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Company: McDonald's
Technology: Blockchain
Process: Supply Chain Management

Every flourishing business has a driving force behind it. For McDonald's, that individual is Ray Kroc, who started working there in 1954. He was responsible for all of his influence in the McDonald's supply chain. He was able to create long-lasting connections with suppliers that have remained with the business to this day (Adam ShrumAdam). Kroc viewed the business as a system made up of three key components: owners, vendors, and staff members. Without any of these foundational elements, the business would not be possible. Additionally, all solutions must take the system's needs into account (Adam ShrumAdam). Kroc thought that a completely outsourced supply chain would be the greatest option for the system when it came to managing the McDonald's supply chain, and he was successful. He did not have enough money to create his own vertical supply chain, which was the first excuse. Second, Kroc did not adopt the tactics of rivals who required their franchised restaurants to only purchase goods from them (Adam ShrumAdam). Some of the original rules that seemed to be set in place were looking for long term supplier relationships, not just the best price, looking at measurable outcomes, reliable inventory management, and constant communication (Adam ShrumAdam).

Over the years as many become more aware and health conscious McDonald’s food has been questioned heavily. As a fast food chain there are normal speculations of higher salt, unhealthy fats, and higher sugar. However there are multiple scandals where the meats and main ingredients are questionable. There are also allegations of the meats not having accurate labels indicating what they actually eat, having contaminated foods, iffy meats, and E. coli. For example, according to Forbes there was a meat scandal in China where a local reporter caught footage of McDonald's employees using expired meat products. Following an investigation, the authorities discovered that 3,000 cases of tainted beef had already been distributed, along with expired animal items (chicken and beef) that had been packed and processed with new expiration

dates (Team, Trefis). According to Havard Business Review there was a 2013 horsemeat incident that caused widespread fear of tainted meat throughout Europe. Reputational issues do not go away overnight; transparency requires a long game to gain back the trust of customers (McDonald's and the Challenges).

McDonald's can efficiently meet consumer needs, save costs, guarantee the quality of their products, and gain an edge over competitors by using effective supply chain management. From the procurement of raw materials to the delivery of the finished product to customers, supply chains include the end-to-end movement. We would be better able to respond to market changes, disruptions, and shifting consumer preferences when their supply chains are well-managed. Which in the long term will provide a stronger relationship with partners by becoming more sustainable.

While having a strong IS/IT technology infrastructure for data transparency among supply chain partners is definitely essential, there are more advantages to advocating for the adoption of blockchain technology in McDonald's supply chain management. To increase advertising effectiveness and supply chain transparency, McDonald's should implement blockchain. With the amount of numerous scandals McDonald's can put them to rest and reassure customers with blockchain. Implementation of blockchain technology within McDonald's supply chain would allow them to be able to track their own operations and supplies. These logistics and resources can finally allow McDonald's to be more transparent and secure of the products that are being served. Blockchain serves as a helpful tracking tool across the whole supply chain lifecycle due to its transparency and consistency. A food product's data can be tracked and updated on blockchain ledgers as it passes various checkpoints, allowing users to see every stage of the product's journey (Blockchain for Food). Blockchain improves the

capacity to swiftly identify any potential contamination sources in order to effectively stop, contain, or address epidemics. Food origin may be verified and authenticated using transparency in the form of blockchain food traceability, which also boosts the trust in McDonald's for customers (Blockchain for Food).

The blockchain was first utilized in supply chain management for the digital record-keeping of transactions, but it wasn't until recently that it entered the food sector (Gondek, Christopher). With blockchain there is a greater level of transparency that can lessen consumer safety concerns and prevent food fraud. Blockchain enables open and trackable transactions that cannot be concealed. As a result of its ability to locate and identify the manufacturer, it also aids in reducing food waste (Gondek, Christopher). There are even reports of the meats not labeled correctly of what they actually consume. There are reports of them containing questionable meats, cross contamination, and e-coli within the foods. These were not easily debunked however with the help of blockchain technology within the supply chain this would be easy to prove as false in the future. Giving McDonald's the chance to gain back the trust and loyalty that has been broken throughout all the doubt.

Blockchain technology is a decentralized digital ledger system that records and verifies transactions across a peer-to-peer network. It operates on the principles of transparency, security, and immutability. Instead of relying on a central authority, blockchain allows multiple participants to maintain a shared and synchronized record of transactions. Each transaction is grouped into blocks, which are cryptographically linked to form a chain. This ensures that once a transaction is recorded, it cannot be altered or deleted without consensus from the network.

Blockchain technology offers significant benefits to supply chain management, including enhanced transparency, traceability, security, and operational efficiency. In the context of a

supply chain, blockchain provides a shared and auditable record of transactions, enabling all stakeholders to have visibility into the movement and origin of goods. This transparency fosters trust and accountability, as each participant can independently verify the authenticity and integrity of the recorded data. Moreover, the immutability of blockchain data ensures that the information cannot be tampered with, providing a reliable source of truth.

McDonald's supply chain faces specific challenges that can be effectively addressed by blockchain technology. One such challenge is the lack of transparency and traceability across the complex network of suppliers, distributors, and restaurants. By implementing blockchain, McDonald's can establish a transparent and traceable system where each transaction and movement of goods is recorded in an immutable manner. This enables efficient tracking of ingredients, from the sourcing of raw materials to the delivery of finished products, ensuring compliance with quality standards and regulations.

Another challenge in McDonald's supply chain is the risk of fraudulent activities or unauthorized alterations to sensitive data. Blockchain technology provides a secure and tamper-proof environment by utilizing cryptographic algorithms and consensus mechanisms. By implementing blockchain, McDonald's can safeguard important information, such as pricing details, contracts, and certifications, preventing unauthorized access or modifications. This ensures data integrity and minimizes the risk of fraud or data breaches.

Furthermore, blockchain technology can address inefficiencies and delays in processes, such as reconciling transactions, verifying certifications, and managing documentation. By automating and streamlining these processes through smart contracts and decentralized ledger systems, McDonald's can achieve greater operational efficiency and reduce administrative costs.

The elimination of intermediaries and the direct peer-to-peer nature of blockchain transactions can also simplify supply chain interactions and expedite the flow of goods and information.

According to David Garvin in "The Process of Organization Management," the key to understanding what makes an organization more or less effective is how it does things. McDonald's focuses a lot on the work processes. *Work processes* is a notation that organizations accomplish their work through linked chains of activities cutting across departments and functional groups. McDonald's, for example, utilizes work processes through their hand-bag-out process. McDonald's relies on their core operational processes revolving around creating, producing, and delivering products and services that customers want. Through McDonald's operation processes, we can see the frequency of work and information flows linking the differentiated roles within and between departments of their organizations. In Exhibit B, their HBO process is depicted. We witness the process between each department (drive through back end, drive through front end, and the line cooks) within the organization from start to finish that transforms inputs into outputs. We see how data is captured and transmitted from one department to another within the organization. We also can see each department's contributions to McDonald's operational processes. A supply blockchain would enhance operational efficiency by ensuring ingredients and suppliers meet food and safety standards and regulations, mitigating possible risks such as contamination or recall. Another instance would be keeping an exact track of inventory. Supply shortages would disrupt McDonald’s daily work processes. Some of Mcdonald's other vital operational processes involve their standardized menu, supply chain management, quality control and technology initiatives to bring more value to consumers.

McDonald's is one of the world's largest fast-food restaurant chains, known for its standardized menu, efficient operations, and global presence. As previously mentioned, one of

McDonald's key strengths is its standardized menu across its restaurants worldwide. Their standardized menus create consistent quality and efficient processes in food preparation. McDonald's core items are the Big Mac, Quarter Pounder, Chicken McNuggets, and various breakfast options, complemented by regional or country-specific items. The standardization of their menus simplifies procurement, supply chain management, and employee training. Another of McDonald's current business processes is a well-established supply chain network that ensures the availability of ingredients and products at all locations. Throughout their years of success, they have secured long-term contracts with trusted suppliers, allowing them to maintain quality and control costs. The supply chain process is constructed to optimize delivery and reduce stockouts (running out of demanded supplies), ensuring a stable flow of products to the restaurants. McDonald's focuses on streamlining its operations to maximize efficiency and minimize wait times. They utilize process improvement techniques such as lean manufacturing and Six Sigma to enhance operational performance. Six Sigma essentially is a statistical term that means that for every 1 million products, only 3.4 items are found to be defective and rejected. So, in McDonald's case, out of 1 million burgers, as few as 4 burgers are below standards when selling hamburgers. McDonald's has also developed creative strategies to streamline the process within the kitchen to become more efficient. Their kitchen layouts are designed to minimize movement and optimize workflow, enabling employees to assemble orders quickly and accurately.

Over the years, McDonald's has embraced technology to enhance its business processes. For instance, they have implemented self-ordering kiosks in many restaurants, enabling customers to place their orders independently. This reduces order errors and speeds up the

ordering process. Additionally, McDonald's has integrated digital platforms for online ordering, delivery services, and mobile app-based loyalty programs, providing convenience to customers and expanding their reach. McDonald's invests significantly in training its employees to ensure consistent service quality and operational efficiency. Employees undergo comprehensive training programs focusing on food safety, customer service, and operational procedures. The training emphasizes speed, accuracy, and adherence to standardized processes to maintain McDonald's brand standards across all locations. McDonald's has incorporated sustainability into its business processes, along with employee training and development. They have set goals to source sustainable packaging, reduce greenhouse gas emissions, and minimize food waste. McDonald's is also exploring renewable energy sources and eco-friendly packaging alternatives and implementing recycling programs in various locations. By implementing these processes, McDonald’s adds value to not only their internal processes, but also provides value to their customers through awards programs and faster service.

McDonald's has stern quality control measures to maintain its products' taste, safety, and consistency. Quality assurance teams monitor the entire supply chain, from sourcing ingredients to restaurant food preparation. Regular inspections and audits ensure compliance with McDonald's standards and local regulations. McDonald's strives to provide a positive customer experience by focusing on speed, convenience, and consistency. They emphasize fast service, efficient drive-thru operations, and accurate order fulfillment. An internal jargon was created by staff to motivate employees to provide fast service and promote efficiency within the drive-thru process. This internal jargon word was known as HBO, which stood for Hand-Bag-Out. It was a great way to measure employees' speed and efficiency, customer satisfaction, and the rate at which a customer would receive their order from when it is created, stored, made, and delivered.

Some McDonald's franchises incentivized this process by rewarding employees in specific locations. There was rich data collected from this process alone. Though it was a great way to track business processes within the company, there were areas for improvement within the process, which caused inaccurate data. McDonald's collects customer feedback through various channels and continuously improves its processes based on customer preferences and suggestions.

In conclusion, McDonald's has built a robust system of standardized processes, efficient supply chain management, and technology integration to deliver consistent service and quality across its global network. The company's emphasis on employee training, sustainability initiatives, and customer experience further contributes to its success in the fast-food industry. Additional information regarding McDonald's business processes can be found on their corporate website. Their website often provides updates on the company's operations, strategies, and initiatives.

While McDonald's is known for its efficient business processes, there are always areas where improvements can be made. One of the main areas McDonald's can improve is order accuracy and customization. Order accuracy can sometimes be challenging despite standardized processes, especially when customers have specific customization requests. McDonald's could explore ways to improve communication between customers and employees, such as implementing more precise order screens or providing additional training for employees to ensure accurate order fulfillment.

McDonald's heavily relies on its drive-thru operations, and long wait times or order delays can lead to customer dissatisfaction. Optimizing drive-thru processes, such as reevaluating the layout and staffing levels and integrating technology solutions for faster order

taking and payment, can help reduce waiting times and enhance the overall customer experience. The HBO system was an excellent process for the company; however, incorrect data was sometimes collected because employees could clear the screen before even handing customers their orders. This led to order confusion and mix-up if employees were not diligent. McDonald's strategic decision to create two lanes within their drive-thru was genius, but it also created weaknesses within some of their processes.

Post-Covid, all companies have experienced higher than average turnover rates, but even before then, the fast-food industry often faced challenges related to employee turnover and retention. McDonald's could enhance employee training and development programs to improve operational efficiency, consistency, and customer service. Additionally, implementing strategies to improve employee satisfaction, such as competitive wages, benefits, and advancement opportunities, can help reduce turnover rates and maintain a skilled workforce. We did see some of these measures taken because of Covid, for example, higher wages. However, McDonald's could use this economic threat as an opportunity to prepare for future unknown external threats. They can start researching ways to use artificial intelligence to cut costs and assist with high turnover rates and retention.

Although McDonald's has embraced technology in various aspects of its operations, there may be opportunities for further digital innovation. This could involve enhancing the mobile app experience, implementing innovative payment solutions, or leveraging data analytics to personalize customer experiences and drive sales. Continuously exploring and adopting new technologies can keep McDonald's at the forefront of customer expectations and industry trends. Lastly, although McDonald's already focuses on streamlining operations, further opportunities may exist to improve kitchen efficiency. They can analyze and optimize kitchen layouts,

workflows, and equipment placement to help reduce movement and improve productivity, leading to faster order assembly and decreased wait times.

Implementing a supply blockchain technology can bring numerous benefits to McDonald's, including enhanced traceability, improved supply chain efficiency, and increased transparency. However, there are also certain risks associated with blockchain implementation. Here are some ways McDonald's can mitigate the risks in blockchain: McDonald's should collaborate with reputable and experienced blockchain providers or technology partners. Perform comprehensive security assessments of the blockchain technology being utilized. Prioritize data privacy and protection when implementing blockchain technology. Establish transparent governance and compliance frameworks for blockchain implementation with regular monitoring and audits. Actively collaborate with its supply chain partners to implement blockchain technology. Conduct pilot projects before utilizing the blockchain across the entire organization. They should regularly monitor and improve the blockchain. Keeping up with advancements in blockchain technology and industry best practices is essential to ensure ongoing risk mitigation.

McDonald's would have two sets of stakeholders, internal and external. Their internal stakeholders include the management team, employees, and franchisees. Their management team would oversee the integration of the blockchain technology and management strategies to ensure it is successful and has a good return on investment. Employees' impact on the blockchain is more direct than management. They would have to adapt to the new systems, processes, and tools associated with the blockchain. McDonald's franchisees would also be directly impacted because they would need to align their operations to meet those of the implementation of the blockchain

Some of their external stakeholders are suppliers, customers, regulatory authorities and investors and shareholders. Implementing blockchain technologies would impact McDonald's suppliers, specifically in terms of traceability and transparency. Suppliers would need to integrate their systems with McDonald's blockchain network to provide real-time data on the origin, quality, and handling of ingredients and products. Blockchain technology can present customers with increased transparency regarding the sourcing and quality of McDonald's products. Blockchain implementation brings forth regulatory implications, particularly regarding data privacy and compliance. Lastly, the utilization of blockchain technology by McDonald's could impact investor perceptions and attract attention from shareholders. The successful integration of blockchain into the company's operations could be seen as a positive development, indicating a commitment to innovation, operational efficiency, and supply chain integrity.

The supply chain's impact on McDonald's daily operations is a question worth exploring. McDonald's relies on a complex and extensive supply chain to maintain ingredient and product availability worldwide. Despite having well-established processes, there are potential issues that could affect day-to-day operations within the supply chain. For instance, disruptions such as natural disasters, transportation problems, labor strikes, or supplier failures can directly impact ingredient and product availability. Consequently, these disruptions can result in shortages or delays in supplying restaurants, thereby directly affecting McDonald's ability to provide quality services to its consumers.

Another example is variations in the quality of supplies. Inconsistent quality can result in product recalls, customer complaints, and a negative impact on operations more so if the issue is widespread. Ensuring food safety and compliance with regulations is vital for McDonald's success. Issues related to foodborne illnesses, contamination, or non-compliance with food safety

standards can have severe consequences, including reputational damage and legal liabilities. The benefit of traceability when operating the blockchain will allow McDonald's to locate issues within its supply chain and address them promptly.

Blockchains can help mitigate the risk associated with the supply chain, whether it is tracking down ingredients that were recalled or maintaining consistent quality across McDonald's vast supply chain. Blockchain will also help communication among the numerous stakeholders in the supply chain, including suppliers, distributors, and McDonald's restaurants. Any breakdowns or delays in communication can lead to disruptions, misaligned inventory levels, and challenges in meeting demand. Addressing these issues requires a comprehensive approach, including proactive risk management, effective supplier management, regular monitoring, and continuous improvement initiatives. McDonald's must build a resilient and responsive supply chain to minimize disruptions and ensure smooth day-to-day operations.,

McDonald’s has been making a lot of progress in their innovative tactics the past few years in order to bring customers back to the failing industry. The introduction of the McDonald’s ordering app in 2015 brought a lot of attention, and ultimately started a strong turning point for the fast-food restaurant. However, there could definitely be a few implementations made that could allow for more customer loyalty and customer satisfaction. The three changes are: simplification of the menu in order to cause less risk of over/under-production of ingredients through analytical forecasting, and implementing “ghost kitchen” McDonald’s buildings can bring an increase in revenue and decrease in costs.

To this day, McDonald’s has over 100+ items available for order on the menu (close to 140 in some other parts of the world). For McDonald’s to simplify the menu, it can increase sales and decrease ordering times and preparation. This change can also decrease the amount of

complications that go into the data analytics forecasting that is needed to order the right amount of ingredients for each restaurant based on popular and seasonal items. While McDonald's does usually order generic raw items from their suppliers, it can save on costs from some specific inputs from limited suppliers. Through these changes, McDonald's could become more profitable through higher sales and less costs. In the US, the most common types of farm animals are chickens, then cattle (Farm); for vegetables it is: potatoes, tomatoes, onions, and lettuce (Cook). As these are the most common types of ingredients used in McDonald's foods, they will have no issues procuring suppliers, and maybe even have lower prices for these types of produce due to bidding wars.

The proposed changes would allow for McDonald's to be less reliant on all their suppliers, leading to McDonald's being more powerful for their buyer position. If the ingredients become more specific due to the simplified menu (beef, chicken, fruits, vegetables, wheat), then it allows for McDonald's to be open to getting these items from any specific farm of their choosing.

Something that is gaining popularity nowadays among restaurants is something called a "ghost kitchen." Ghost kitchens are restaurants that provide only food delivery, no sit-down or drive-thrus within the restaurant. Nowadays, most people are too busy at work to come to the drive-thru line at McDonald's or even commit to a curb-side order, due to busy lunch times and the immense amount of people who want "fast-food." If McDonald's can implement some restaurants in specific locations to become ghost kitchens. The cost-savings would be in areas like: building decor, non-need for sit-down areas, can cut on staff costs through automation, not needing to spend time on customers ordering or drive-thru, and hire delivery drivers specifically for these locations or work with food-delivery app companies specifically.

There are several existing examples and case studies of blockchain implementation in supply chains that demonstrate the potential benefits for organizations similar to McDonald's. For instance, Walmart, one of the world's largest retailers, has implemented blockchain technology in its food supply chain (Sristy, 2021). By using blockchain, Walmart has improved the traceability of products, enabling the tracking of each step in the supply chain, from farm to store shelves. This implementation has allowed Walmart to quickly identify the source of contaminated food in case of recalls, reducing the time taken for investigations from weeks to minutes.

Another example is IBM's Food Trust platform, which utilizes blockchain technology to enhance transparency and traceability in the food industry. This platform has been adopted by various companies and retailers, including Nestlé, Unilever, and Carrefour. It allows consumers to access detailed information about the origin, quality, and journey of food products by scanning a QR code (Thomasson, 2019). Such examples highlight the successful implementation of blockchain in similar supply chains and the positive outcomes it brings in terms of transparency, traceability, and consumer trust.

As the utilization of blockchain in the food supply chains becomes more prevalent, companies are increasingly recognizing its potential to enhance transparency, efficiency, and sustainability (Higgins). By having blockchain started to being used in the McDonald’s supply chain department, it creates an ease of use system to transfer information and track the same information, as well. The introduction of blockchain also allows for stronger security measures as the records are decentralized and hard to get ahold of for those who would want to wrong McDonald’s.

For starters, each participant of the blockchain (McDonald's included) have their own digital signature. This signature allows for the participants to use their token signature to move through the chain, creating a type of audited trail that can't be tampered with since all tokens are unique copies (Higgins). According to the article, Blockchain in Supply Chain, by Michael Higgins (journalist at Forbes), this allows for better traceability and transparency for McDonald's because it eliminates waste, duplicate orders, and problems for accounts payable like invoice fraud and rogue spend (Higgins). This type of transparent visibility of the financial and performance sectors lead to lower processing times through the introduction of reduced uncertainty and risk.

Another application of the blockchain for McDonald's would be greater savings. This is due to the increased efficiency through minimized risk, and also through the decreased costs through the lack of waste (no paper costs, everything is online) (Higgins). Storage and labor (ancillary costs) are eliminated as well, since the relationship between paper, storage, and labor are eliminated due to the lack of physical documents.

Lastly, the best use of the adoption of blockchain technology for McDonald's would be that materials and goods are easier to verify origins. McDonald's is all about ethical and sustainable agriculture, so this is a great help in reducing manpower to figure out where the ingredients are really coming from (Worford). This is possible due to the unique participant tokens that are created for each individual, so the evidence of origin can't be tampered without having everyone else figure it out due to the built-in auditing functionality of blockchain.

McDonald's is already trying to implement blockchain, but we need a strong plan first before the jump from traditional methods to blockchain. Paul Brody, an Ernst and Young global blockchain leader, explains the parts of the plan which most companies should focus on first

from his article on TechTarget (Brody). First, we need to make sure that the blockchain that's being created is being done by real developers and is a public blockchain, not a private blockchain that could be easily tampered with. Private blockchains can be tampered with by the controlling entity, where the rules can be changed so that the auditing isn't a for sure process. This is where public blockchains are used successfully, where the decentralized ecosystem is not controlled by anyone, and everyone who uses the public blockchain play by the same set of rules. Second, we want to implement the blockchain into areas that are in need of fixing, not something that will maybe be needed to fix in the future. By selecting a specific problem in the system, we can focus on fixing the problem at hand since there are no what-ifs being introduced as a hypothesis. Even though the problem that's being fixed could be small, it will be done well when blockchain is implemented. Lastly, the best blockchain isn't always the best option to look for - instead it should be to build practical applications that create value for McDonald's. Technology is always being improved upon, and so what's the best today may not be the best tomorrow. So that's why introducing a blockchain that is relatively the best at hand can have the most impact on the company. These are the top three implementation plans for McDonald's to have the best plan to implement blockchain, and to make it as successful as possible.

If McDonald's is able to apply most of these applications to their company, the amount of savings and productivity gains will be greatly increased. McDonald's will be saving in a few areas: supply chain management, data analyst forecasting, suppliers with ingredients, auditing and financial labor plus time, minimized risk, and over time the blockchain will become streamline throughout the company which allows for more savings over the years . The productivity gains will be made in these areas: less items means less variation so more focus on the items perceived on the menu, and better choices in specific areas of ingredient selection (less

costs on specific items from unique farms can allow for more budgeting to go into the farms that are heavily used on the menu items.

To successfully pilot and scale a blockchain solution within McDonald's supply chain, it is important to integrate the concepts of the optimal process of the Analytical Value Chain (Phillips, 2017). The following explores how McDonald's can leverage these concepts to address challenges, enhance transparency, improve operational efficiency, and achieve cost savings through the implementation of blockchain technology.

Early stakeholder engagement is essential to address challenges such as resistance to change, technical integration issues, limited stakeholder knowledge, and scalability concerns. By working closely with business stakeholders, McDonald's can identify their questions and requirements, ensuring that the blockchain solution aligns with their needs. Furthermore, comprehensive training and education on blockchain technology can facilitate a shared understanding and effective utilization among stakeholders.

To overcome technical integration issues, McDonald's should conduct pre-engagement discussions with stakeholders to verify the feasibility of proposed analyses based on available data and systems. It is crucial to ensure that relevant and accurate data is defined, collected, verified, governed, and provided in a timely manner for analysis. Additionally, assessing the existing infrastructure and making necessary upgrades will ensure the scalability of the blockchain solution across McDonald's supply chain.

Integrating analytics into existing processes and emphasizing solid operations management will ensure successful analytics implementation. McDonald's can monitor performance through defined metrics and Key Performance Indicators (KPIs), enabling proactive

adjustments and optimization. By presenting and visualizing data in reporting and dashboard formats, McDonald's can create actionable and user-friendly reports that answer specific questions and foster trust among stakeholders.

Leveraging advanced analytics techniques, such as predictive analytics and data science, McDonald's can optimize various aspects of the supply chain. By utilizing mathematically and statistically rigorous techniques to analyze data, accurate answers to business questions can be communicated, and recommendations focused on creating business value can be provided. Foster strong relationships with business stakeholders to assist them in using analytics to make informed decisions. Linking analytical activities to profitability is crucial for the successful implementation of the blockchain solution. McDonald's should track the impact of analytical work on financial metrics such as cost, revenue, margin, profit, and earnings. Conducting a thorough cost-benefit analysis will evaluate the financial implications and potential benefits of scaling the blockchain solution, ensuring that all analytical efforts are aligned with answering business questions and addressing challenges.

By addressing the considerations mentioned above and incorporating the optimal process of the Analytical Value Chain (Phillips, 2017), McDonald's can successfully pilot and scale the blockchain solution in its supply chain. This will lead to enhanced transparency, traceability, security, and operational efficiency, fostering trust among stakeholders, improving collaboration, simplifying processes, reducing costs, and strengthening McDonald's overall reputation and credibility. The implementation should be accompanied by infrastructure upgrades, network expansion, performance optimization, strong data privacy measures, clear governance, and a thorough cost-benefit analysis to ensure a seamless and beneficial implementation on a larger operational scale.

Implementing blockchain technology in McDonald's supply chain involves considering several cost factors, including the initial investment in technology infrastructure, ongoing expenses, and employee training. Conducting a comprehensive cost analysis is crucial to determine the total cost of ownership and assess the financial feasibility of the implementation. By streamlining processes, reducing intermediaries, and automating tasks through smart contracts, blockchain can yield cost savings and efficiency gains. Enhanced transparency and traceability can minimize costs associated with quality control, recalls, and compliance issues. Quick identification and resolution of supply chain bottlenecks can optimize inventory management and reduce carrying costs. To ensure a successful and cost-effective implementation of blockchain, McDonald's should establish a clear implementation roadmap, collaborate with experienced technology partners, conduct a pilot project, and perform a thorough cost-benefit analysis. Ongoing monitoring and evaluation of performance against predefined KPIs enable identification of optimization opportunities and cost-saving measures.

To effectively measure the success and impact of blockchain implementation, McDonald's should identify relevant KPIs, such as improved traceability, transparency, reduced transaction time and costs, enhanced data accuracy, increased supply chain efficiency, and strengthened stakeholder trust. Regular monitoring, reporting, and qualitative feedback provide insight s into the effectiveness of blockchain implementation and help identify areas for improvement or optimization. In conclusion, by integrating the concepts of the Analytical Value Chain into the implementation of blockchain technology, McDonald's can revolutionize its supply chain, achieving operational excellence, cost savings, and stakeholder satisfaction.

In conclusion, McDonald's supply chain management faces significant challenges in terms of people, processes, and technology. Data errors, delays, lack of transparency, and

traceability issues persist, often due to manual employee processes that could be automated. These obstacles make it extremely difficult to ensure food safety and maintain quality standards throughout the supply chain.

However, there are opportunities for innovation within McDonald's supply chain management. Specifically, in areas such as sourcing, transportation, and inventory management, adopting blockchain technology can address these challenges. By leveraging blockchain, McDonald's can automate processes, mitigate data inaccuracies, and enhance transparency and traceability. This innovation has the potential to create substantial value for various stakeholders.

Implementing blockchain technology can benefit McDonald's by improving operational effectiveness, reducing supply chain risks, and bolstering brand perception through increased transparency. Furthermore, suppliers and employees stand to gain from process simplification, reduced paperwork, and improved communication. Lastly, customers will benefit from accessing trustworthy information about ingredient origins and quality, enabling them to make informed decisions and fostering confidence in McDonald's products. By embracing blockchain technology, McDonald's can overcome the broken aspects of its supply chain process, unlock opportunities for innovation, and create significant value for all stakeholders involved.

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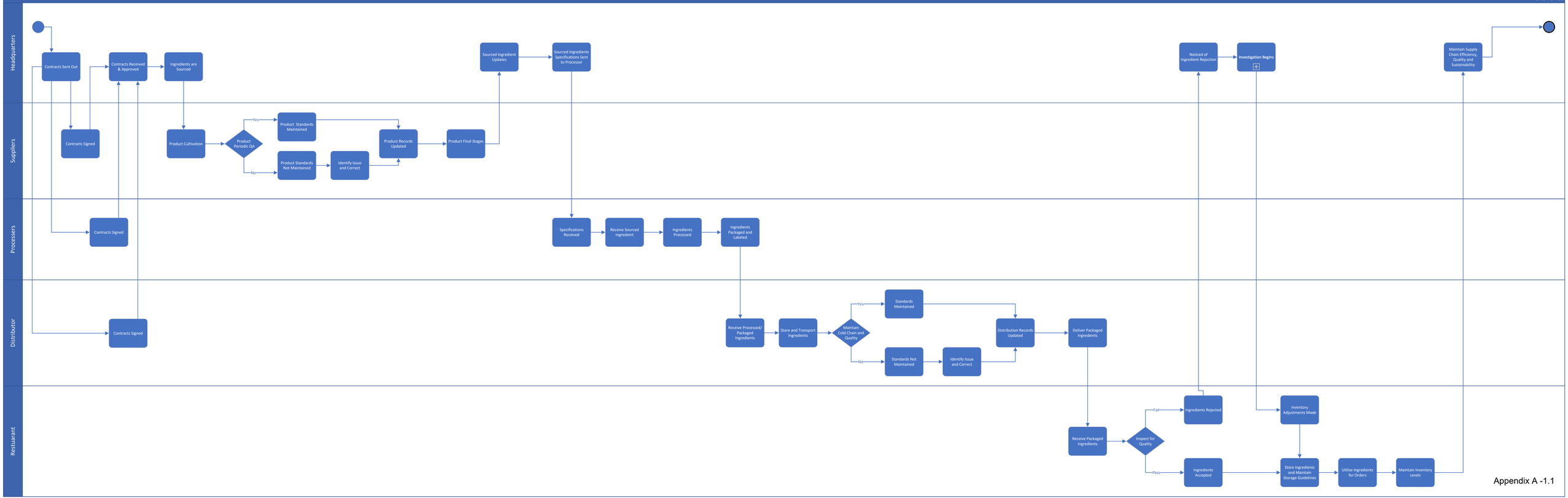
McDonald's Supply Chain – BPM (Before Blockchain)

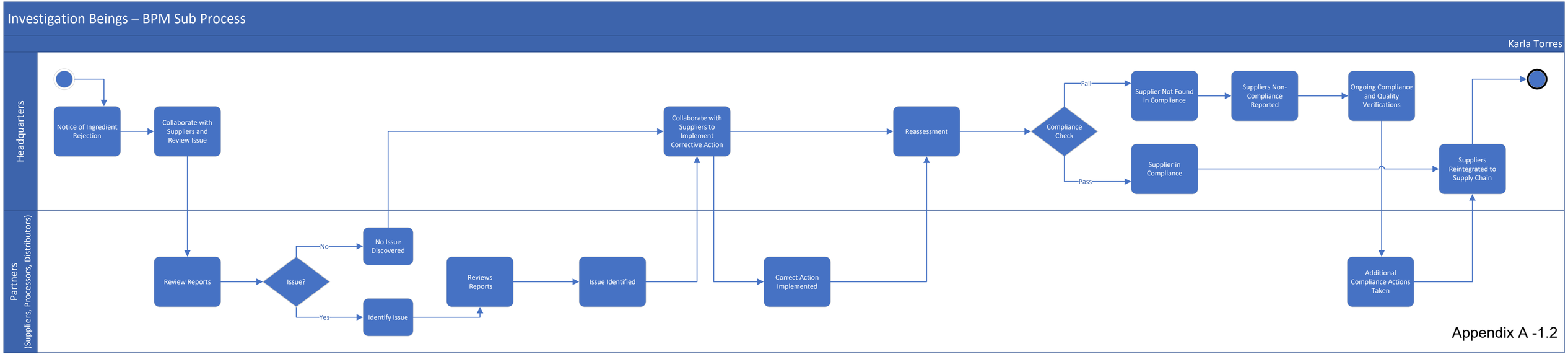
Karla Torres



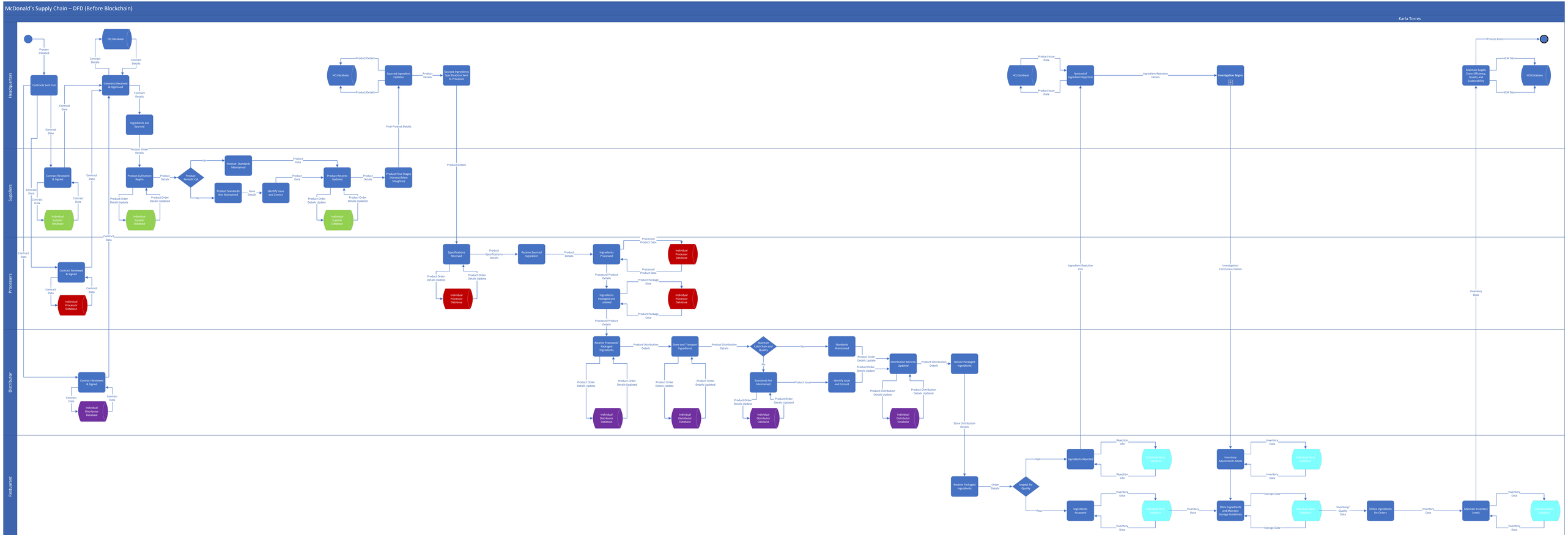
Appendix A -1.1

Investigation Beings – BPM Sub Process

Karla Torres

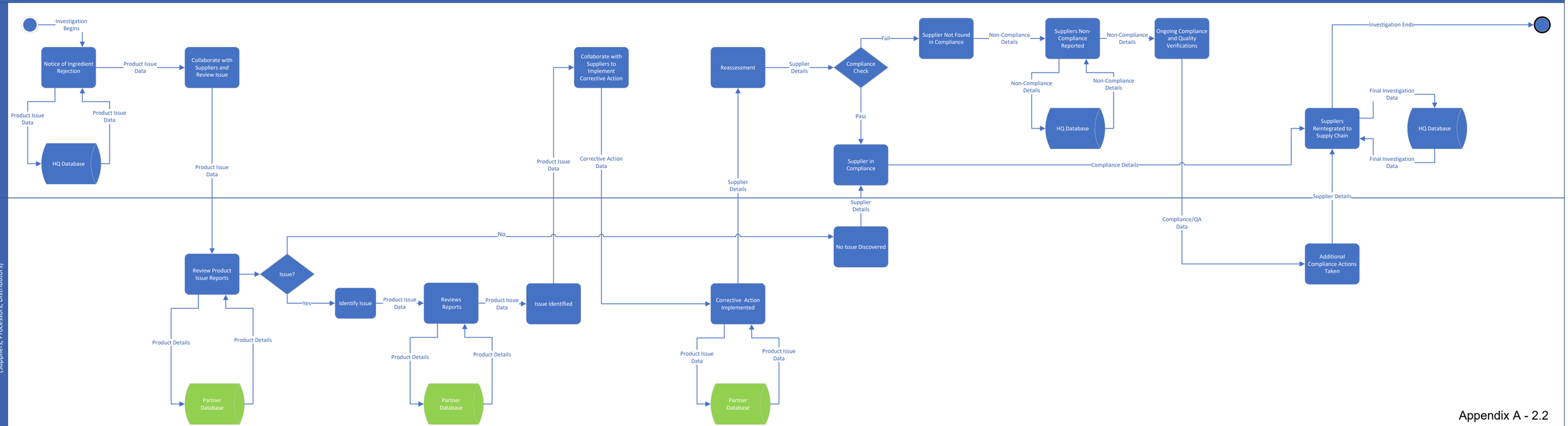


Appendix A -1.2


McDonald's Supply Chain – DFD (Before Blockchain)
Karla Torres
Headquarters
Suppliers
Processers
Distributor
Restaurant
Process Initiated
HQ Database
Contract Details
Contracts Sent Out
Contracts Reviewed & Approved
Contract Data
Ingredients are Sourced
Product Order Details
Contract Reviewed & Signed
Individual Supplier Database
Product Cultivation Begins
Product Details
Product Periodic QA
Yes
No
Product Standards Maintained
Product Standards Not Maintained
Issue Details
Identify Issue and Correct
Product Data
Product Records Updated
Product Order Details Update
Product Order Details Updated
Product Final Stage (Harvest/Meat Slaughter)
Sourced Ingredient Updates
Product Details
Sourced Ingredient Specifications Sent to Processor
Final Product Details
Contract Reviewed & Signed
Individual Processor Database
Specifications Received
Product Specifications Details
Receive Sourced Ingredient
Ingredients Processed
Processed Product Details
Processed Product Data
Ingredients Packaged and Labeled
Product Package Data
Contract Reviewed & Signed
Individual Distributor Database
Receive Processed/ Packaged Ingredients
Product Distribution Details
Store and Transport Ingredients
Maintain Cold Chain and Quality
Standards Maintained
Standards Not Maintained
Identify Issue and Correct
Product Issue
Distribution Records Updated
Product Distribution Details Update
Product Distribution Details Updated
Deliver Packaged Ingredients
Store Distribution Details
Receive Packaged Ingredients
Order Details
Inspect for Quality
Fail
Pass
Ingredients Rejected
Rejection Info
Individual Store Database
Ingredients Accepted
Inventory Data
Inventory Adjustments Made
Store Ingredients and Maintain Storage Guidelines
Storage Data
Utilize Ingredients for Orders
Inventory/ Quality Data
Maintain Inventory Levels
Product Issue Data
Noticed of Ingredient Rejection
Ingredient Rejection Details
Investigation Begins
Ingredient Rejection Info
Investigation Conclusion Details
Process Ends
Maintain Supply Chain Efficiency, Quality and Sustainability
SCM Data
Inventory Data

Investigation Beings – DFD Sub Process

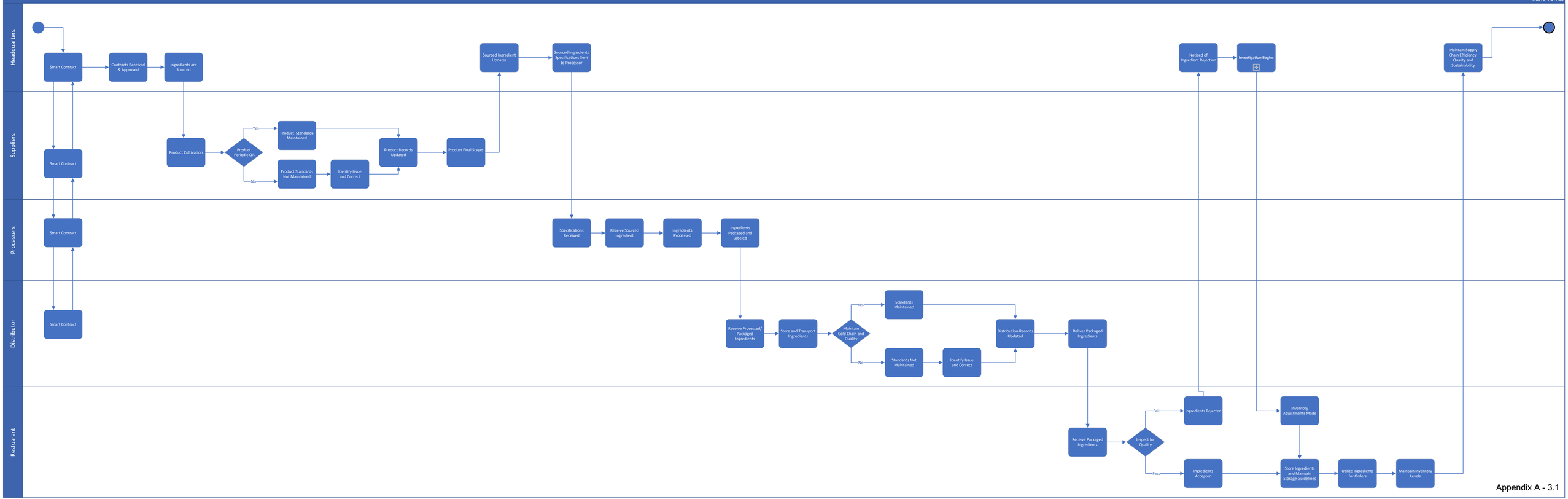
Karla Torres



Appendix A - 2.2

McDonald's Supply Chain – BPM After (with Blockchain)

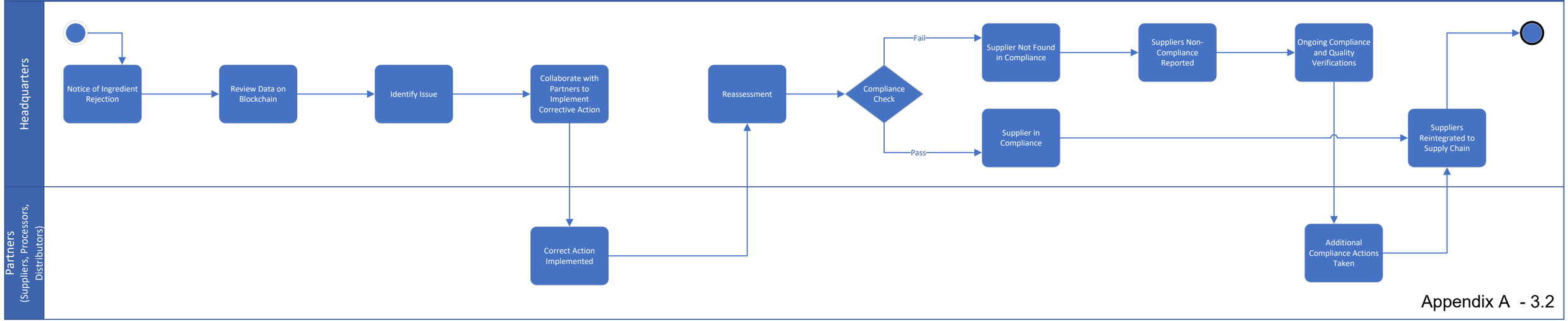
Karla Torres



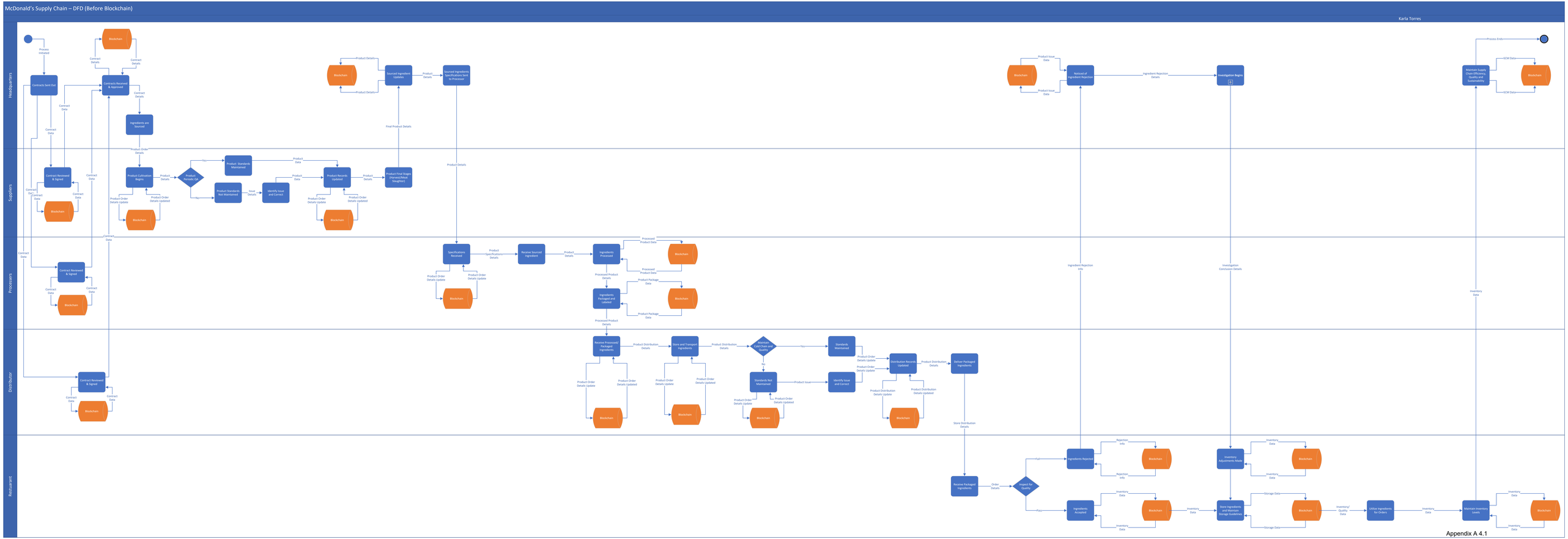
Appendix A - 3.1

Investigation Beings – BPM Sub Process (with Blockchain)

Karla Torres



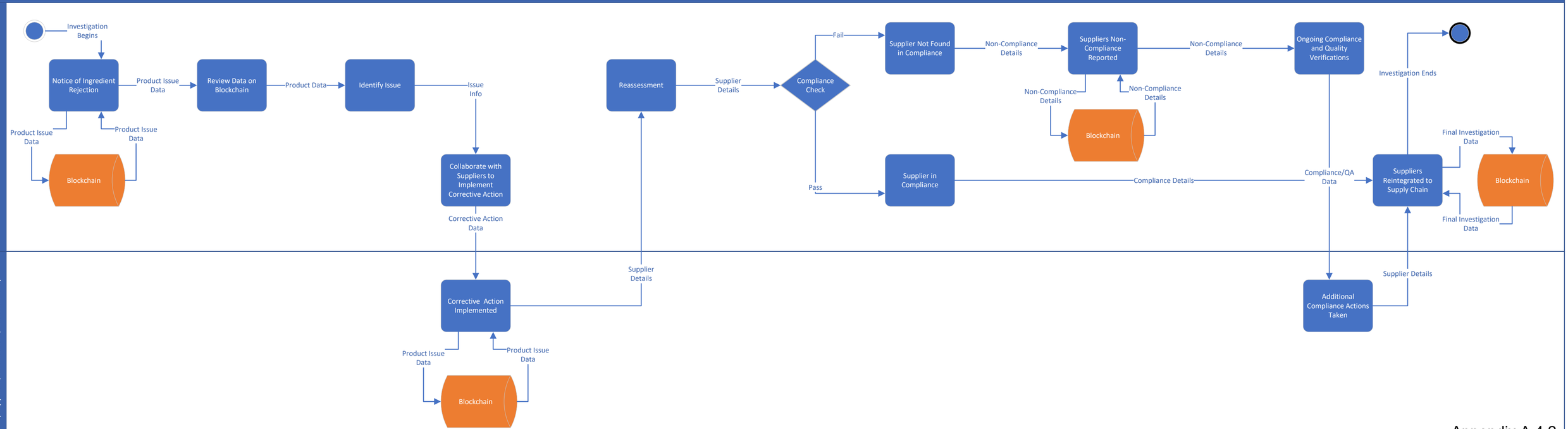
Appendix A - 3.2



Appendix A 4.1

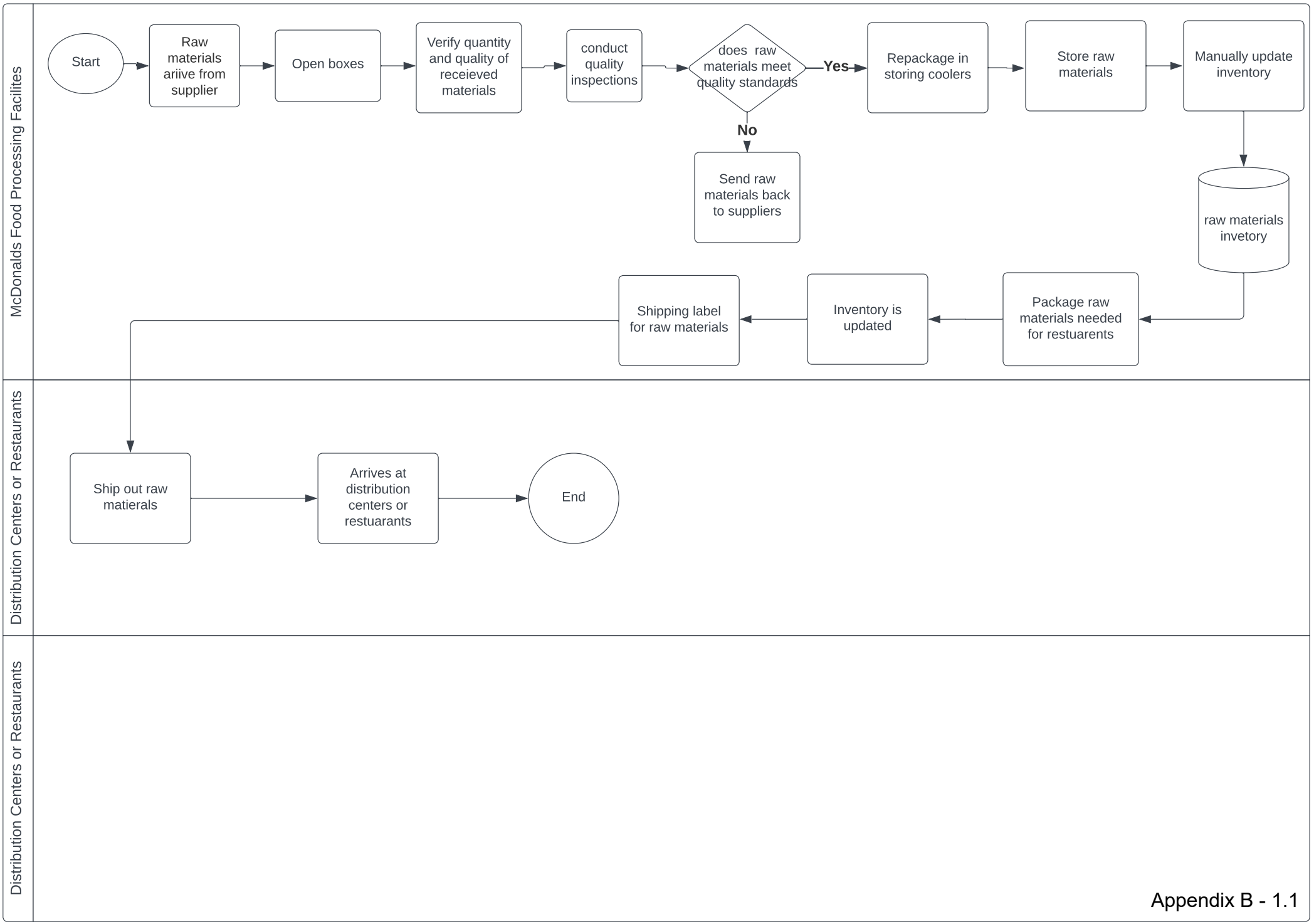
Investigation Beings – DFD Sub Process (with Blockchain)

Karla Torres

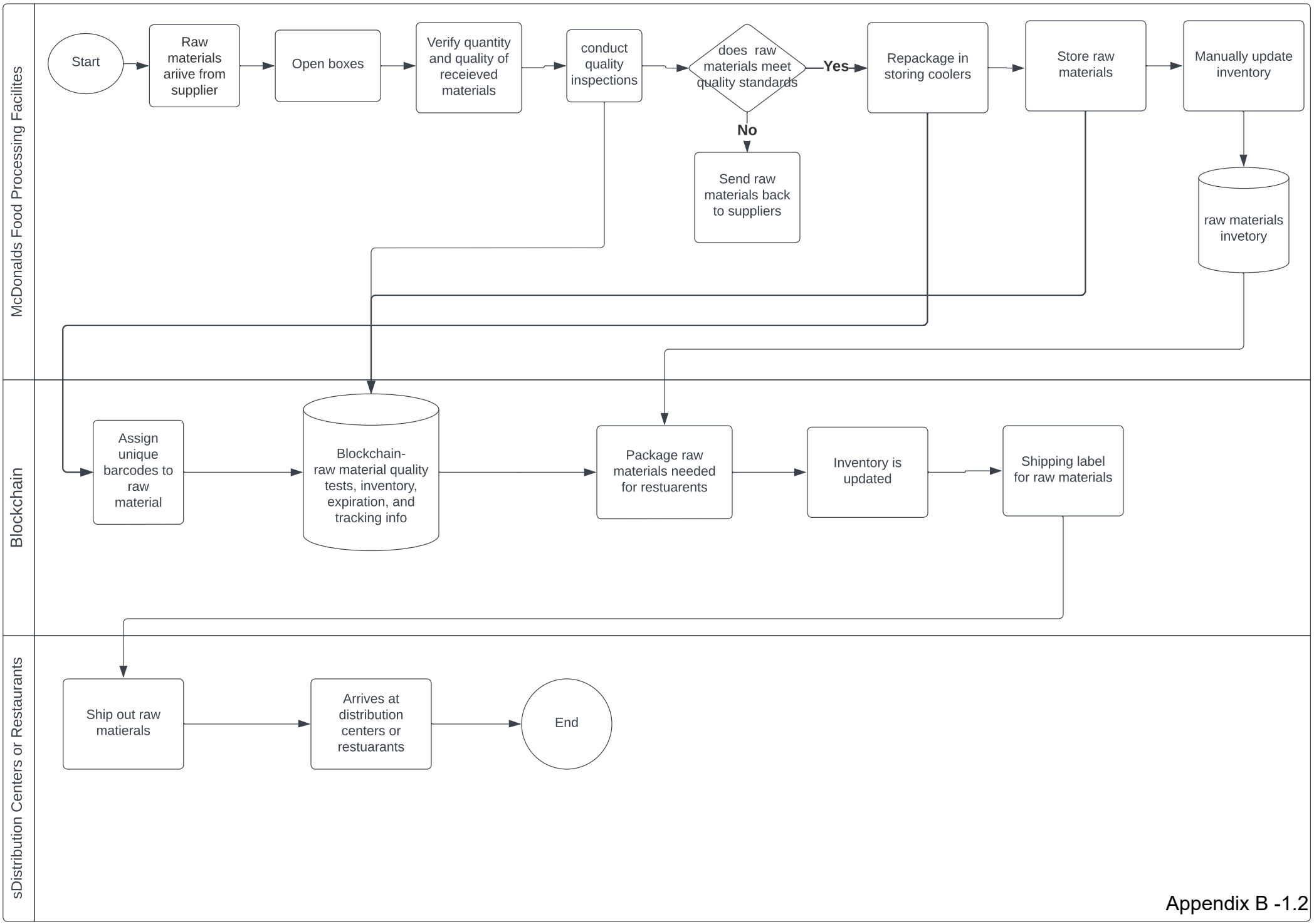


Appendix A 4.2

Food Processing



Food Processing



Appendix B -1.2

DFD Logistics and Transportation Before

Phase

Restaurants

Draft up Order Proposal

Order Proposal

Send orders

Receipt of order

McDonald's Supply Order Database

Digital Transfer of Order Proposal

Not correct amount, order missing material amount

Receive shipment tracking time
For when order is arriving

Prepare to unload shipment order

Unload Shipment order

Check materials amount

Correct amount?

yes

Order Finished

Logistics & Data Analysis Integrator

Receive Order Proposal

Supplier Research

Check for Best suppliers

Receive Info On suppliers

McDonald's Supplier Database

After receival of info

No, do more research

Research Demand Forecast Analysis

Cost Effective?

Yes

Create Transport Order Statement and inventory space order for Distribution Center

Send out orders

Receive Confirmation

McDonald's Supply Order Database

Receive Orders for Shipment to restaurant

Outbound Transport Order

Digital Transfer of Transport Orders

Confirmation of travel to dist. center

Confirm Preparation of trucks Going outbound

Logistics Database

Store all digital confirmation information into database (for auditing)

Confirmation of pickup

Inbound Transportation

Receive Order

Input orders

Receive Confirmation

Transportation Database

Transport Trucks prepared for inbound process

Pickup Supply Order

Transport to Distribution Center

After confirmation

No, request different dist. Center to be used

Digital Transfer of Outbound Transport Orders

Distribution Centers

Receive Order

Look up inv. space

Receive Inventory Space details

Inventory Database

After Receiving inventory details

Enough space?

yes

Prepare proper warehouses for order

Data Entry of Warehoused Materials

Digital Transfer of Inventory Order

Unload materials

Perform Safety Inspections

Properly Handled?

yes

no

Dispose Materials

Store materials into cold storage

Confirmation of Outbound Transport

Prepare order for outbound transportation

Load Shipment Order into truck

Suppliers

Receive Order

Enter Order

Receive Confirmation

Supplier Database

After Confirmation

Prepare Materials for Pickup

Load Materials into Inbound Transport Vehicles

Digital Transfer of Supplier Orders

Outbound Transportation

Receive Order

Input Orders

Receive Confirmation

Transportation Database

Confirmation of trucks Going outbound

Prepare Fleet for Pickup

Pickup shipment order

Deliver to restaurant

Logistics Database

Confirmation of outbound transport to restaurant

Confirmation of Shipment picked up

Appendix C - 1.1

DFD Logistics and Transportation After (w/ Blockchain)

Phase

Restaurant

Draft up Order Proposal

Order Proposal

Not correct amount or materials, order missing material amount

Prepare to unload shipment order

Unload shipment order

Check ordered materials and amount

Correct materials and amount?

yes

Finalize order data

Order Finished

Logistics & Data Analysis Integrator

Retrieve Order Proposal

Check for Best supplier

Receive info On suppliers

Supplier Database

No, do more research

Research Demand Forecast Analysis

Cost Effective?

yes

Create Transport Order Statement and Inventory Space Order for Dist. Center

Outbound transport order

Receive shipment tracking time for When order is arriving

Authorized User Sends Data-encrypted order

Inbound Transportation

Notification of Order Proposal

Receive Order

Input orders

Receive Confirmation

Transportation Database

Transport Trucks prepared for inbound process

Authorized User sends Data-encrypted Order

Pickup Supply Order

Transport to Dist. Center

Receive orders for Shipment to restaurant

Auth. User inputs Order has been Correctly delivered

Input of truck and location of dist. Center delivered to

Inputs materials and amount Picked up

Blockchain Database (note: all databases are connected to the blockchain)

Notification of Order

Authorized user Inputs which trucks Going outbound

Blockchain Database

Blockchain Database

Auth. User inputs Outbound transport orders

Notification Of Inventory Space order

Order change requested

Order confirmed

Blockchain Database

Notification of outbound transport orders

Authorized User inputs that Food has been properly inspected And amount stored

Blockchain Database

Distribution Center

Notification of supply order

Receive Order

Look up inv. Space details

Receive inv. Space details

Inventory Database

Enough space?

yes

no

Prepare proper warehouses for order

Unload materials

Perform Safety Inspection

Properly Handled?

yes

no

Dispose Materials

Store Materials into cold storage

Prepare order for outbound transport

Load Shipment onto truck

Auth. User inputs Trucks picking up Outbound order

Request different dist. Center to be used

Notification of outbound transport orders

Auth. User inputs total amount And what materials picked up

Suppliers

Receive Order

Input Order

Receive Confirmation

Supplier Database

Prepare Materials for Pickup

Load Materials into inbound transport vehicle(s)

After Confirmation of Order

Outbound Transportation

Receive Order

Input Orders

Receive Confirmation

Transportation Database

Prepare Fleet for pickup

Pickup shipment order

Outbound transport to restaurant

Appendix C -1.2

McDonald's HBO - BPM

Drive Thru Cashier

Greets Customer

Utilizing Mobile app?

No

Aquire, document and store customer order

Retrieve customer order from screen

Confirm Order

Accept Payment Type

Any additional assistance or change required?

Yes

Complete additional assistance

No

Thank customer for business and have proceed to next window for order pick up

Mark Order as paid to change color of order in system

Customer

Customer Arrives to Drive Thru

Provide order details or App information

Drive to first window for payment

Cash or Debt/ Credit Card

Cash

Provide Cash to Casier

CCRD

Provide Payment Card to Cashier

Receive Reciept and proceed to next window for order pick up

Confirm and accpt order from bagger

Bag Out

Yes

Mobile App

Retrieve data from mobile app using customer information

Drive Thru Front End Employee

Order is displayed on order screen

Begin fulfilling order

Does Customer require a beverage or fries

No

Yes

Prepare Beveage or Fries order based on order specification (s,m,l)

Begin bagging order for fulfillment based on MCD's order preparation standards and confirm payment received

Does Customer have any condiment request?

No

Greet Customer, Confirm order and any additional needs

Yes

Place condiments off

Any Additional Assistance ?

Yes

Complete additional assistance

Hand customer their order

Clear order screen

Line Cook

Order information details and customizations are sent to line cooks

Does customer have any order customizations

No

Make order based on standardized menu recommendation

Yes

Make order based on customer customization request

Send order up the line

Clear order from screen to store the time the order was completed

Notify front end staff order is ready for bagging

Appendix D - 1,1