Project Phoenix: Addressing CSC's Business Continuity and Disaster Recovery

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AGENDA

Context

Recommendation

Timeline

Financials

Risks and Mitigation

Conclusion

Cocoa-Sassafras Corporation needs to invest in business continuity and disaster recovery to support its operations and reduce the impact of disaster

Cocoa-Sassafras Corporation (CSC) is a leading food and beverage company with a diverse product portfolio, including chocolate, snacks, coffee, and beverages. The company operates manufacturing plants and distribution centers across the U.S., Canada, and Mexico

Hurricane Sandy revealed major vulnerabilities in CSC's business continuity preparedness, particularly impacting the New Jersey distribution center. The **aging Business Impact Analysis (BIA)**, **untested** disaster recovery plans, and a fragmented IT infrastructure, including separate ERP systems, highlight **a lack of resilience**. Additionally, **supply chain issues**, particularly political unrest in South America and agricultural challenges in the Midwest, pose a risk to CSC's raw material supply

How should Cocoa invest in its business continuity and disaster recovery so that they are prepared to respond and recover from disasters?

Project Phoenix Project Charter: BCM Resilience and Recovery Initiatives for Cocoa-Sassafras Corporation (CSC) to maximize business operations

Project Phoenix Description

Purpose: Ensure CSC is fully prepared to respond to and recover from disruptions like natural disasters, IT outages, and supply chain issues

Objective: Protect employees, products, and operations while ensuring resilience and continuous business operations

Project Scope

Manufacturing Plants: Ensure redundancy, failover capacity, real-time data replication, and cross-regional split-production

Delivery Centers: Establish pre-positioned inventory, alternate warehousing, and 3PL contracts

IT Systems: Implement cloud-based disaster recovery for ERP systems, with redundant communications and backup power.

Supply Chain: Secure critical raw materials, develop alternative sourcing, and build buffer stocks

Key Deliverables for Project Phoenix

I. **Assess & Validate - Business Impact Assessment (BIA):** A thorough analysis to identify critical business functions, dependencies, and the financial, operational, and reputational impact of disruptions

II. **Assess & Validate - Site Risk Assessments:** Regular assessments of manufacturing plants, data centers, and delivery centers to evaluate vulnerability to risks such as natural disasters and geopolitical issues

III. **Implement – Disaster Recovery Plans:** Comprehensive disaster recovery and business continuity plans, including RPO and RTO targets for each critical function

IV. **Implement - IT Resilience Strategy:** Cloud-based ERP failover solutions, backup power, and communication redundancy to ensure uninterrupted operations

V. **Implement - Supply Chain Risk Mitigation:** Plan a strategy to mitigate risks related to supply chain disruptions, including alternative sourcing, stockpiling, and transportation contingency plans

Project Success

Complete disaster recovery drills with minimal downtime

Recover critical operations within 14 days

Establish alternative supply chain and logistics networks

Cocoa needs to conduct a Business Impact Assessment (BIA) that addresses the team member's participating and identifies criteria to analyze impacts

BIA Approach

Purpose
- Establish a singular point of contact for the entire BIA
- State the purpose that highlights the importance of quick adaptability and importance of maintaining availability during disruptions

Point of Contacts
- Establish points of contact that takes ownership of portions of the BIA, separating them from internal and external

System Resources
- Describe the resources available to Cocoa, separating them by category (hardware, software, or other)

Critical Contacts and Resources
- Identify the people and resources needed to handle critical tasks

Disruption Impact
- For each resources, identify the impact an outage would have to the organization, then determine the maximum acceptable period it can be unavailable until there are unacceptable impacts
- Consider peak seasons

Resource Recovery Priorities
- Prioritize recovery of each resource
- Split production recovery strategy

Activities	Executive Committee	COO	CIO	Business Continuity Director (Katie)	Business Process Owners	Head IT Ops	Chief Risk Officer (John)	Disaster Recovery Manager (James)
Define business continuity policy, objectives, and scope	R	R	R	R	R	R	A	R
Identify POC		C	C	R	R		A	I
Identify and describe resources	I	C	C	R	R	R	A	
Identify and prioritize critical resources and people	R	R	R	R	C	R	A	I
Evaluate business impact	R	R	R	R	R	R	A	R

Criteria to Analyze Impacts of Disruptions

Financial Impact
- **Revenue:** How much revenue would be lost if critical business function is disrupted
- **Operational Costs:** How much will it cost to outsource production or pay overtime

Operational Impact
- **Productivity:** How many critical processes are affected and how much output is lost
- **Delivery Delays:** How long will deliveries be delayed due to disruption
- **Supply Chain Impact:** How will key suppliers disruption affect production and delivery

Data and Integrity Impact
- **Loss of Critical Data:** How much business and customer data is lost or compromised
- **IT Downtime:** How long can IT systems that support critical business functions be down

Reputational Impact
- **Market Share:** Assess the possibility of losing CSC's competitive position due to disruptions in operations

Strategic recovery solutions to minimize disruption impact and enhance manufacturing and delivery continuity for CSC

Manufacturing Plants		Distribution Centers	
High Criticality Recovery (Chocolate, Coffee, Snacks)	**RPO**: Near-zero (real-time replication); **RTO**: 6 hours; **MTD**: 12 hours **Solution:** Use **geo-redundant data centers** for real-time backups and ensure **backup plants** can take over production. For example, **Tulsa** covers **Wichita**, and **Oak Brook** backs up **Deerfield** for quick recovery.	**Inventory Management**	**RPO**: 4 (real-time replication); **RTO**: 24 hours; **MTD**: 48 hours **Solution:** Stockpile critical items in non-disaster areas to ensure supply and meet recovery timelines without delay. For example, areas in close proximity can have stockpiles in case they are not affected.
Medium Criticality Recovery (Soda & Drinks)	**RPO**: 4 hours; RTO: 12 hours; MTD: 24 **Solution**: Set up **flexible production capacity** at nearby plants to handle increased output during disruptions.	**Warehouse Logistics**	**RPO**: 4 hours; RTO: 24 hours; MTD: 48 hours **Solution**: Partner with 3PL providers and secure alternative warehousing to r**eroute goods when primary centers are disrupted**, ensuring business continuity.
Low Criticality Recovery (Seasonal & Low Demand)	**RPO**: 12 hours; **RTO**: 48 hours; MTD: 72 hours **Solution:** For low-critical products, use **daily backups** and **remote storage** to protect data. Designate **secondary production sites** with spare capacity to resume operations within 48 hours, focusing on cost-effective recovery.	**Technology Improvements**	**RPO**: Real-time; **RTO**: Immediate; MTD: 24 hours **Solution:** Use **IoT sensors for real-time monitoring and quick rerouting of shipments**, minimizing delays and ensuring fast recovery.

RPO = Recovery Point Objective (Data Loss); RTO = Recovery Time Objective (Disruption); MTD = Maximum Tolerable Downtime

Hybrid Cloud approach provides resiliency, scalability & flexibility for the data center and ERP system and helps with the integration between two data centers

Resiliency for Data Center and ERP System	Hybrid cloud ensures continuous data replication between on-premise data centers and the cloud, enhancing resiliency and availability of critical systems, including ERP

Benefits

- **Automated Failover:** The cloud takes over ERP operations instantly, If the primary on-premise data center fails, minimizing downtime and data loss
- **Real-time Backup**: ERP data is continuously backed up in the cloud, ensuring rapid recovery in the event of a disaster

Integration Between Two Data Centers	Acting as an intermediary that facilitates the seamless integration of CSC's Illinois and Philadelphia data centers by enabling real-time data transfer and synchronization

Benefits

- **Unified Architecture**: Enabling seamless data flow and management
- **Enhanced Data Replication**: Continuous cloud-based data replication keeps both data centers synchronized and operational

Scalability & Flexibility	Allowing dynamically scale resources in the cloud based on demand while maintaining critical systems on-premise

Benefits

- **Elastic Resources**: The cloud can scale up during peak usage or high-demand periods and scale down during low-demand times
- **Optimized Costs**: This prevents over-provisioning of hardware in on-premise data centers and reduces costs by only paying for what is used in the cloud

The hybrid cloud approach consists of four parts for Cocoa-Sassafras Corporation to implement into their technology environment

Data Center Networking and Infrastructure

- Establish secure, high-speed connectivity between the Illinois and Philadelphia data centers
- Manage to ensure route traffic seamlessly between the two locations, making it easier to replicate data and failover

Data Replication and Data Center Integration

- Implement real-time data replication across the data centers always ensure that critical systems (especially SAP and JD Edwards) are always up-to-date
- Ensure cross-training of staff in both locations so they can manage operations in the event of a disaster in one data center

Cloud Integration for Disaster Recovery

- Implement a cloud-based disaster recovery solution as an additional failover layer in case both data centers experience downtime
- Use Disaster Recovery as a Service (DRaaS) for critical applications, including ERP systems, to reduce downtime and ensure minimal data loss

Testing and Optimization

- Conduct regular failover testing between Illinois and Philadelphia data centers to ensure seamless recovery
- Optimize backup schedule on data replication, and network connections to minimize data transfer costs and ensure real-time data availability

Outcomes

RTO/RPO Improvement: Reducing the **RTO** and **RPO** for critical ERP systems and data center services
Improved Availability: Achieving " five 9s", **99.999% uptime** for ERP systems through cloud-based failover and redundancy
Improved Resiliency: Minimizing integration issues, increasing the disaster recovery ability, then keeping the business continuity

Establish alternative suppliers in more stable regions to mitigate the risks from political unrest and environmental disruptions

Before

South America
- Heavy reliance on Nicaragua for coffee supply
- Vulnerable to political unrest and worker strikes
- Primary sourcing from high-risk areas

North America
- Major reliance on the Midwest for potato sourcing
- Highly exposed to natural disasters like tornadoes, extreme weather, and planting delays

General Issues
- Single-region dependency for sourcing critical ingredients
- Insufficient buffer stock in stable regions to mitigate disruptions
- Supply chain lacks diversification

Recommendation

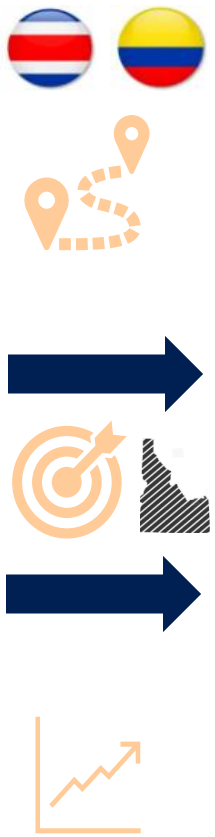
Identification of new regions

South America
Add more stable regions of sourcing like Costa Rica, Colombia, and Peru for coffee and cocoa

North America
Increase reliance on Idaho (U.S.) for potatoes

Set Supply Targets
Reduce single-region dependency to 30% or less for coffee and potato sourcing
Increase buffer stock in stable regions by 20%, ensuring readiness for supply chain disruptions

Expand Supplier Network
Increase suppliers by 40% for coffee and 25% for potatoes across stable regions



Future

South America
Shifted coffee & cocoa sourcing to more politically stable regions like Costa Rica, Colombia, and Peru
Reduced reliance on Nicaragua for coffee beans to 30% or less

North America
Increased reliance on Idaho for potato sourcing
Targeted 30% or less reliance on the Midwest for potato supplies.

General Improvements
- Single-region dependency for coffee and potato sourcing reduced by 30%
- Buffer Stock Increased by 15% in stable regions
- Supplier Network expansion for coffee and potato

Metrics

Supply Stability

20%

Product Availability

98-99%

Raw material price surges

20%

Sources: Specialty Coffee Association , National Library of Medicine, Supply Chain Brain

Cocoa-Sassafras Corporation can successfully enhance its business continuity and disaster recovery within 1 year

Activities	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
Planning												
Define scope and objectives												
Assign roles to members (POC)												
Identify CSC resources criticalities												
Prioritize risks												
Analyze disruption impacts												
Assessment and Validation												
Conduct a Business Impact Analyis												
Conduct a Site Risk Assessment												
Implementation												
Reconfigure data centers for geo-redundancy												
Configure real-time backups												
Plan alternate logistic routes												
Designate secondary production site												
Prepare infrastructure for data migration												
Secure more stable areas for suppliers												
Data replication and ERP migration												
Exercise Stage												
Conduct exercises												
Sustaining and Maintaining												
Monitor implementation												
Maintenance												

Cocoa-Sassafras Corporation will financially benefit from investing in business continuity and disaster recovery with an ROI over 36% and Total Benefits reaching $200M

ROI

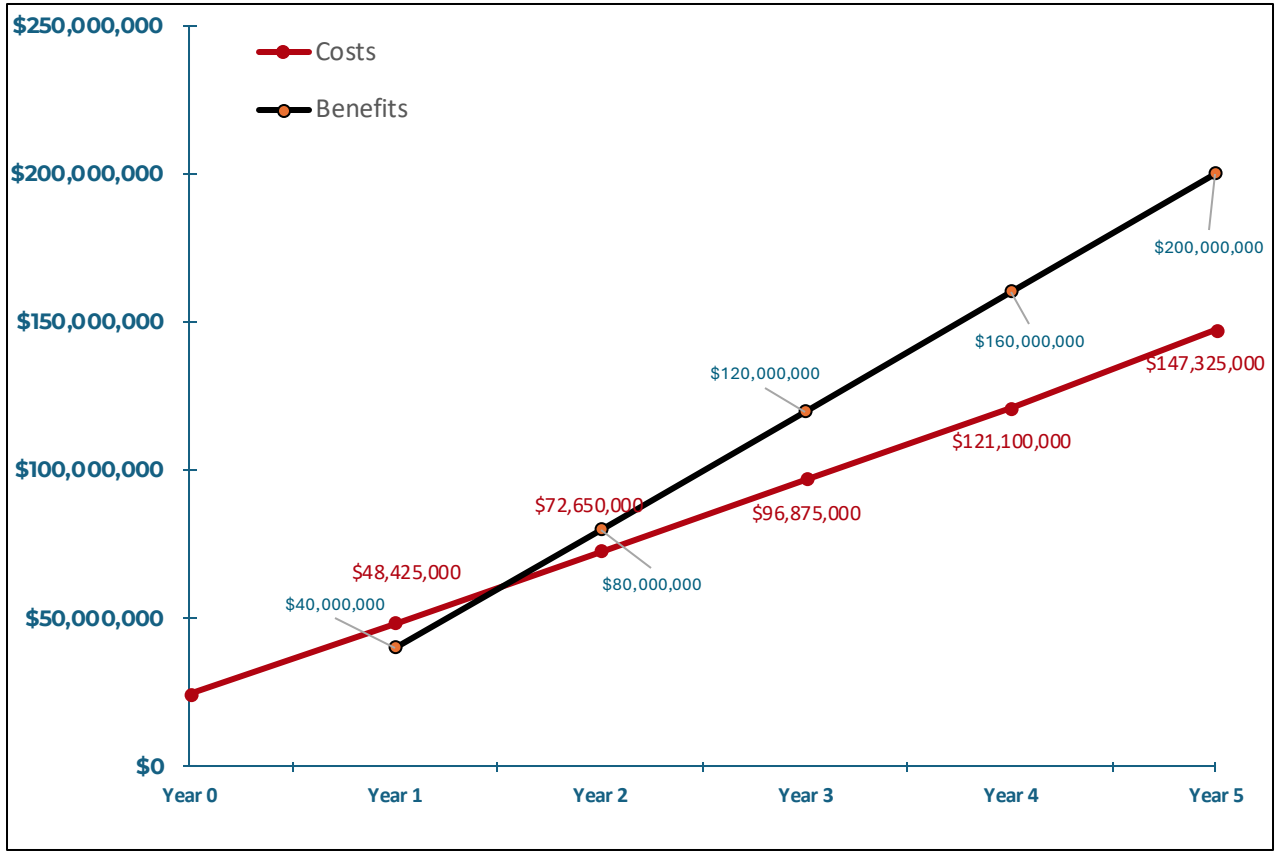
36%

B/E

27 months

NPV

$39M



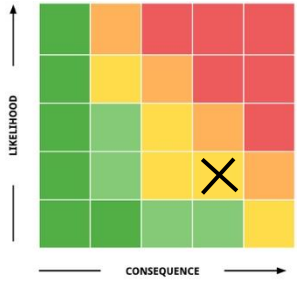
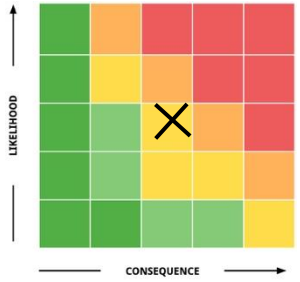
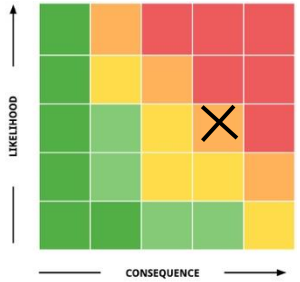
Financial Assumption

SAP goes down once in the next 5 years (Reducing downtime from 5 days to 2 days)

Total Benefits	**$200M**
SAP Downtime Cost Avoidance	$36M
Scalability Cost Saving	$4M

Total Costs	**$147.5M**
Total One-time Costs	$240k
Consultant cost	$200k
Site Preparation (network upgrades)	$40k
Total Recurring Costs	**$147.3M**
IT Infrastructure Costs	$5M
License and upgrades	$4M
Supply Partnerships	$10M
Cloud Migration	$1.2M
Training	$4M

There are potential risks with the proposed solution, but they can be mitigated with strategic planning

Potential Risk	Risk Matrix	Mitigation Plan
Cloud Vendor Reliability There can be service disruptions or outages from a cloud provider, which can affect business operations. If the vendor fails to meet uptime or performance guarantees, it can lead to downtime, data loss, or service interruptions for CSC		• Selecting reputable cloud vendors with a strong track record of uptime and service reliability • Including Service Level Agreements (SLAs) with guaranteed uptime and redundancy measures • Have a contingency plan to switch to another vendor if services are disrupted
New Supplier Quality and Reliability Issues Newly established suppliers may not meet the required quality standards or fail to deliver products consistently. This could result in production delays, compromised product quality, and increased operational costs if raw materials or components are substandard or delivered late		• Conducting thorough vetting and quality checks for the new suppliers is important before establishing partnerships • Implementing ongoing performance evaluations and set up quality assurance processes to monitor and address issues quickly
Infrastructure Damage from Unpredictable Natural Disasters CSC's facilities, such as manufacturing plants or distribution centers, could be severely impacted by events like hurricanes, floods, or earthquakes. Such damage can disrupt production, halt distribution, and lead to significant repair costs		• Strengthen physical infrastructure resilience by reinforcing critical facilities (e.g., flood defenses, hurricane-proofing) • Establish alternate distribution centers in low-risk areas to reduce dependency on a single vulnerable site

Cocoa-Sassafras Corporation (CSC) should invest in its business continuity and disaster recovery

Business Impact Assessment

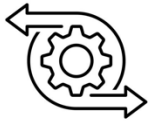
Conduct a BIA to prepare for disruptions

- Identify the business impacts of disruptions
- Identify criticality of resources
- Establish POC and recovery priorities

Recovery

Reduction in RPO and RTO for each criticality bucket

- Geo-redundant data centers
- Flexible production
- Alternate logistics routes
- Daily backups
- Remote data storage



Resiliency

Data centers and ERP will be more resilient through a hybrid environment

- Scalable and flexible
- Real-time backup
- Integrated data centers

Mitigate Supply Chain Risks

Create new supply chain partnerships

- Identification of new regions for shifting high impact zones
- Expand the Supplier Network for increased competition between suppliers

APPENDIX

Hybrid Cloud approach provides resiliency, scalability & flexibility for the data center and ERP system and helps with the integration between two data centers

Resiliency for Data Center and ERP System	Hybrid cloud ensures continuous data replication between on-premise data centers and the cloud, enhancing resiliency and availability of critical systems, including ERP	**Benefits**	• **Automated Failover**: If the primary on-premise data center fails, the cloud takes over ERP operations instantly, minimizing downtime and data loss • **Real-time Backup**: ERP data (SAP and JD Edwards) is continuously backed up in the cloud, ensuring rapid recovery in the event of a disaster	**Outcome** • **RTO/RPO Improvement**: Reducing the **RTO** and **RPO** for critical ERP systems and data center services • **Improved Availability**: Achieving 39s, **99.9% uptime** for ERP systems through cloud-based failover and redundancy
Scalability & Flexibility	Allowing dynamically scale resources in the cloud based on demand while maintaining critical systems on-premise	**Benefits**	• **Elastic Resources**: The cloud can scale up during peak usage or high-demand periods and scale down during low-demand times • **Optimized Costs**: This prevents over-provisioning of hardware in on-premise data centers and reduces costs by only paying for what is used in the cloud	**Outcome** • **Resource Scaling**: Aiming for achieving a **30%** improvement in response time during peak usage due to dynamic cloud resource allocation • **Cost Savings**: Lowering IT operational costs by **10%** through scalable cloud services rather than purchasing additional physical infrastructure
Integration Between Two Data Centers	Acting as an intermediary that facilitates the seamless integration of CSC's Illinois and Philadelphia data centers by enabling real-time data transfer and synchronization	**Benefits**	• **Unified Architecture**: Enabling seamless data flow and management • **Enhanced Data Replication**: Continuous cloud-based data replication keeps both data centers synchronized and operational	**Outcome** • **Reduced Complexity**: Cutting integration efforts by using cloud-based networking, while improving synchronization between Illinois and Philadelphia • **Improved Resiliency**: Achieving **real-time data replication**, minimizing integration issues and enhancing operational reliability

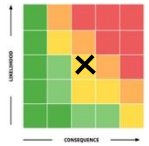
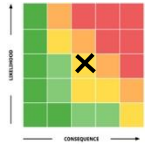
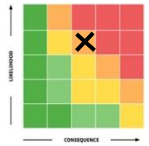
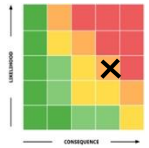
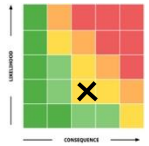
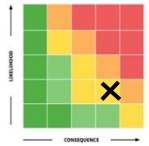
Options to increase Resiliency for Data center & ERP system

Hybrid Cloud Infrastructure	Migrate critical data and applications to a hybrid cloud environment, combining on-premise data centers with cloud-based solutions.		• **Scalability:** On-demand scaling during peak usage or recovery situations • **Redundancy:** Cloud-based services can serve as a failover to ensure continuous operation if a physical data center goes down • **Cost Efficiency:** The cloud reduces the need for physical infrastructure, allowing CSC to pay for resources only when needed
Geographic Redundancy	Establish geographic redundancy by setting up a third data center in a different region while enhancing existing centers in Illinois and Philadelphia		• **Disaster Recovery (DR):** If a disaster affects one region, operations can seamlessly shift to another unaffected region • **Real-time Data Replication:** Implement real-time replication across data centers to ensure that critical data (especially from ERP systems) is backed up immediately. This prevents data loss and reduces the Recovery Point Objective (RPO)
Data Center Virtualization	Virtualize CSC's infrastructure to allow better flexibility and management of resources between data centers		• **Faster Recovery:** Virtual machines can be easily moved or replicated between data centers, ensuring faster recovery times (better RTO) • **Resource Optimization:** Virtualization reduces hardware dependency and allows easier scaling

Financials

Period (e.g. Year)	0	1	2	3	4	5		ROI	36%
								NPV	$39,031,712
Net Cash Flows (NCF)	$ (24,440,000)	$15,775,000	$ 15,775,000	$ 15,775,000	$ 15,775,000	$ 13,775,000		IRR	57%
NPV (Annual)	$ (24,440,000)	$14,760,924	$ 13,812,038	$ 12,924,149	$ 12,093,336	$ 9,881,265			
ROI (Running Total)	-100%	-18%	10%	24%	32%	36%		NCF from Excel Formula	
			Break Even					NPV	$39,031,712
Costs									
One-Time (Non-recurring)									
Cost of Consultants Hired to Assist Development[1]	$ 200,000								
Initial purchase price of software and hardware									
Salaries of IT or business employees, consultants that are involved with acquisition and/or development of the solution									
Site preparation costs such as network upgrades, OS upgrades, new PCs, etc.	$ 40,000								
Cloud migration									
Training users prior to going live							$ -	Total One-Time Costs	
One-Time Costs per Period	$ 240,000								
Recurring									
IT infrastructure costs of supporting the new software and hardware	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 5,000,000			
Salaries of IT or business employees, consultants/contractors involved with ongoing su	$ -	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000			
Software and hardware licensing fees and/or upgrades	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000			
Follow-up training and support costs	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000			
Data Replication and Backup	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000			
Supply Chain Partnerships	$ 10,000,000	$10,000,000	$ 10,000,000	$ 10,000,000	$ 10,000,000	$ 12,000,000			
Recurring Costs per Period	$ 24,200,000	$24,225,000	$ 24,225,000	$ 24,225,000	$ 24,225,000	$ 26,225,000	$ 147,325,000	Total Recurring Costs	
Total One-Time and Recurring Costs per PeriodCosts	$ 24,440,000	$24,225,000	$ 24,225,000	$ 24,225,000	$ 24,225,000	$ 26,225,000	$ 147,565,000	Grand Total Costs	
Cumulative Costs	$ 24,440,000	$48,665,000	$ 72,890,000	$ 97,115,000	$121,340,000	$ 147,565,000			
Benefits									
Cost avoidance	$ -	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000			
Value/revenue enhancement		$36,000,000	$ 36,000,000	$ 36,000,000	$ 36,000,000	$ 36,000,000			
SAP Downtime	$ -	$ -	$ -	$ -	$ -	$ -			
Total Benefits per Period	$ -	$40,000,000	$ 40,000,000	$ 40,000,000	$ 40,000,000	$ 40,000,000	$ 200,000,000	Grand Total Benefits	
Cumulative Benefits	$ -	$40,000,000	$ 80,000,000	$120,000,000	$160,000,000	$ 200,000,000			

Risks and Mitigations

Potential Risk	Risk Matrix	Mitigation Plan
Risk: Cybersecurity Threats Data breaches or system compromises due to malicious attacks on CSC's IT infrastructure		• Implement advanced security measures such as multi-factor authentication (MFA), encryption, and continuous network monitoring • Regularly update and patch systems to prevent vulnerabilities. Conduct frequent cybersecurity drills and audits to ensure readiness
Risk: Data Compliance and Privacy Regulations Non-compliance with data privacy laws, leading to potential fines and legal issues		• Ensure compliance with regional and international regulations (e.g., GDPR, CCPA) by working with legal experts and privacy consultants • Regularly audit cloud storage and data processing practices to adhere to regulatory requirement
Risk: Higher Costs and Logistics Complexity Increased expenses and logistical challenges when establishing suppliers in alternative regions		• Negotiate long-term contracts to secure favorable pricing and build strong relationships with alternative suppliers • Optimize supply routes and invest in advanced supply chain management software to efficiently manage logistics complexities
Risk: Global Supply Chain Disruptions Uncontrollable global events like pandemics or geopolitical conflicts impacting supply chain continuity		While CSC cannot fully control global disruptions (e.g., pandemics, geopolitical conflicts), it can reduce impact by diversifying suppliers across multiple regions, maintaining inventory buffers, and establishing flexible supply chain strategies to adapt when crises occur
Risk: Inadequate Employee Training and Response Readiness Insufficient preparation of staff for emergency responses, reducing BC/DR effectiveness		Schedule regular BC/DR training sessions and simulation exercises for all relevant staff, ensuring key personnel have clear responsibilities and access to necessary resources during an emergency
Risk: Delays in Implementing Updated BC/DR Plans Potential slow progress in updating and executing disaster recovery plans, leading to vulnerabilities during crises		• Set clear timelines and milestones for BC/DR implementation, with regular reviews to track progress • Allocate sufficient resources and designate a dedicated team to ensure the BC/DR initiatives are carried out effectively and on schedule

Mitigation costs to be forecasted for a better planned environment