

2023SU_MS_DSP_403-DL_SEC60: Data Science and Digital Transformation

Module 2 Assignment

Creating a Short List of Potentially Impactful Digital Use Cases

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Background

Global FinTech Corp (GFC) is a multinational financial services provider with a diversified business model that caters to individual consumers, small to medium businesses, and large corporations. The company has been a leader in traditional banking services for over a century, but in recent years, it has also made substantial strides in the field of digital finance.

Headquartered in London, UK, GFC operates in over 50 countries, employing more than 100,000 people worldwide. It manages assets exceeding \$2 trillion and serves over 20 million customers globally. As one of the largest global banks, it offers a wide range of services, including retail banking, corporate banking, investment banking, asset management, and insurance.

Despite the company's success, the past decade has seen an industry-wide shift in the financial sector. The advent of financial technology or "fintech" has started to disrupt traditional banking practices, leading to a shift in consumer expectations. Consumers increasingly demand seamless, round-the-clock digital experiences. This change is driven by a younger, more tech-savvy generation of consumers, but it has also been accelerated by the global shift towards digital services resulting from the COVID-19 pandemic.

In response to these changes, GFC has undertaken a digital transformation journey to remain competitive and deliver on evolving consumer demands. The company has already made significant progress in this regard, with over 60% of its transactions now being conducted digitally.

However, GFC recognizes that to remain at the forefront of the industry, it must go beyond simply digitizing existing services. The company must also harness the power of data and emerging technologies to deliver innovative financial products and services that anticipate and meet its customers' needs. Therefore, GFC is seeking to leverage technologies such as artificial intelligence, machine learning, natural language processing, and blockchain in its operations.

Moreover, GFC also understands that to fully realize its digital ambitions, it must reimagine its internal processes and structures. This includes adopting agile methodologies, fostering a culture of innovation, upskilling its workforce, and integrating technology into every facet of its operations. These efforts are being led by a dedicated digital transformation team that reports directly to the company's executive leadership.

GFC's strategic vision is to become a global leader in digital financial services. This ambition is underpinned by a mission to deliver personalized, seamless, and secure financial services that empower its customers and drive inclusive growth. The company's executive leadership is fully supportive of this vision and is committed to investing the necessary resources to achieve it.

As part of this transformation journey, GFC has posted a large project for bid. It aims to hire an analytical consultancy to design a Digital Transformation Roadmap that focuses on several key areas such as digital personal assistants/chatbots, fraud detection, credit scoring, NLP for customer contracts, portfolio management, high frequency trading, algorithmic trading, investment predictions, process automation, consumer marketing and cross-selling, trade settlements, and an automated wealth advisor. The successful consultancy will play a critical role in shaping the company's future and cementing its position as a global leader in digital finance.

Assumptions

In developing a comprehensive Digital Transformation Roadmap for GFC, it is essential to make certain assumptions about the organization and the market dynamics. These assumptions help in creating a realistic and actionable roadmap, providing the foundation for potential initiatives and projecting their impact. Each transformation opportunity leveraged by GFC brings its unique context and potential, therefore requiring its distinct set of assumptions. While these assumptions are grounded in industry trends and GFC's operational context, they are subject to validation and refinement as the company delves deeper into each transformation initiative. Here, we lay out these assumptions across the key transformation areas.

- 1. Digital Personal Assistants/Chatbots: Given GFC's large and diverse customer base, it's plausible to assume that the company fields a substantial volume of customer queries daily, with many of them likely to be routine or repetitive. By introducing AI-powered digital personal assistants or chatbots, GFC could provide immediate responses to these customer queries, thereby enhancing service speed, efficiency, and customer satisfaction.
- 2. Fraud Detection: In an increasingly digitized financial landscape, fraud mechanisms have become significantly sophisticated. By leveraging technologies like AI and machine learning, GFC can potentially revolutionize its fraud detection capabilities, thus reducing financial losses and bolstering customer trust.
- 3. Credit Scoring: Traditional credit scoring methods may not fully capture the creditworthiness of all potential customers, particularly those with non-conventional financial histories. By deploying advanced analytics and utilizing alternative data, GFC could extend its services to previously underserved market segments, driving growth and inclusivity.

- 4. NLP for Customer Contracts: Considering GFC's broad range of services and its international operations, it's likely that the company manages a vast volume of contracts. The adoption of Natural Language Processing (NLP) technologies can streamline contract management, reduce legal risks, and free up valuable resources for strategic tasks.
- Portfolio Management: As customers demand increasingly personalized and flexible
 portfolio management services, GFC could leverage advanced analytics and AI to
 offer tailor-made investment solutions, enhancing customer satisfaction and
 promoting customer retention.
- 6. High Frequency Trading and Algorithmic Trading: Given GFC's stature and scale, it's reasonable to assume that the company possesses the necessary infrastructure to support high-speed trades. By optimizing and advancing these capabilities, GFC could offer its clients even more competitive offerings and expand its market share.
- 7. Investment Predictions: With decades of operational experience, GFC has access to a wealth of historical trading data. By harnessing the power of advanced analytics, the company can develop predictive models to provide superior investment advisory services to its clients.
- 8. Process Automation: As a large organization, GFC likely manages numerous manual, repetitive tasks. Automating these processes could yield significant cost reductions, improve operational efficiency, and enable the company to focus more on strategic initiatives.
- 9. Consumer Marketing and Cross-Selling: With its diverse customer base and wide range of services, GFC possesses considerable opportunities for cross-selling. By leveraging customer analytics, the company could better understand its customers and tailor its marketing strategies accordingly, driving increased sales and profitability.

- 10. Trade Settlements: The current trade settlement process may be time-consuming and susceptible to human error due to manual intervention. Automating this process could streamline operations, reducing time and error rates, leading to improved operational efficiency and customer satisfaction.
- 11. Automated Wealth Advisor (Wealth Bot): The demand for low-cost, personalized financial advice continues to rise. By introducing an automated wealth advisor, or 'Wealth Bot', GFC could cater to this demand, enhance customer satisfaction, and achieve a competitive advantage in the digital financial landscape.

Transformation Areas

In today's rapidly evolving digital landscape, financial institutions must leverage emerging technologies to stay competitive and meet the evolving needs of their customers. For GFC, this means exploring a range of transformation opportunities that could fundamentally enhance its operations and customer experience. From deploying AI-powered digital assistants to harnessing machine learning for superior fraud detection and credit scoring, the potential for digital disruption is immense. Similarly, applying Natural Language Processing (NLP) for customer contracts can revolutionize contract management, while improved portfolio management, high-frequency trading, and algorithmic trading can bring unprecedented efficiency and profitability. Investment predictions, powered by sophisticated analytics, can significantly enhance financial outcomes for GFC's clients. Process automation can dramatically reduce costs and improve service delivery. Targeted consumer marketing and cross-selling, powered by data analytics, can enhance customer acquisition and retention. Enhancements in trade settlements can streamline trading operations, and an Automated Wealth Advisor, or 'Wealth Bot,' can democratize wealth management services, reaching a wider customer base. Let's explore these transformation opportunities in more detail.

- 1. Digital Personal Assistants/Chatbots: The integration of AI-powered chatbots will revolutionize customer service within GFC. In the initial stages, these chatbots will handle simple customer queries, significantly reducing response times and enhancing the customer experience. As these AI tools learn from interactions, they will be able to tackle more complex questions, reducing the load on human agents, thereby cutting costs. Additionally, integrating chatbots with product recommendation systems can create personalized up-selling and cross-selling opportunities, driving further revenue.
- 2. Fraud Detection: A progressive AI-based fraud detection system will drastically minimize GFC's exposure to fraudulent transactions and associated financial losses. Initially, these systems would identify basic patterns of fraudulent activities. As they learn over time, they could predict sophisticated fraud patterns in real-time, securing customer accounts and boosting overall customer confidence in the platform. This will also help maintain the company's reputation and foster stronger customer relationships, thereby indirectly driving customer retention and acquisition.
- 3. Credit Scoring: The deployment of AI and machine learning for credit scoring will enable GFC to make more precise credit decisions. The firm will evolve from using traditional credit scoring methods to advanced models that leverage alternative data sources. The system will improve over time, allowing the company to extend services to a broader customer segment previously viewed as high-risk or credit-invisible, resulting in increased revenues and market share.
- 4. NLP for Customer Contracts: Implementation of Natural Language Processing (NLP) for customer contract analysis will boost operational efficiency. The primary step will involve using NLP for automatic extraction and categorization of key contractual obligations, which will significantly reduce manual effort and related errors. As the system matures, it can handle more sophisticated analyses like identifying anomalies

- in contractual terms or predicting disputes, providing an additional layer of risk management.
- 5. Portfolio Management: AI-enabled portfolio management will transform GFC's approach to investment advice. Initially, personalized portfolio strategies based on the customer's risk profile and financial goals will be provided. As the models mature, they can consider more nuanced factors like market sentiment analysis, improving the quality of advice and potentially leading to higher returns for customers, thereby enhancing customer satisfaction and loyalty.
- 6. High Frequency Trading and Algorithmic Trading: These automated trading strategies can provide GFC a competitive edge in the market. Initially, these systems will execute trades more quickly and efficiently, improving profitability. As they evolve, they can adapt in real-time to market dynamics, providing even better trading performance. This could attract more active traders to GFC, boosting its trading volumes and revenues.
- 7. Investment Predictions: AI-driven investment predictions can become a significant differentiator for GFC. Initially, these systems will provide forecasts based on historical data and market trends. Over time, they will incorporate more complex data like real-time news, social media sentiment, etc., to make more precise predictions, which could lead to higher returns for customers and boost the company's reputation as a sophisticated investment platform.
- 8. Process Automation: Automating routine processes can lead to cost savings and improved accuracy. Initially, automation will be applied to simple, repetitive tasks. As the technology and implementation improve, more complex tasks can be automated, leading to substantial operational efficiencies and cost reduction, which can be

- reflected in competitive pricing for customers, thereby enhancing customer acquisition and retention.
- 9. Consumer Marketing and Cross-Selling: Advanced analytics can enable GFC to create highly targeted marketing campaigns and identify cross-selling opportunities. In the initial stages, personalized offers based on customer's past behavior will be provided. As the analytics mature, they can predict future customer needs based on their life events, behavior patterns, and other factors, leading to even more effective marketing and cross-selling, enhancing customer lifetime value.
- 10. Trade Settlements: Automation in trade settlements will reduce the trade processing time, decrease errors, and improve customer satisfaction. Initially, basic automation will reduce manual effort. Over time, sophisticated technologies like blockchain could be incorporated for real-time, decentralized settlements, further enhancing efficiency and reducing counterparty risk.
- 11. Automated Wealth Advisor (Wealth Bot): An automated wealth advisor can democratize wealth management services. Initially, the bot will provide basic advice on portfolio allocation. As the bot learns and improves, it will provide more sophisticated advice, taking into account factors like tax implications, estate planning, etc., leading to a more comprehensive wealth management service. This can attract a larger customer base, boosting assets under management and revenues.

Ratings of Transformation Opportunities

- 1. Digital Personal Assistants/Chatbots
 - Groups Benefitted: 5/5. Both customers and employees benefit. Customers receive quick responses, and employees can focus on complex queries.
 - Cost-Reduction Impact: 4/5. Significant reduction in customer service costs with automated response handling.

- Satisfaction-related Impact: 4/5. Increased customer satisfaction from instant responses, but potentially lower satisfaction for complex issues.
- Profits Impacted: 3/5. Lower operational costs and increased customer retention can indirectly boost profits.
- Aligned with Strategic Mission and Executive Support: 5/5. Aligns well with the objective of enhancing digital customer interaction.
- Impact on Consumer Outcomes: 4/5. Faster service response improves overall consumer experience.
- Volume of Individuals Impacted: 5/5. Impacts all digital channel users.
- Impact to Society: 3/5. Improves access to financial services but limited societal impact.

2. Fraud Detection

- Groups Benefitted: 5/5. Protects customers from fraud, reduces operational risks, and potentially lowers regulatory scrutiny.
- Cost-Reduction Impact: 3/5. Prevents financial losses due to fraud but requires significant upfront investment.
- Satisfaction-related Impact: 4/5. Enhances trust and customer satisfaction.
- Profits Impacted: 4/5. Directly impacts bottom line by preventing fraudulent transactions.
- Aligned with Strategic Mission and Executive Support: 5/5. Enhances trust, a core value for the company.
- Impact on Consumer Outcomes: 4/5. Ensures secure transactions.
- Volume of Individuals Impacted: 5/5. All customers and potentially employees.
- Impact to Society: 4/5. Increases trust in digital financial services.

3. Credit Scoring

- Groups Benefitted: 4/5. Helps underserved customers access financial products, increases market for sales teams.
- Cost-Reduction Impact: 3/5. Potentially higher risk-adjusted returns.
- Satisfaction-related Impact: 4/5. Can enhance customer satisfaction by approving more loans.
- Profits Impacted: 4/5. Could expand customer base and increase interest income.
- Aligned with Strategic Mission and Executive Support: 4/5. Increases financial inclusion.
- Impact on Consumer Outcomes: 4/5. Provides access to credit for more consumers.
- Volume of Individuals Impacted: 3/5. Impacts a subset of potential customers.
- Impact to Society: 4/5. Promotes financial inclusion and economic activity.

4. NLP for Customer Contracts

- Groups Benefitted: 4/5. Benefits legal, sales, and service teams, and indirectly benefits customers by ensuring contractual compliance.
- Cost-Reduction Impact: 3/5. Automates contract analysis, reducing manual effort, but requires initial investment.
- Satisfaction-related Impact: 3/5. Reduces errors and improves contract management, leading to indirect customer satisfaction.
- Profits Impacted: 3/5. Optimizes resource allocation and reduces contractual risks.
- Aligned with Strategic Mission and Executive Support: 4/5. Supports digital transformation and automation objectives.
- Impact on Consumer Outcomes: 2/5. Indirectly contributes to better service delivery.

- Volume of Individuals Impacted: 3/5. Impacts internal teams directly, customers indirectly.
- Impact to Society: 2/5. Contributes to more effective business operations but limited wider societal impact.

5. Portfolio Management

- Groups Benefitted: 5/5. Benefits customers through personalized services, sales and advisory teams by enhancing their capabilities.
- Cost-Reduction Impact: 3/5. Enhances efficiency but requires initial investment for AI integration.
- Satisfaction-related Impact: 4/5. Personalized portfolio management can significantly enhance customer satisfaction.
- Profits Impacted: 4/5. Could lead to increased assets under management and associated revenues.
- Aligned with Strategic Mission and Executive Support: 4/5. Fits well with the company's objective of providing personalized financial services.
- Impact on Consumer Outcomes: 4/5. Customers get more personalized,
 potentially more successful portfolio strategies.
- Volume of Individuals Impacted: 4/5. Impacts all customers using portfolio management services.
- Impact to Society: 3/5. Enhances wealth management services but limited broader societal impact.

6. High Frequency Trading and Algorithmic Trading

- Groups Benefitted: 4/5. Directly benefits trading customers and traders.
- Cost-Reduction Impact: 3/5. Enhances trading efficiency but requires investment in technology.

- Satisfaction-related Impact: 4/5. Efficient and profitable trading strategies can enhance customer satisfaction.
- Profits Impacted: 4/5. Directly impacts trading revenues.
- Aligned with Strategic Mission and Executive Support: 4/5. Aligns with the objective of leveraging technology for efficient financial services.
- Impact on Consumer Outcomes: 4/5. Potentially better trading outcomes.
- Volume of Individuals Impacted: 3/5. Impacts all customers involved in trading activities.
- Impact to Society: 3/5. Enhances the sophistication of trading services but limited broader societal impact.

7. Investment Predictions

- Groups Benefitted: 5/5. This benefits traders, investors, and the research teams directly, and indirectly benefits the sales and marketing teams.
- Cost-Reduction Impact: 3/5. While potentially enhancing investment outcomes, the development of advanced prediction models would require initial investment.
- Satisfaction-related Impact: 4/5. Accurate predictions can significantly enhance customer satisfaction and trust.
- Profits Impacted: 4/5. More successful investment outcomes can lead to higher assets under management and trading volumes.
- Aligned with Strategic Mission and Executive Support: 5/5. Directly aligns with the company's focus on leveraging technology for better financial outcomes.
- Impact on Consumer Outcomes: 4/5. Customers have access to better investment predictions, which can lead to more successful investment outcomes.
- Volume of Individuals Impacted: 4/5. Impacts all customers involved in investment activities.

• Impact to Society: 3/5. Enhances the sophistication of investment services but limited broader societal impact.

8. Process Automation

- Groups Benefitted: 5/5. Automation benefits nearly all internal departments by enhancing efficiency and reducing manual work, and indirectly benefits customers by ensuring faster and more accurate service delivery.
- Cost-Reduction Impact: 4/5. Can lead to significant cost savings by automating repetitive tasks but requires initial investment.
- Satisfaction-related Impact: 3/5. Enhanced operational efficiency indirectly contributes to customer satisfaction.
- Profits Impacted: 3/5. Cost savings can boost profit margins.
- Aligned with Strategic Mission and Executive Support: 5/5. Aligns directly with the mission of digital transformation and automation.
- Impact on Consumer Outcomes: 3/5. Faster and more accurate service delivery can enhance customer experience.
- Volume of Individuals Impacted: 5/5. Impacts all employees and customers.
- Impact to Society: 3/5. Contributes to effective business operations but limited wider societal impact.

9. Consumer Marketing and Cross-Selling

- Groups Benefitted: 4/5. Directly benefits sales and marketing teams, and customers get more personalized offers.
- Cost-Reduction Impact: 3/5. More effective marketing can lead to higher ROI, but developing sophisticated analytics capabilities requires investment.
- Satisfaction-related Impact: 4/5. Personalized offers can enhance customer satisfaction and loyalty.

- Profits Impacted: 4/5. Effective cross-selling can boost sales and revenues.
- Aligned with Strategic Mission and Executive Support: 4/5. Aligns with the company's objective of leveraging data for personalized services.
- Impact on Consumer Outcomes: 4/5. Customers get offers that are more relevant to their needs.
- Volume of Individuals Impacted: 4/5. Impacts all customers and the marketing and sales teams.
- Impact to Society: 3/5. Enhances marketing practices but limited broader societal impact.

10. Trade Settlements

- Groups Benefitted: 4/5. Directly benefits trading customers and operations teams.
- Cost-Reduction Impact: 3/5. Automation can reduce costs but requires initial investment.
- Satisfaction-related Impact: 3/5. Faster settlements can enhance customer satisfaction.
- Profits Impacted: 3/5. Reduces operational costs and can potentially attract more trading customers.
- Aligned with Strategic Mission and Executive Support: 4/5. Aligns with the objective of leveraging technology for efficient operations.
- Impact on Consumer Outcomes: 3/5. Faster trade settlements can enhance the trading experience.
- Volume of Individuals Impacted: 3/5. Impacts all customers involved in trading activities.
- Impact to Society: 3/5. Enhances trading operations but limited broader societal impact.

11. Automated Wealth Advisor (Wealth Bot)

- Groups Benefitted: 5/5. This benefits a wide range of customers by democratizing access to wealth management services. Also benefits the sales and advisory teams.
- Cost-Reduction Impact: 3/5. Can automate the delivery of wealth management services but requires initial investment.
- Satisfaction-related Impact: 4/5. Personalized, automated advice can enhance customer satisfaction.
- Profits Impacted: 4/5. Can attract a wider customer base, leading to higher assets under management.
- Aligned with Strategic Mission and Executive Support: 4/5. Fits well with the company's objective of providing personalized, technology-driven services.
- Impact on Consumer Outcomes: 4/5. More individuals have access to personalized wealth management advice.
- Volume of Individuals Impacted: 4/5. Can potentially attract a broad customer base.
- Impact to Society: 4/5. Democratizes access to wealth management services, contributing to financial inclusion.

Ratings Summary

Use Case	Groups Benefitted	Cost- Reduction Impact	Satisfaction- related Impact	Profits Impacted	Aligned with Strategic Mission and Executive Support	Impact on Consumer Outcomes (Product / Service characteristics)	Volume of Individuals Impacted (from all the groups)	Impact to Society (Overall)	Average
Fraud Detection	5	3	4	4	5	4	5	4	4.250
Digital and Personal Assistants / Chatbots	5	4	4	3	5	4	5	3	4.125
Investment Predictions	5	3	4	4	5	4	4	3	4.000
Automated Wealth Advisor (Wealth Bot)	5	3	4	4	4	4	4	4	4.000
Portfolio Management	5	3	4	4	4	4	4	3	3.875
Process Automation	5	4	3	3	5	3	5	3	3.875
Credit Scoring	4	3	4	4	4	4	3	4	3.750
Consumer Marketing and Cross- Selling	4	3	4	4	4	4	4	3	3.750
High Frequency Trading and Algorithmic Trading	4	3	4	4	4	4	3	3	3.625
Trade Settlements	4	3	3	3	4	3	3	3	3.250
NLP for Customer Contracts	4	3	3	3	4	2	3	2	3.000

Conclusion

The Digital Transformation Roadmap for GFC brings a plethora of opportunities for improving efficiency, customer satisfaction, and the bottom line. Each transformation area offers unique advantages, with the most impactful being Fraud Detection, Digital Personal Assistants/Chatbots, and Investment Predictions.

Fraud Detection emerged as the highest scoring transformation area with an average score of 4.25. This transformation stands to benefit numerous groups, with potential for significant cost reduction, high alignment with GFC's strategic mission, and a notable societal impact. It also directly impacts the financial security of consumers and the reputation of the organization, thus making it a high-priority area.

Close behind is the implementation of Digital Personal Assistants and Chatbots, scoring an average of 4.125. The deployment of this technology not only benefits a broad range of groups but also reduces costs significantly, improves customer satisfaction, and is closely aligned with GFC's strategic mission. This transformation could have a large impact on the volume of individuals benefitting from instant, round-the-clock customer service.

Investment Predictions, with an average score of 4, offers significant benefits to various groups, enhances customer satisfaction, and potentially boosts profits. It aligns well with GFC's strategic mission and has a considerable impact on consumer outcomes, specifically in the realm of investment advisory services.

Despite scoring lower, other transformation areas such as Automated Wealth Advisor (Wealth Bot), Portfolio Management, Process Automation, Credit Scoring, Consumer Marketing and Cross-Selling, High Frequency Trading and Algorithmic Trading, Trade Settlements, and NLP for Customer Contracts should not be overlooked. Each presents

distinct opportunities for GFC to streamline operations, improve customer experience, and boost profits.

While all areas of transformation present promising opportunities for improvement, it is essential for GFC to prioritize them based on their strategic objectives, resource availability, and the urgency of customer and market demands. These digital initiatives could prove instrumental in maintaining GFC's competitive edge in the rapidly evolving FinTech landscape.