and FX risk.

Dividend Repatriation: The decision on the number of dividends is determined by the associates through a voting process. This could impact the company's cash flow and hence its ability to manage FX risk.

Risk Management Policy: FX risk assessment once a month and uses forward contracts for hedging. This strategy can help the company protect against potential losses from adverse currency movements.

Commodity Exposure: Despite being 100% export oriented, I3C has no direct commodity exposure, which means the company is not directly affected by commodity price fluctuations.

Research and Preferences: This section appears to be incomplete, but it would generally cover the company's preferences for research materials and other resources to support its FX risk management.

In summary, I3C Tunisie has a well-structured approach to managing its FX risk, which includes centralized treasury management, dealing with multiple international banks, assessing FX risk periodically, and using forward contracts for hedging. However, the company's 100% export orientation and the use of EUR and USD in transactions expose it to FX risk, necessitating effective risk management practices.

4. Alpha Capital KPI's Expertise:

To demonstrate our expertise, we presented a "Comparative Analysis of Key Performance Indicators (KPIs) in the Construction Market: A Case Study of I3C and Carthage Cement."

The global construction market is anticipated to experience significant growth in the coming years. One report suggests that the market, which had a compound annual growth rate (CAGR) of 4.6% from 2017 to 2022, is projected to grow at a rate of 5.5% from 2022 to 2027. The global construction materials market, which reached a size of USD 1.3 trillion in 2022, is expected to grow to around USD 3.52 trillion by 2032, with a CAGR of 10.97% from 2023 to 2032. In contrast, the Global Building Materials Market, which also reached USD 1.3 trillion in 2022, is projected to reach USD 1.7 trillion by 2030, growing at a slower CAGR of 3.9% during the forecast period 2023-2030.

Given these significant growth rates projected for the global construction and building materials markets, it's crucial for companies like I3C to consider implementing hedging strategies. Currently, I3C's hedge ratio stands at 100%, suggesting that the company is fully hedged against potential risks. Hedging, particularly in the construction industry, can be relevant when managing risks associated with fluctuating costs of construction materials. For instance, a construction company could enter into a futures contract to purchase a certain amount of a key construction material at a set price at a future date, effectively hedging against potential price increases.

With the expected growth in the construction market and the associated risks, it's clear that companies like I3C and Carthage Cement need to continue monitoring their key performance indicators and adjust their risk management strategies accordingly. As the construction market expands, the demand for construction materials is likely to rise, potentially leading to price increases and supply shortages. By maintaining a comprehensive approach to managing FX risk and other financial risks, including the use of hedging strategies, these companies can better navigate these market conditions and support their financial objectives.

To summarize Step 2, our engagement process was an iterative one, encompassing multiple rounds of meetings and discussions. We ensured our availability for follow-up discussions and consistently provided written updates on our progress. This continuous engagement guaranteed that we stayed in sync with I3C Tunisie's expectations and requirements.

The company selection and engagement phase proved to be critical to the success of our project. By choosing a company like I3C Tunisie, which has substantial FX exposure, and actively engaging with its leadership, we were able to gain a profound understanding of the company's needs and challenges.

III. Step 3: Alpha Capital Proposed Services

In Step 3, we, Alpha Capital, a leading financial services firm in Tunisia, presented our expertise and commitment to providing innovative and tailored solutions to our clients. Our proficiency spans across various aspects of financial management, from risk mitigation to portfolio management. Our dedicated team of professionals brings a wealth of experience and knowledge, ensuring that we deliver the highest standards of service and strategic guidance to our clients.

To mitigate FX risk, we propose a range of services that leverage different hedging strategies, each serving different purposes and used under varying market conditions.

Rolling Hedging: This strategy involves the continuous replacement of maturing forward contracts with new ones. It's particularly beneficial when the company's FX exposure is continuous and long-term. For instance, if I3C regularly imports materials priced in USD, rolling hedging can help mitigate the risk of USD appreciation over time. As each forward contract matures, a new one is implemented, effectively 'rolling' the hedge forward. This strategy is useful when exchange rates are expected to fluctuate over time, allowing I3C to manage its currency exposure more effectively.

Static Hedging: Static Hedging is used when cash flow patterns are predictable. It involves entering into a hedging contract once and not adjusting it during its lifetime. If I3C has a one-off significant transaction in a foreign currency, a static hedge can be used to lock in the current exchange rate, protecting the company against future currency fluctuations. This strategy is especially useful for one-time transactions where the company can predict the cash flow pattern.

Personalized Hedging Program: A Personalized Hedging Program involves designing a hedging program specifically tailored to I3C's unique risk profile and needs. This program could involve a mix of different financial instruments and strategies based on the company's specific situations. If I3C has diverse exposure across multiple currencies due to its global operations, a personalized hedging program that tackles each currency risk differently might be the most effective strategy. This program might also include tactical hedging strategies, which involve hedging only opportunistically in specific periods based on various conditions.

Understanding the types of foreign exchange risk is crucial to managing it effectively. There are three main types of FX risk:

Transaction Risk: This is the risk that the exchange rate will change unfavorably before a payment is made or received in the currency.

Translation Risk: A company that has assets and liabilities denominated in a foreign currency will have to translate them back into their domestic currency for financial reporting. The risk is that the exchange rate will change unfavorably during this period.

Economic Risk: This refers to the risk that a company's market value is continuously impacted by an unavoidable exposure to currency fluctuations. This is often the most difficult type of risk to forecast and hedge against because it involves long-term considerations.

In conclusion, managing FX risk is a strategic necessity for companies like I3C that operate in the global marketplace. By offering a suite of services that leverage a variety of hedging strategies, we can help I3C to mitigate their FX risk, protect them from unfavorable currency movements, and potentially enhance their profit margins through optimized FX execution. The goal is to provide a comprehensive solution that aligns with I3C's business objectives and minimizes their exposure to FX risk.

IV. Step 4: Calculations & Dashboards

Since I3c exports only in euro currency, we took the mid-market rates and did analysis on several risk metrics where we computed its several risk metrics mentioned in the 'Currency Risk' sheet on excel.

- **VaR :**

Gives you a measure of the worst expected loss with a certain probability. It tells you the level of loss you might expect to exceed only a given percentage of the time. for both alpha 1% and 5% to determine currency.

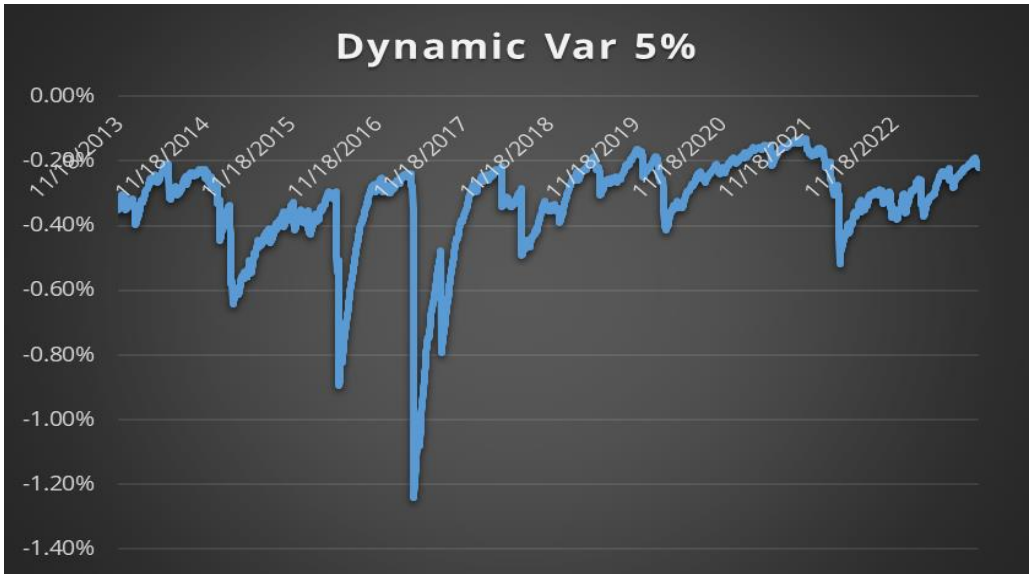
Computation: we used the historical classic formula with the PERCENTILE EXC(array,probability)

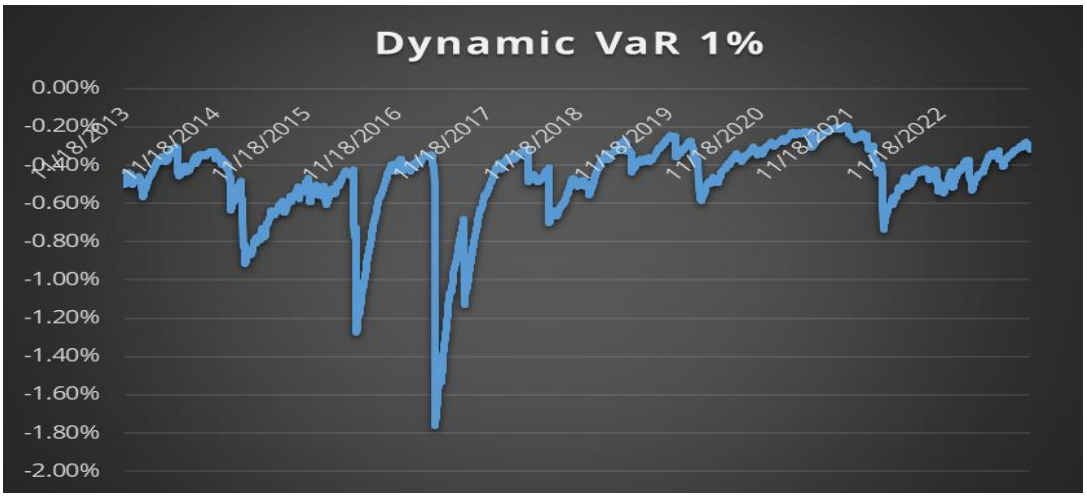
- **Dynamic VaR:**

Dynamic VaR adjusts for variations in the portfolio's composition or the state of the market over time. Dynamic VaR, as opposed to static VaR, changes as the market and portfolio do.

Computation: Applied the EWMA model with a lambda of 97% to calculate dynamic VaR for 1% and 5% alpha levels relying on the EWMA Formula:

$$\sigma_n^2 = \lambda * \sigma_{n-1}^2 + (1-\lambda) * r_{n-1}^2$$





- **Expected Shortfall considers what happens beyond VaR:**

While VaR gives you a threshold, Expected Shortfall goes a step further by looking at the average of the losses that exceed this threshold. It considers not just the magnitude of the potential loss but also the likelihood of that loss occurring.

Computation: Calculate the Expected Shortfall by averaging the returns on the days where losses exceed the VaR. Using Excel, you can use the AVERAGEIF function for this purpose.

		daily	yearly
FOR 1%	Var	-0.52%	-8.2%
	Expected shortfall	-0.70%	-11.12%

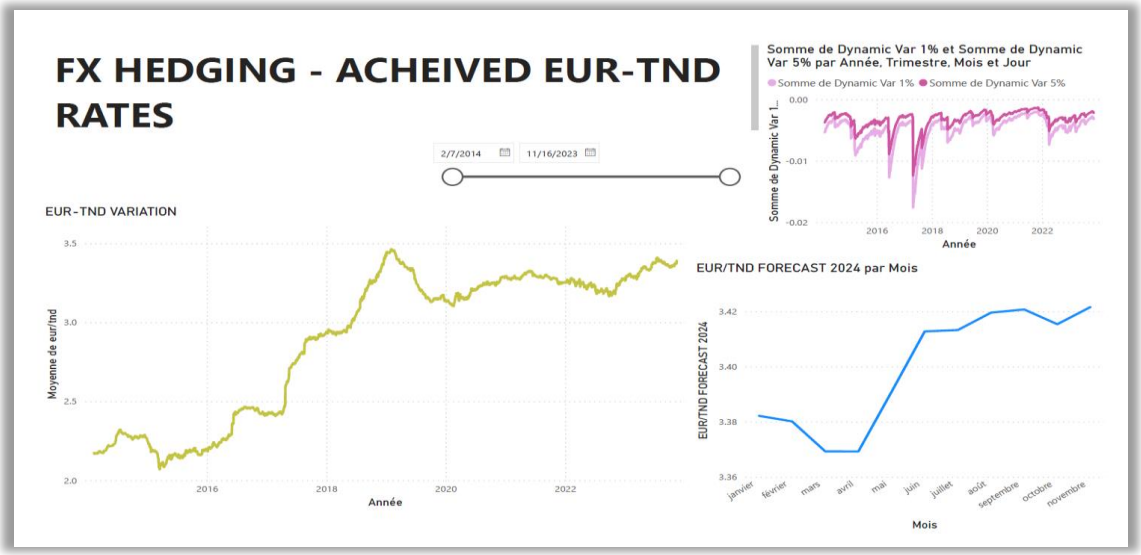
- There is a 95% probability that the EUR TND exchange rate will not depreciate more than 0.52% in a single day and 8.2% yearly.
- if the exchange rate experiences losses beyond the VaR thresholds of a 1% probability the average loss is expected to be 0.70% daily and 11.12% average losses yearly

FOR 5%	Var	-0.28%	-4.4%
	Expected Shortfall	-0.43%	-6.79%

- There is a 99% probability that the depreciation will not exceed 0.28% daily.
- if the exchange rate experiences losses beyond the VaR thresholds of a 1% probability the average loss is expected to be 0.43%.

To summarize a dashboard is made where we put the several risk metrics adding to the **forecasting where we used the following python code (prophet forecasting) to forecast EUR TND rates for the next 252 business days and give insights about the currency volatility since no correlation is needed because I3C uses only one currency .though, no weighted var is required.**

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from prophet import Prophet

# Load the dataset
file_path = 'Copy of TND - PCA - FX Rates.xlsx'
df = pd.read_excel(file_path)

# Convert 'Date' to datetime format
df['Date'] = pd.to_datetime(df['Date'])

# Drop unnamed columns and remove duplicate rows
df = df.loc[:, ~df.columns.str.contains('^Unnamed')]
df = df.drop_duplicates()

# Split data for each exchange rate
exchange_rate = ['EURTND']

for rate in exchange_rate:
    # Select columns for the specific exchange rate and drop NaN values
    df_rate = df[['Date', rate]].dropna()
    df_rate.columns = ['ds', 'y']  # Rename columns for Prophet

    # Define the training dataset (all available data)
    df_train = df_rate.copy()

    # Initialize and fit the Prophet model
    prophet_model = Prophet()
    prophet_model.fit(df_train)

    # Forecasting for the next year (252 business days)
    future = prophet_model.make_future_dataframe(periods=252, freq='B')
    forecast = prophet_model.predict(future)

    # Plot the forecast
    plt.figure(figsize=(14, 7))
    plt.plot(df_train['ds'], df_train['y'], label='Train Actual', color='blue')
    plt.plot(forecast['ds'], forecast['yhat'], label='Forecast', color='red')
    plt.title(f'Prophet Forecast for the Next Year - {rate}')
    plt.xlabel('Date')
    plt.ylabel('Exchange Rate')
    plt.legend()
    plt.show()

    # Save the forecast to an Excel file
    forecast_df = forecast[['ds', 'yhat']]
    forecast_df.columns = ['Date', 'Forecasted_Exchange_Rate']
    forecast_df.to_excel(f'forecast_{rate}_prophet.xlsx', index=False)
    print(f'Forecasted data saved to Excel for {rate}: forecast_{rate}_prophet.xlsx')
```



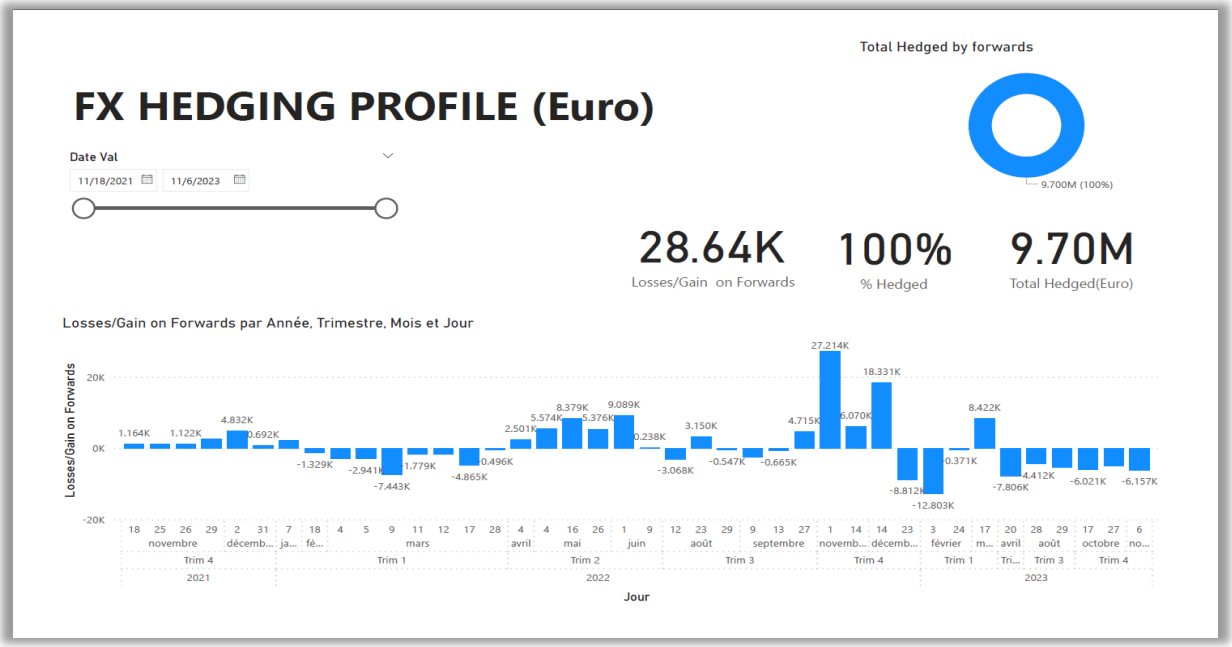
The dashboard emphasizes how the rates have been moving a long in the last 9 years and highlights the dynamic VaR metric to put more in value the stochastic process that goes within the currency. Also, we tried to visualize the forecasting currency to estimate more the currency fluctuations.

(Remark: to open the Power BI file you should download the two excel sheets we sent, change the source)

V. Step 5: Historical Losses in FX Transactions

By contrasting the agreed upon (executed) future rates with the matching mid-market forward prices, we were able to calculate the historical losses in EURTND currency (FX) transactions.
The study attempts to provide insights into the efficacy of the company's foreign exchange policies and pinpoint possible areas for development by closely examining these discrepancies. A detailed comprehension is made possible by the unique presentation of every transaction, which includes the essential rates and the profit or loss that results.

First, the dashboard for I3C management provides a comprehensive view of the company's FX risk profile, focusing on the effectiveness and efficiency of its forward contracts as a hedging strategy.



The first section, "FX Hedging Profile (Euro)", shows that a total of 9.7 million Euros (100% of the company's exposure) has been hedged by forwards. Over the specified date range from 11/18/2021 to 11/6/2023, the net gains from these forward contracts totaled 28.64K Euros. This suggests that I3C's hedging strategy has been effective in generating a positive return and mitigating the company's FX risk during this period.

Since I3C in last 3 years only entered in forwards for 3-month tenor or less, we calculated the 3-month forward rates relying on the formula:

- **Forward (EUR TND)=SPOT(EUR TND)*(1+TUNIBOR-3 month)/(1+EURIBOR 3-month)**

$$F(EUR/TND) = S(EUR/TND) \times \frac{(1+i_{TND})}{(1+i_{EUR})}$$

$$FWD = Spot\ Price\ X\ \frac{\left(1 + interest\ rate\ of\ variable\ currency\ X\ \frac{Days}{Annual\ base}\right)}{\left(1 + interest\ rate\ of\ base\ currency\ X\ \frac{Days}{Annual\ base}\right)}$$

- We didn't find the Tunibor which pushed us to take the TMM and ask Mr Mezri for the adjustment needed which was 0.25%
- Downloaded EURIBOR rates for 3 months.

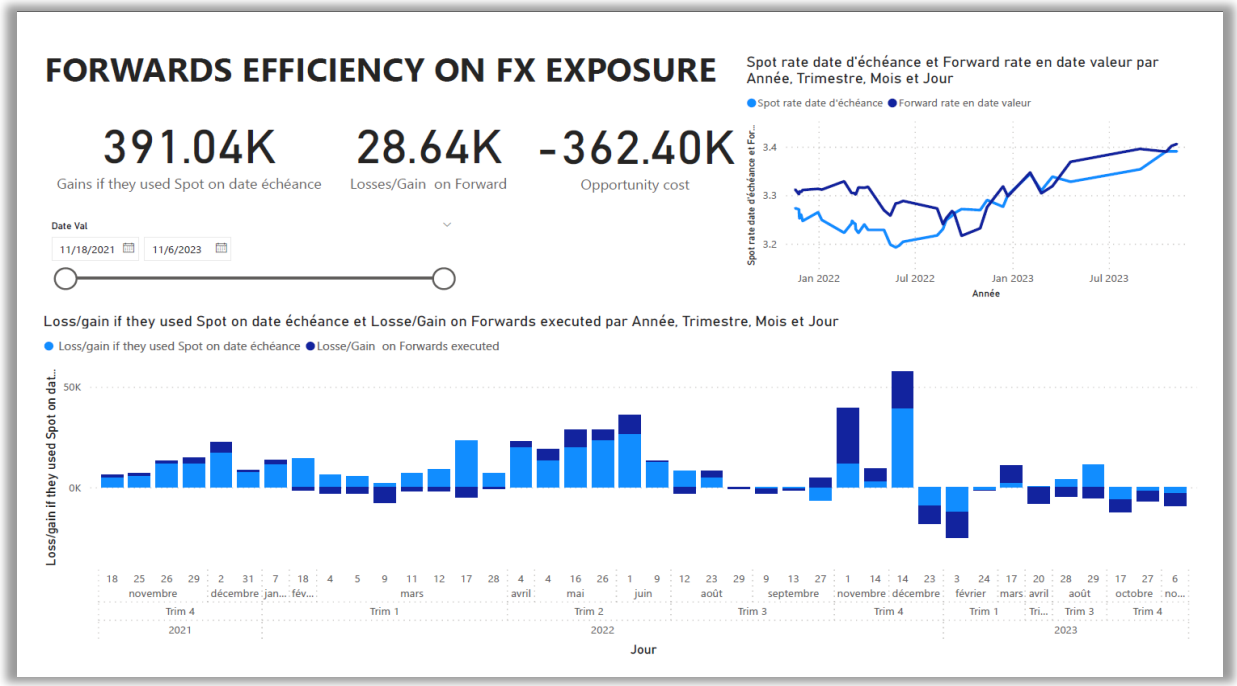
- We took the Tenor by subtracting (Date échéance (maturity of the forward minus Date Valeur)
- By using the formula to calculate historical losses we take Net export which is the next exposure (100% exportable)

- **Losses/gain= Net exposure*(Negotiated rate with the bank-Forward rate)**

To make a relative benchmark for I3c historical losses and gains we calculated the mid-market rate in date échéance:

- **Loss/gain at maturity= Net exposure*(negotiated bank rate-Spot rate at maturity of the forward)**

And compared it to forward rates executed to track the opportunity cost as shown on the dashboard.



"Forwards Efficiency on FX Exposure", provides a deeper look at the efficiency of I3C's forward contracts. If I3C had used the spot rate on the date of maturity (date échéance) for their foreign transactions instead of forward contracts, they would have realized gains of 391.04K Euros. However, by using forward contracts, their actual gains were 28.64K Euros. The difference of 362.4K Euros represents the opportunity cost of using forward contracts instead of the spot rate.

Opportunity cost is a key concept in financial management. It represents the potential benefits an individual, investor, or business misses out on when choosing one alternative over another. In this case, the opportunity cost suggests that I3C could have potentially achieved higher gains if they had used the spot rate instead of forward contracts. However, it's important to remember that hedging is primarily about risk reduction rather than profit maximization. The use of forward contracts has allowed I3C to lock in the exchange rate for its foreign transactions, thereby reducing their FX risk and providing them with greater certainty about their future cash flows.

In summary, the dashboard provides valuable insights into I3C's FX risk and the effectiveness and efficiency of its hedging strategy. While the company's use of forward contracts has resulted in an opportunity cost, it has also effectively mitigated the company's FX risk and provided them with greater financial stability.

VI. Step 6: Presentation of I3C and its FX Exposure

In Step 6, we embarked on a journey to illuminate the financial landscape of I3C, a company that stands as a beacon in various sectors, including electricity, construction materials, and agri-food. Our presentation painted a vivid picture of I3C's operations, underlining its mission to enhance its clients' businesses by delivering tailored solutions that drive growth and profitability.

We then delved into the heart of I3C's financial operations, shedding light on its significant foreign exchange (FX) risk. With transactions in multiple currencies, primarily Euros and Dollars, I3C's fully export-oriented model exposes it to an FX risk of a considerable 9.7 million Euros. This figure, a testament to the scale of I3C's operations, also serves as a stark reminder of the substantial FX risk that the company is currently facing.

Our narrative then transitioned to I3C's current FX Risk Management strategies. We highlighted how I3C navigates the turbulent waters of FX risk with a static 100% forward hedging strategy, using “vente à terme” operations for their hedging activities and managing their imports through a “compte négoce”. We also emphasized the crucial role of I3C's financial partnerships with several institutions, including BIAT, UIB, STB, and ATTIJARI BANK, in executing their hedging strategies and managing their FX risks.

Finally, we touched upon I3C's risk management systems. Despite not using an ERP system, I3C effectively leverages Excel for their risk management activities. This revelation served as a testament to I3C's ability to adapt and thrive, even in the face of significant FX risk.

Through this presentation, we not only showcased I3C's financial landscape but also set the stage for the proposal we would build in the subsequent steps, aimed at better managing and mitigating their FX risk. This step was a crucial part of our journey, providing us with the foundation upon which we would construct our strategic interventions.

VII. Step 7: Collaboration with Mr. Mezri Karoui

We collaborated with Mr. Mezri Karoui, VP at Citibank, to develop client-centric FX solutions for I3C Tunisie. These solutions feature customized reporting, seamless integration with I3C Tunisie's existing systems, and innovative business intelligence capabilities that offer actionable insights and decision-making support.

Our collaboration began with a detailed discussion on I3C Tunisie's FX risk management needs and since i3c is 100% hedging its FX exposure We then explored possible ways in which Citibank's expertise and resources could be leveraged to enhance I3C Tunisie's FX risk management strategies.
and this was the summary out of the collaboration.

1. Executive Summary

In this step we Provided a concise overview of the proposed shift from 100% static hedging to dynamic hedging, highlighting the potential benefits for the client and emphasizing the static hedging approach and acknowledging the inherent challenges, setting the stage for the transition to dynamic hedging.

To take a deeper look we calculated some KPIs like, hedging ratio, hedging effectiveness and cash flow impact:

- **Transaction Exposure = Expected Transaction Amount x (1 - Hedge Ratio)**
- **Hedging Effectiveness = [(Actual Gain or Loss - Expected Gain or Loss) / Expected Gain or Loss] x 100**
- **Forward Contract Usage = (Value of Hedged Exposure) / (Total Exposure)**
- **FX P&L Variance = Actual FX P&L - Expected FX P&L**

Hedging KPIs	Value
Hedging ratio	100%
Hedging effectiveness	-93.7%
Transaction exposure	0
Forwards usage	100%
Opportunity cost	362.4K

2. Red Flags of Static hedging

Hedging Approach	Drawdown	Risk	Returns	Cash Flow Impact
FULLY HEDGED	NEUTRALISED	ZERO	INTEREST RATE DIFFERENTIAL	HIGH

a. Cash-Flow Management :

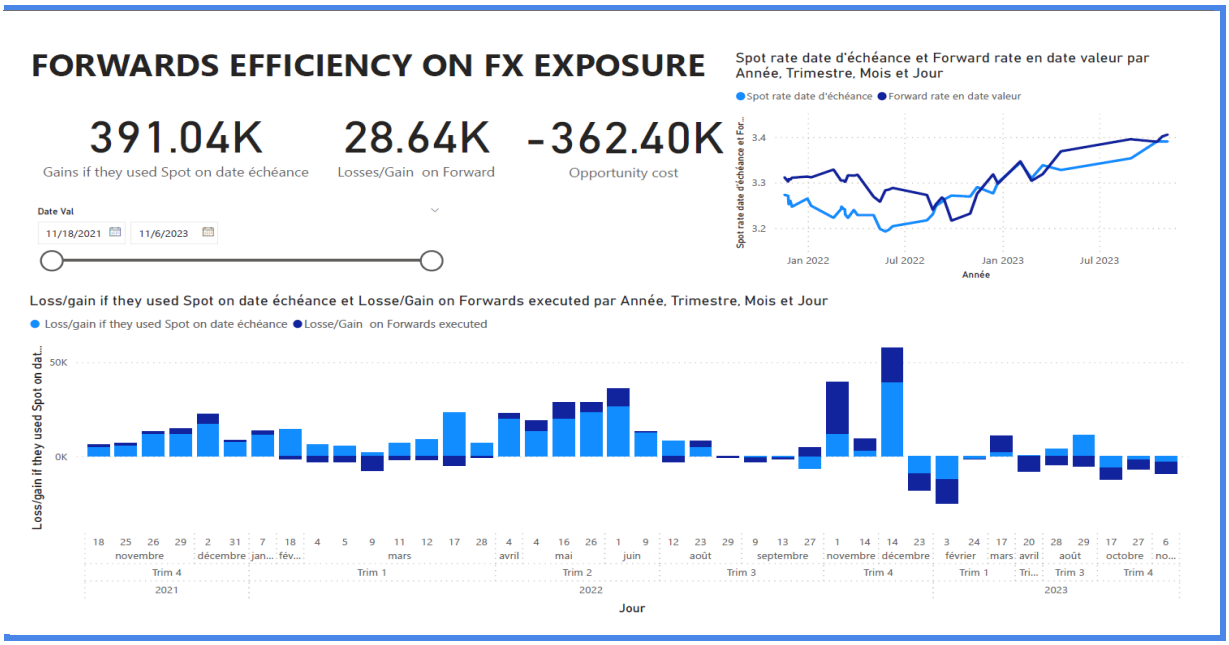
However, the profits and losses from the currency hedge result in a cash flow impact which can be significant and needs to be managed.

b. Diversification Matters :

100% hedging policy was always a taboo that's why an important measure like hedge ratio should be dynamically managed. Also as mentioned the client's desire for risk mitigation without sacrificing potential returns.

c. Opportunity Cost :

Present the concept of opportunity cost in a dynamic market and how a dynamic hedge can capture potential gains during favorable market conditions, and this is an example of the opportunity cost caused by passive hedging for i3c last 3 years.



3. *Solution:*

A Dynamic rolling Hedging Strategy is strongly recommended in such cases when 100% is the benchmark and since the hedging effectiveness (-93.7%) KPI is too low.
Dynamic hedging would be a more adaptive approach to manage currency risk. Dynamic hedging involves adjusting hedge ratios based on currency market conditions. Emphasize the need for continuous monitoring and strategic adjustments.

Discuss how dynamic hedging improves cash flow management by responding to market cycles.
Highlight potential gains during periods of favorable currency movements.

Hedging Approach	Drawdown	Risk	Returns	Cash Flow Impact
DYNAMIC HEDGE	REDUCES DRAWDOWNS	VARIABLE	ADDED VALUE VS ANY BENCHMARK	IMPROVE VS PASSIVE HEDGE

Dynamic hedging is flexible and can be applied to any benchmark hedge ratio.

For this matter we focused on optimizing the hedging strategy since our benchmark is 100%, we tried to optimize the right past optimal hedging ratios using the formula:

Formula: **SUMIFS (range of transcation amounts, [criteria1range] range of(opportunity cost, [Criteria1] ">0", range of year (date valeur), year of hedging)**

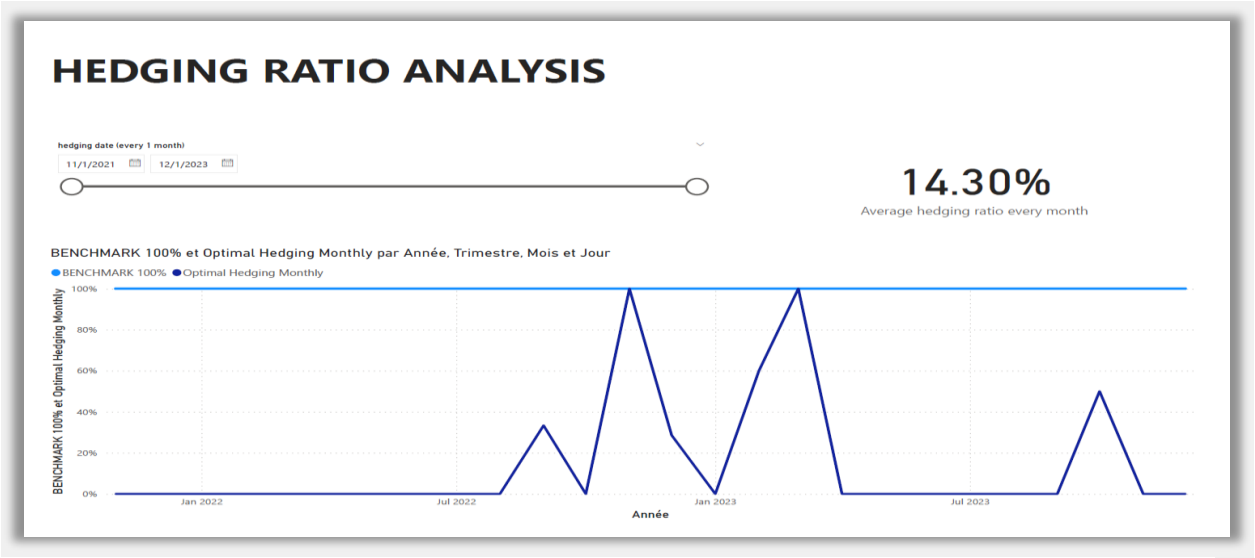
We tried to calculate 3-month, monthly and yearly optimal hedging ratio to track and stress the worst Periodic cases; which gave us(HEDGE RATIO SHEET on excel):

hedging date (every 1 month)	hedge ratio every month
11/1/2021	0%
12/1/2021	0%
1/1/2022	0%
2/1/2022	0%
3/1/2022	0%
4/1/2022	0%
5/1/2022	0%
6/1/2022	0%
7/1/2022	0%
8/1/2022	0%
9/1/2022	33%
10/1/2022	0%
11/1/2022	100%
12/1/2022	29%
1/1/2023	0%
2/1/2023	60%
3/1/2023	100%
4/1/2023	0%
5/1/2023	0%
6/1/2023	0%
7/1/2023	0%
8/1/2023	0%
9/1/2023	0%
10/1/2023	50%
11/1/2023	0%
12/1/2023	0%

hedging date every 3 monts	hedge ratio every 3 months
11/1/2021	0%
2/1/2022	0%
5/1/2022	0%
8/1/2022	17%
11/1/2022	62%
2/1/2023	60%
5/1/2023	0%
8/1/2023	25%
11/1/2023	0%

Date hedge	Optimal Annual hedge ratio
01.01.2021	0.0%
01.01.2022	16.7%
01.01.2023	37.5%

To get the optimal hedge ratio yearly and every 3 months for the last 3 years. It's concluded in this clear dashboard where we compare the optimal hedge ratio to the benchmark 100%:



Just like shown on the graph the hedging strategy of i3c from 11-2021 to 06-2022 was highly inefficient since they missed 100% chance of getting an additional gain on its FX operations afterwards from 06-2022 until 04/2023 it got back to the same inefficiency and which why dynamic hedging is required.

VIII. Step 8: Meetings & Discussions with Mr. Mezri

In Step 8, we embarked on a series of enlightening online meetings with Mr. Mezri. Over the course of **four sessions** and a **collective Q&A session**, we delved deep into the intricacies of FX risk management. Mr. Mezri's insights, coupled with our expertise, paved the way for a comprehensive understanding of our client I3C's needs and aspirations for better FX risk execution.

Each meeting was a treasure trove of knowledge, shedding light on the nuances of FX risk and the pivotal role Citibank could play in executing the deal for I3C. We dissected the challenges I3C faced, analyzed their current strategies, and brainstormed potential solutions. The discussions were not just about identifying the problems but also about envisioning a future where I3C could navigate the volatile FX market with confidence and precision.

Mr. Mezri's notes served as a compass, guiding us through the complex landscape of FX risk management. His insights underscored the importance of a client-centric approach, emphasizing the need to align our strategies with I3C's financial objectives. This collaborative approach was instrumental in shaping our understanding and formulating a plan that would not only mitigate I3C's FX risk but also empower them to seize potential opportunities in the FX market.

The culmination of these discussions was a shared vision - a vision of I3C leveraging sophisticated FX risk execution strategies to enhance their financial stability and drive growth. Citibank emerged as a critical ally in this journey, offering its vast resources and expertise to facilitate the execution of this vision.

In essence, Step 8 was a testament to the power of collaboration and expertise. It underscored the importance of understanding the client's needs, leveraging professional insights, and formulating strategies that align with the client's financial objectives. As we move forward to the next step, these insights will be instrumental. The proposal and recommendations for I3C will be pitched, considering all the knowledge and understanding we've gathered so far. This will ensure that our proposal is not only robust and effective but also tailored to I3C's unique needs and aspirations. The goal is to

empower I3C to navigate the volatile FX market with confidence and precision, enhancing their financial stability and driving growth.

IX. Step 9: Proposal for I3C

In Step 9, we presented a comprehensive proposal to I3C Tunisie for better execution of their FX transactions. This proposal was the culmination of our thorough analysis of I3C Tunisie's FX risk, insightful discussions with Citibank, and our expertise in FX risk management.

Our proposal was encapsulated in a second PowerPoint presentation, which featured a variety of dashboards, recommendations, and strategies. The cornerstone of our proposal was a shift from I3C's current 100% static hedging strategy to a more dynamic hedging approach. This approach involves adjusting the hedging ratio during periods of foreign currency strength, leading to a greater use of spot transactions. The goal is to minimize negative cash flows while maintaining a close to fully hedged position most of the time.

While a benchmark hedge ratio of 50% is often recommended, our in-depth analysis suggested that a ratio of 37.5% would be optimal for I3C's specific situation. This dynamic hedging strategy provides a more flexible and potentially more profitable approach to managing FX risk.

Given the scenario of a 100% export company experiencing higher volatility in the EUR/TNS FX market due to public Tunisian debts reimbursements in 2024, we recommended a more balanced approach. We advised I3C to reconsider its current 100% hedging approach and recommended a phased adjustment towards the optimal 37.5% hedging level. This gradual transition allows the company to benefit from potential favorable market movements while managing risks effectively.

Regularly reassessing market conditions and adjusting the hedging ratio accordingly will enhance the overall risk-return profile and would make it a better forecast for the short-term next period. This proposal, developed in collaboration with Citibank, aims to empower I3C Tunisie to navigate the volatile FX market with confidence and precision, enhancing their financial stability and driving growth.

Before presenting the proposal, we took the time to explain the benefits and implications of each recommendation. We also provided a cost-benefit analysis to illustrate how the proposed solutions would reduce I3C Tunisie's FX risk while potentially increasing their profits.

The presentation was well-received by I3C Tunisie. They appreciated our efforts in understanding their FX risk and our commitment to providing effective solutions. They agreed to our proposal and expressed their willingness to implement the suggested FX solutions.

For all intents and purposes, the new proposal for FX transactions execution was a significant milestone in our project. It marked the culmination of our analysis, collaboration with Citibank, and discussions with I3C Tunisie. The proposal provided a roadmap for I3C Tunisie to better manage their FX risks and optimize their FX transactions.

Thank you!