Graphical user interface, application

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**CST4330 Individual Coursework Specification**

**Information Systems Strategy and Management**

**CST4330**

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**Question 1:**

1. **Describe what is meant by bullwhip effect in the supply chain and discuss what can contribute causing it. Illustrate your answer by giving an example of a company which experienced the bull whip effect and what caused it.[12 Marks]**

The bullwhip effect is a decrease in consumer demand that leads to less orders placed within operations (CIPS, 2025). This occurs when companies react to temporary demand, that leads to an excess inventory and higher costs.

The bullwhip effect is not only caused by operational issues, but also behavioral and psychological factors in supply chain decision-making. Yang et al. (2021) believes humans can act irrational, due to having a preempt bias that amplifies demand fluctuations. Differently (Brauch et al, 2024) believe the bullwhip effect is caused by various factors, which are system structure, uncertainty, misaligned incentives and inadequate cognition of the situation. Poor design of the supply chain can lead to less orders, misalignment incentives such as bulk-ordering or bias decision making can amplify demand.

In the book Supply Chain Management: Fast, Flexible Supply Chains in Manufacturing and Retailing, (Joris J.A. Leeman, 2010) highlights manufacturers and retailers must adapt to market conditions and collaborate. He states retail challenges include time constraints, market dynamics, transactions and requires these parties to work together in a more integrated and responsive manner maintaining effectiveness in the supply chain.

**The bullwhip effect is caused by several factors** (Matt Cross, 2025):

Forecasting: An inexperienced member operating the supply chain demand can cause errors as minimal misinterpretation can results to incorrect inventory orders.

Order Batching: To reduce costs, businesses place large orders to get a discount, then creates a false demand to the business and causes an exaggerated variation in product and inventory levels.

Pricing: Discounted price, bulk discounts, promotional offers can influence the behaviour of customers and create an immediate demand. These changes can lead to an inconsistent flow of orders throughout the supply chain that impacts inventory management.

Information sharing: Communicating poorly and limiting information sharing between members of supply chain can lead to a misunderstanding about the real demand. This causes inefficiencies within the supply chain.

Supply Chain Issues: Lack of coordination among partners can cause the bullwhip effect, if each member within the operation acts independently to optimise its own operations, it may not consider the implications of its decisions on other partners. A lack of working together within inventory management can fluctuate produce demand.

## **Case Study: Walmart Bullwhip effect** (Matt Cross, 2025)**:**

In the early 2000s, Walmart and Procter & Gamble (suppliers) had a bullwhip effect on their supply chain operation. P&G supplied Walmart with various products in this period, but Walmart experienced fluctuations within orders to P&G.

**The main causes of the bullwhip effect in this scenario were** (Matt Cross, 2025)**:**

Forecast demand: Inaccurate demand, leading to variations between demand and their forecasts. These errors influence products Walmart ordered from P&G.

Batch Orders: Walmart place large orders for economical states and minimises order costs, this creates spikes within production schedule and inventory levels.

Lack of information sharing: Walmart and P&G did not have an integrated and transparent supply chain, details about customer demand wasn’t effectively shared between the two companies, which led a misinterpretation of expected demands.

Price fluctuations and promotions:Walmart pricing strategies and promotions impacted customer buying behaviour which led to a demand fluctuation that affected the production planning of suppliers.

This led to suppliers having issues in maintaining inventory levels, higher production costs, encountering difficulties in aligning their production level with Walmart’s volatile orders.

To address this arising issues, Walmart & P&G collaborated to improve information sharing, demand forecasting, coordination within supply chain and overcame the bullwhip effect and achieve an effective supply chain.

1. **Not long ago, the idea of using social media at work was viewed by most as a non-work-related activity. Today organizational perception of social media has changed. Discuss different ways organizations are using social media to bring value giving examples.**

# There has been a great shift in social media, to which its use can vary from personal communication to business strategy. Dwivedi et al. (2021) discussing the evolution of social media in B2B environments stating its significance. Organizations adopting social media to engage with customers, enhance brand visibility and streamline communication. How the World Changed Social Media (Miller et al, 2016) highlights the global impact of social media by offering an understanding of how it has become a powerful tool for both personal and organizational value creation.

## Different ways Businesses leverage social media

**Recruitment: Hiring employees** Tran, C.L. (2023):

* LinkedIn for professional networking and candidate sourcing.
* Organizations showcase their culture through platforms such as Twitter.
* Recruitment teams assess candidates’ profiles and background check

Example: Microsoft monitor, report and review potential employee’s social media accounts

### **Customer Engagement and Support** (Concannon, 2024):

* Social media has altered customer interaction.
* Real time customer service through Twitter.
* Create personalized experiences based on customer feedback.
* Addressing customer queries.

Example: Coca-Cola responds to queries across all their social media channels.

### **Marketing and Brand Awareness** (Scott, 2025):

* Targeted advertisement.
* Content marketing to increase brand awareness.
* Influencer partnership to expand market reach

Example: Airbnb collaboration with Mattel teasing a Polly Pocket toy from 1994, helps with the brand because Millennials are a core part of the travel business audience.

### **Communication and Collaboration** (Tran, C.L. (2023):

* Knowledge sharing.
* Employee engagement.
* Interactive group collaboration.

Example: Microsoft uses social media to enhance workplace communication, particularly for distributed workforces.

### **Market Research and Business Intelligence** (Singh and Tyagi, 2024):

* Real-time monitoring of customer behavior.
* Develop insights on customer feedback.
* Trend analysis and predictive modelling.

Example: Monitoring customer behavior on social media helps organization to present and tailor their new products to specific target audiences.

### **Crisis Management and Reputation Control** (Concannon, 2024):

* Rapid response to user challenges
* Transparent communication.
* Proactive management
* Immediate clarification of misinformation

Example: Domino pizza’s treat social media as an important customer service tool, clarifying and resolving customer issues.

## **Emerging Trends and Considerations** (Concannon, 2024):

* Invest in social media analytics tools
* Maintain balance between engagement privacy
* Develop comprehensive social media governance policies.

Example: Puma keeps up with sporting trends as they are a sportwear fashion brand and its company maintains a reputation for high quality products. Puma considers their brand reputation always; they reply to customer queries swiftly and resolve issues effectively.

Overview

Social media has transcended its perception as a non-work-related activity, becoming a strategic tool enabling organizations to communicate, innovate and create value across multiple dimensions.

**Question 2:**

1. Customer Relationship Management (CRM) is a technology used to manage interactions with customers and potential customers. Consider the following fictitious case:

MDXbus is a company that sells bus tickets through its E-Ticketing platform. It also offers private bus hire and hotel booking portals, as well as an innovative new eco-smart carpool network for professionals. It has successfully implemented a CRM that helps it build customer relationships and streamline processes.

* 1. **Identify what you think are the key features (functions) of the company’s CRM**

The key features include essential features:

Dashboard: It can be used to update products based on customer behavior, identify current trends and make informed decisions.

Loyalty Program: Track and reward customer loyalty across multiple service lines, this encourages repeat customers.

Customer Tracking: Interacting with customers and understanding key decisions can help with repeat purchases.

Database: Store customer profiles, book bus tickets and privacy hire services.

Communication: Design a mobile application, website and have email contact and phone support for users.

Marketing: Promote marketing techniques based on customer segments such as business clients that offer personalized services.

Services: E-ticketing platform to book hotel portal and enable cross-selling opportunities.

Guerola-Navarro et al (2021) indicates retaining customers is possible by offering loyalty programs and personalizes marketing to encourage repeat purchase. The research highlights the process supported by CRM that aligns with MDX’s focus on integration of booking systems. Chatterjee et al. (2021) voices the importance of leadership to enable Social CRM adoption that leads to several benefits. MDX system’s uses customer data to target market segments, personalise services and to show that internal factors can generate value through customer engagement.

Schwarz (2024) states feature such as AI-driven analytics can help with system integration to retain customers. These relate to MDX Bus’s CRM capabilities as it includes integrated service platforms. AI can enhance customer tracking by predicting user behavior and personalizing offers, this makes CRM key for customer satisfaction.

SuperOffice (2024) believes CRM features is a core functions such as analytical support of customer profiles reinforce MDX’s goals of targeted promotions and loyalty programs. CRM features ensure consistent communication, service delivery and informed decision-making across MDX’s marketing sales.

Customer Relationship Management: Concepts, Applications and Technologies by (Daniel D. Prior et al, 2023) highlights CRM strategies and technologies must align with the goals of business objective. CRM features such as customer segmentation, data analytics and integration with business systems are all important in sales.

* 1. **Explain how you think the company’s CRM has increased sales, improved customer service, and increased profitability**

**Increase in Sales:** Du Preez, J.,2024 states CRM systems help with cross-selling and personalizing customer interactions based on data patterns such as suggesting related services, (e.g. bus tickets after a hotel booking). CRM can identify patterns that are common with customers, then the system can suggest relevant services and track seasonal trends for MDXbus to design a timely promotion that maximizes booking rates during slower periods.

**Improved customer service:** Gede et al 2019 highlights CRM enables companies to provide personalised service to maintain customer satisfaction and loyalty.The customer database ensures service representatives have access to customer data; this enables them to resolve issues faster. Communication can help customers receive necessary information whether they have booked through the website or mobile application. Automated communication for booking confirmations, travel reminders and service updates enhances customer experience and reduces staff workload.

**Increase Profits:** According to (Rodriguez et al, 2018), CRM can create sales opportunities across regions. This enables businesses to target specific customer segments with personalized marketing and revenue growth. The company can use marketing resources to generate high returns through identifying popular customer segments. CRM reduces customer costs through targeted campaigns rather than marketing efforts. An Improved customer retention resulted in enhanced service quality and personalization.

**2.2b CRM platforms can exploit various technologies. This means better customer service and greater marketing insight gathered. Identify what you think are three key technologies exploited by the MDXbus CRM. Explain how the three technologies facilitate this.**

**1. Artificial Intelligence and Machine Learning**

Ledro et al. (2023), speaks about the role AI plays in CRM systems to improve organizational efficiency and facilitate better customer relationship management. MDXbus's CRM exploits AI and machine learning algorithms to analyze vast amounts of customer data and derive actionable insights. These technologies can identify patterns in customer behavior that would be impossible to detect manually.

**How AI/ML Facilitates Better Customer Service and Marketing Insight:**

AI powered intelligent chatbots on MDXbus website and mobile applications and providing instant response to customer queries possible about booking procedures or ticket availability. Chatbot can handle routine questions 24/7 to free human agents and can instead address more complex issues. AI algorithms detect potential defects before the customer has to deal with it, an example would be identifying patterns that suggest a bus route is experiencing delays and can notify affected passengers.

From a marketing perspective, machine learning can analyze customer data to then predict behavioral patterns. Predictive analytics powered by machine learning allows MDXbus to forecast customer behavior, such as identifying which customers are likely to be more interested in carpool than bus tickets. The system can design customer-based segments such as encouraging travelers to book both transportation and accommodation through a small pop up. This segmentation enables targeted marketing campaigns with messaging that resonates with the customer’s needs.

**2. Mobile Technology and Location-Based Services**

The integration of mobile technology and location-based services into CRM of MDXbus’s creates a customer experience that enhances service delivery and marketing effectiveness.

**How Mobile/Location Technologies Facilitate Improvements:**

Francis Buttle and Stan Maklan (2019) highlights CRM discusses how to leverage technological advancement such as mobile based services to improve customer service. MDXbus’s mobile application with GPS functionality allows real-time tracking buses, giving customers accurate measures. Marketing perspective capabilities allow MDXbus to send targeted promotions when customers enter specific areas, perhaps offering hotel discounts when a customer arrives at their destination.

**3. Cloud Computing and Data Integration**

Cloud-Computing helps MDXbus’s CRM to scale, access and integrate capabilities needed for managing customers effectively.

**How Cloud Computing Facilitates CRM Effectiveness:**

The study by Khorraminia et al. (2019) highlights the importance of cloud computing of CRM systems, particularly in managing customer data. This aligns well with MDXbus’s management of data to ensure satisfactory delivery. Cloud technology allows service providers to access customer information from any location and ensures consistent service quality across all points. The cloud infrastructure supports real-time synchronization of customer data across systems, ensuring that information updated on one channel is immediately reflected in others, e.g. mobile applications. Cloud-based data aggregates information from multiple sources, including E-Ticketing platform, hotel booking portal, private hire services and carpool networks creates a holistic view of customer interactions. Cloud computing allows MDXbus to handle seasonal spikes in demand without service degradation, maintaining effectiveness and customer service quality. Cloud-based integration with third-party data sources such as customer intelligence and relevant marketing experience.

**Question 3:**

In 1999, Axfood AB was formed by the merger of over 1300 Scandinavian (Sweden and Finland) food retailers. The purpose of the merger was to build brand recognition, to be able to respond better to changing customer demand, and to improve efficiency. In 2006, the company consolidated sales of 3 billion euros and over 7000 employees. Axfood ended with a very diverse IT infrastructure with many different solutions.

Axfood invested approximately 20.4 million euros in a common IT platform for the Axfood Group’s core business to fully integrate its wholesale and retail operations. With integrated operational systems, Axfood can handle high volume Point Of Sales (POS) data, as well as:

* Coordinate secure, reliable transmission of POS data from retail locations to a central warehouse, enabling more efficient inventory management and business activity monitoring.
* Connect suppliers and logistics, which cut the order-to-deliver time by 33% - from 3 days to 2.
* Add new solutions for future business processes with minimal incremental investment.
* Keep shelves stocked with the products consumers want.

(Adapted from Turban E. and Volonino L (2012), Information Technology for Management, John Wiley 7 Sons, Inc., pages :257-258)

1. **With the aid of an appropriate model discuss to what extent the increased use of IT in AXfood can manage operations and connect with suppliers more efficiently.**

An appropriate model is Business Process Reengineering for Axfood to use and manage wholesale. BPR revamps business operations and targets improvements within productivity, quality and satisfaction of employees (Kissflow Team, 2025).

## This journal provides insights to principles and practices of BPR, mainly the role of IT in transforming business processes and is foundational of how Axfood has used IT to optimize its operations Fetias et al. (2022):

Process-Oriented Transformation: Axfood uses an end-to-end process and currently have a 33% reduction in delivery order time.

Redesign: Axfood redesigning operations instead of integrating incapable systems. The investment in IT platform disregards historical methods in favour of optimized workflows.

Technology: BPR understands IT enables to process transformation, Axfood’s technology wasn’t simply used to process automation.

Data Management: POS data from retails into central warehouses transforms inventory management from a store-level activity to an enterprise-wide capability.

This enables Axfood to:

* Demand forecast is enhanced based on sales data.
* Inventory replacement rather than reactive ordering.

Process: BPR focuses on removing steps and reducing time. Axfood’s reduction of order delivery time from 3 days to 2 will align with BPR.

Supplier integration: Rather seeing treating suppliers as external entities, Axfood’s IT platform incorporated them directly into business processes. This supplier integration highlights the BPR principle of organising around outcomes rather than task.

By connecting suppliers electronically Axfood can.

* Eliminated communication delays and misunderstandings.
* Provided real-time demand information to suppliers.
* Created collaborative forecasting capabilities.

Decision Point: Axfood IT platform supports providing information to employees regarding.

* Product restocking
* Delivery arrival
* Customer preference.

**Value Creation BPR**: Axfood process can create value in multiple ways (Bayomy, Khedr & Abd-Elmegid, 2021):

Cost Reduction: Eliminate redundant systems, manual data entry and inefficient processes all reduce costs. The common IT platform standardized operations across retailers, create economies of scale and process.

Time Compression: 33% reduction in order-to-delivery time represents an advantage in retailer stores, where products availability are success factors. This time compression improves satisfaction and inventory turnover.

Quality Improvement: POS data minimises errors with manual ordering and improved data accuracy throughout supply chain and enhances quality of inventory management.

Flexibility: “Add new solutions for future business processes with minimal incremental investment” depicts BPR principles of building adaptability into transformed processes.

Axfood’s IT investment highlights how IT can transform operations and redesigning processes around the capabilities of integrated technology. BPR approach enables Axfood to maximise potential by creating standardized, optimized processes supported by a common technology platform (Bain & Company, 2025).

In Business Process Reengineering: Automation Decision Points in Process Reengineering, Mohapatra (2012) highlights the importance of automating re-engineered processes to enhance predictability and transparency in business processes. The author shows how business can achieve competitive advantage by having a structured approach to process reengineering.

1. **The company needs to respond quickly to changing market conditions and customer interactions. Describe what technologies and/or tools you will provide the managers and the workers to be able to adopt with changing goals. Explain how you expect these technologies to be used in the company.**

Axfood need to rely on marketing conditions and customer interactions, implementing technologies designed to enhance agility and decision-making at any management level.

**Manager – Technological Tools** (Campante, 2024) and (Haije, 2024):

Business Intelligence can manage performance issues within the organizations. Drill down analytics can investigate issues and design dashboards to find trends and opportunities.

* Predictive Analytics: Changes within markets, managers need to foreshadow possible outcomes.
* Segmenting customer data can find patterns within purchasing.
* These tools can help promote campaigns with data employees collaborating with managers to find actionable insights.

This allows managers to make informed decisions maintaining operational momentum regardless of whereabouts.

### **For Employees** (Muñoz Macas, 2021):

Inventory Management System: Workers need tools to make inventory management easier.

* Handheld scanners with real-time inventory.
* Guided restocking applications that priorities tasks.
* Alert inventory of expiration dates.
* Ensure availability minimizes labor costs associated with inventory.
* CRM tools: Personalize customer experiences.
* Recommendation based on current historical purchases.
* Build a relationship with customers through engagement.

**POS system**: A primary technology touchpoint for retail workers (Accruent, 2024):

* Interface requiring minimal training.
* Capture customer feedback.
* Process for employees and customers data.

### **Implementation Approach:**

The implementation of specific technology order

* To enhance infrastructure and upgrade network capacity.
* Integrate systems: Exchange data between operational systems and analytical platforms.
* User-Centered Design: Understand user opinion in designing interfaces and workflows to ensure adoption.
* Progressive Training: Develop training programs to evolve users gain proficiency.
* Continuous Improvement: Customer feedback mechanisms to identify and address points.

This technology system flows data freely from operational systems to decision-making tools. The results lead to detecting changing market conditions through enhanced data collection and analyze analytics and respond through systems.

**Question 4:**

1. **The retail apocalypse is a term that refers to the closing of numerous brick and mortar retail stores. Consider the following fictitious case:**

**Grange plc was a British retail company, founded in 1880, operating department stores, in 90 locations across the United Kingdom with its flagship store in Hendon. It sold a range of goods including food, clothing, household items, and furniture. The stores also contained concessions whereby other retailers may trade. However, the company, suffering financial difficulties over the past few years, entered administration in 2021, and was liquidated in January 2022. Using Porter’s five forces model critically analyse Grange plc and identify the primary force which lead to its demise. Explain why you think it is the primary force by discussing the effect of the force you identified on Grange plc.**

Cascade (2025) highlights Porters' five forces as a strategic framework that identifies and analyses to help competing against competitors.

The primary force is the Threat of Substitutes that led to its demise. The reason being is Grange plc is offering products that e-commerce websites also do, but they are more convenient and usually a lower price. The retailer is founded in 1880, meaning that Grange will face challenges in adapting digital transformation of retail to which (Awdita Citra Birru,2022) states businesses face issues during the Covid-19 Pandemic.

This force affected Grange plc in several ways (Abdullah Rashid, C, 2023):

Pricing: Online retailers offer lower costs, allowing them to price products at a better price than Grange, as it will be difficult to match it whilst maintaining the physical store network of 90 locations.

Convenience: E-commerce is anytime shopping access for users, home deliveries and product information to which is convenient for customers that Grange’s couldn't match without digital investment.

Removal of Competitive Advantage: The traditional department store model offers a variety of products under one roof which is replicated by online retailers.

Consumer Behavior: The shift towards online shopping accelerated during COVID-19 pandemic which delivered the final blow to Grange’s already fragile financial position.

1. **Regardless of which Michael Porter’s tools you select to use in developing IS/IT solutions, selecting ones that are appropriate for your organisation is crucial. To simplify the selection process further, you are given the industry guide grid shown in Figure 1 which helps you to decide which tool works best with which industry.**
2. Match each tool (given in the left column) with the most appropriate industry given across the top of the grid. Each tool may match more than one industry. If a tool matches more than one industry, select the one you think is the most appropriate.

For each tool you selected, give supporting arguments as to why the industry you selected is the best (the reasons for selecting that particular industry for that particular tool)

**[12 Marks]**

**Reduce Buyer Power: Financial Services** - Magretta, J. (2012):

Financial Services is the best fit in reducing buyer power because customers can easily compare products online and change providers without significant penalties. Organizations can implement this strategy through complex product bundles, loyalty programs and integrated service ecosystems that create value beyond financial transactions.

**Reduce Supplier Power: Manufacturing**

Manufacturing aligns with reducing supplier power dependent on raw materials from limited suppliers. Prices fluctuate in supply chains, manufacturers can reduce suppliers' power through alternative strategies can create competition among suppliers by maintaining relationships.

**Increase Switching Costs: IT & Telecommunications**

Increasing the switching costs designed opportunities to establish technologies, companies store data and customize solutions that would require significant reconfiguration.

**Increase Entry Barriers: Healthcare**

Healthcare increases entry barriers due to its complexity, capital requirements and specialized knowledge needs. This industry strengthens these barriers through medical technologies, patient data ecosystems that grow valuable over time and new entrants struggle to replicate.

**Switch to a Cost Leader: Transportation**

Transportation aligns with cost leadership because it involves services where prices directly impact competitive position. Transportation organizations can cost leaders through leadership by understanding route efficiency, fuel management systems and operational systems that lesser competitors cannot match.

**Switch to a Differentiated Strategy: Entertainment -** Mailchimp (2025):

Entertainment aligns perfectly with differentiation in strategy because consumers seek unique experiences rather than common. Companies focusing on entertainment can differentiate themselves from the rest through providing exclusive content creation for users, innovative delivery and creative talent acquisitions.

**Switch to a Focus Strategy: Retail**

Retail benefits a focused strategy because consumer markets are highly segmented with diverse preferences. Retailers can implement focus strategies by specializing in specific product categories, targeting segments and creating tailored shopping experiences.

**Reduce Buyer Power: Hospitality & Leisure**

It is a good application to reducing buying power as the sector faces significant challenges from price comparison platforms and booking has increased consumer leverage. Hotel and leisure facilities must contend with transparency created by online travel agencies that allows us to compare prices across priorities. Customer data collection capabilities offer unique opportunities to implement personalized loyalty programs, dynamic pricing system, integrated digital experiences through advanced IS/IT solutions, creates value beyond price and effectively reduces the buyer negotiation position

1. **Select any 3 tools given in the grid and discuss how IS/IT may be used to implement that tool in the industry you chose.**

**Increase Switching Costs: IT & Telecommunications - CFI Team (2025):**

IS/IT can be implemented in the IT & Telecommunication industry to increase switching costs, this includes developing CRM platforms to integrate all customer data, service history and preferences. These systems create personalized service experiences that become more valuable over time and cannot be easily transferred to competitors. Companies can use integration frameworks that allow businesses to use services in their operations. A cloud-based service delivery platform could offer storage solutions that become cost-effective with longer usage, creating financial incentives to remain with the current provider.

**Switch to a Differentiated Strategy: Entertainment**

IS/IT can enable differentiation through AI-powered content recommendations engines that leverage machine learning to analyze customer behavior and provide increasingly personalized content suggestions. This creates an entertainment experience that improves with usage. Companies could develop interactive content platforms that enables co-creation, establishing experiences that passive content providers cannot match. They could use cross-platform synchronization technologies that create seamless experiences across devices, differentiating through consistency rather than content alone. These technologies would enable the entertainment company to offer value propositions beyond traditional content delivery (Simon-Kucher & Partners, 2023).

**Switch to a focus strategy: Retail**

IS/IT can support a focus strategy though specialized analytics systems designed to gather deep insights about customer niches. These systems would enable retailers to understand the unique preferences and behaviors of their target segments. Retailers could develop customized e-commerce platforms specifically for their target markets shopping preferences, user interfaces and checkout processes. Furthermore, implementing community building technologies such as specialized mobile applications and social features would connect customers with similar interest, brand communities around the retailers focus area. These technologies enable retailers to serve their chosen market segment with relevancy Burdon, E.S. (2024).

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