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LCLM5004 Component 1

Assignment- Group presentation on different information systems

The background of the slide is a vibrant blue watercolor wash. It features a mix of deep cerulean and lighter sky blue tones, with soft, organic edges that blend into each other. The texture is painterly, with visible brushstrokes and variations in saturation. A white rectangular box is positioned on the left side, containing the title and subtitle text.

Business Information Systems

DANIEL 4-12

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Overview of Business information systems

Business information systems and combinations of people, process, data, and technology that collect, process, store, and distribute information to support operations, decision making, and strategy. They help organisations:

- **Improve efficiency:** Automate routine tasks, reduce errors, speed up workflows.
- **Support decision-making:** Turn raw data into reports, dashboards, and models for managers.
- **Create competitive advantage:** Enable better customer insight, faster response to change, and innovate services.



Key types of information systems (brief overview)

(Caudle,1991)

Transaction Processing system(TPS)

Role: Captures and processes day-to-day business transactions (sales, payments, orders, stock movements).

Impact: Foundation for all other systems- provides accurate, timely operational data.

- Management information system (MIS):

Role: Converts TPS data into routine reports and summaries for middle managers.

Impact: Supports monitoring performance, budgeting , and short- to medium- term planning.

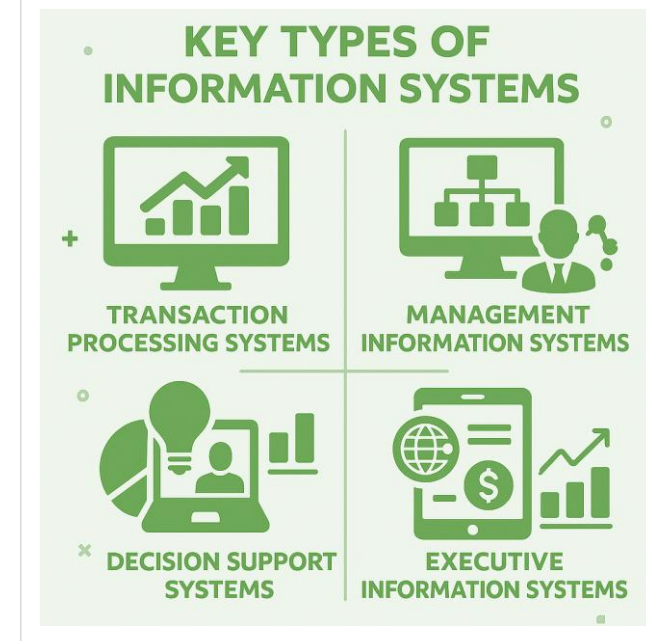
- Decision Support System(DSS):

Role: Interactive tools that combine data, models and “what-if” analysis to support non-routine decisions.

Impact: Helps managers explore scenarios, assess risk, and choose between alternatives.

- Enterprise Resource Planning (ERP):

Role: Integrates core business functions (finance, HR, operations, procurement, inventory) into a single system.



Key types of information systems(brief overview)

- Customer Relationship Management (CRM):

Role: Manages customer data, interactions, sales pipelines, and marketing campaigns.

Impact: Enables personalised service, targeted marketing and has also improved customer retention.

- Supply Chain Management (SCM):

Role: Coordinates flows of materials, information, and finances across suppliers, manufacturers, and distributors.

Impact: Reduces stockouts and excess inventory, improves delivery performance and lower costs.

Comparative Analysis of three core systems

Comparison table : TPS, MIS, DSS

(Asemi, A., Safari, A. and
Zavareh, A.A.,(2011).

Feature	TPS	MIS	DSS
Primary purpose	Record routine transactions	Provide reports	Support complex
Main users	Operational staff supervision	Middle managers	Managers, analysts
Time horizon	Day-to-day, real-time	Short medium term	Medium long term, strategic
Typical outputs	Receipts , stock updates , invoices	Sales reports, KPIs, budget vs actual	Simulations, “what-if” analyses, forecast
Data type	Highly detailed, well structured	Summarised	Mix of external, internal, historical forecast
Impact on success	Accuracy, speed, operational reliability	Control of performance and monitoring	Innovation, risk management, strategic

Transaction Processing Systems (TPS)(Rahmatian, S., 2002)

Functions:

- Capture transactions: Sales at POS, online orders, payments, returns.
- Validate and store data: Check completeness, update databases in real time.
- Trigger follow-on actions: Inventory updates, order confirmations accounting entries.

Benefits:

- High accuracy and speed in routine operations.
- Real-time visibility of stock, cash, and orders.
- Foundation for reporting– all higher-level systems depend on TPS data.



Transaction Processing Systems (TPS)

Limitations:

- Focused on recording, not analysing.
- Can become fragmented if its within a different department use separate TPS with no integration.

Management Information Systems (MIS)

Functions:

- Transform TPS Data into periodic reports(daily sales, weekly productivity, monthly financials).
- Provide Dashboards and KPIs for performance monitoring.
- Support structured decisions (e.g., reordering stock, adjusting staffing levels).

Benefits:

- Improves control and coordination across departments.
- Standardised reporting supports consistent decision making.
- Helps identify trends and exceptions (e.g., underperforming stores or products).

Limitation :

- Often backward-looking-reports what happened, not what might happen.
- Less suited to unstructured or novel problems.
- Quality depends heavily on data accuracy and timely input from TPS.



Extended Comparison: ERP and CRM in a growing Business

For a growing business wanting to modernise, ERP and CRM are often the most transformative:

- ERP (built on TPS + MIS concepts):
- **Strengths:** End-to-end integration, single source of truth, better compliance and reduced duplication.
- **Limitations:** High implementation cost, change-management challenges, risk of “One size fits all” processes.



Customer-facing intelligence (CRM)

Strengths:

- 360degree view of customers, improved sales pipeline management, targeted marketing, better service.

Limitations:

- Data quality and user adoptions are critical and can raise any privacy concerns if misused.

A realistic path for a growing business is often:

1. Stabilise TPS (reliable transaction capture across channels).
2. Introduce MIS dashboards for key performance indicators.
3. Adopt CRM to deepen customer relationships.
4. Move towards ERP as scale and complexity increase.



Ethical, Legal and Social considerations

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Data Privacy and protection

Issues:

Collecting large volumes of customer and employee data(via TPS, CRM, ERP) raises questions about consent, data minimisation and purpose limitation.

Regulations like GDPR in the UK/EU require lawful basis, transparency, and rights for data subjects(access, rectification, ensure).

Mitigation:

- **Privacy-by-design:** Build systems to collect only necessary data, clear retention rules.
- **Strong governance:** Data classification, access controls, and regular audits.
- **Clear Communication:** Privacy notices, opt-in/opt-out options, and easy ways to exercise rights.



Security and cyber risk

Issues:

- Centralised systems (ERP, CRM, DSS) are attractive targets for cyber-attacks.
- Breaches can expose personal data, trade secrets, and financial information.

Mitigation:

- Technical controls: Encryption, multi-factor authentication, network segmentation, regular patching.
- Organisation controls: Security policies , staff training , incident response plans
- Vendor due diligence: Assess cloud providers' security certifications and practices.



AI decision-making and algorithmic bias

Issues:

- DSS and advanced CRM/ERP modules may use AI/ML for credit scoring, pricing, recommendations or hiring.
- Biased training data can lead to discriminatory outcomes (e.g., unfairly rejecting candidates or customers).

Migration:

- Bias assessment: Regulatory test models for disparate impacts across groups.
- Human-in-the-loop: keep humans responsible for high-stakes decisions, with the ability to override AI.
- Explainability: Use models and tools that allow decisions to be explained and challenged.



Employee monitoring and workplace ethics

Issues:

- ERP, TPS, and productivity tools are applicable to track activity, performance and location.
- Excessive monitoring can damage trust, wellbeing and morale.

Mitigation:

- Proportionality: Monitor only what is necessary for safety, compliance or performance.
- Transparency: Inform employees what is monitored, why, and how data is used.
- Consultation: Engage staff and representatives when designing monitoring policies.



Real-World case studies and lessons

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Case Study 1: Retailer using TPS + MIS + ERP (Sainsburys continue)

Context:

A large supermarket chain integrates POS TPS, finance into an ERP platform and inventory systems.

- Uses TPS and DSS

Challenges:

Fragmented legacy systems, inconsistent stock data, manual reconciliations.

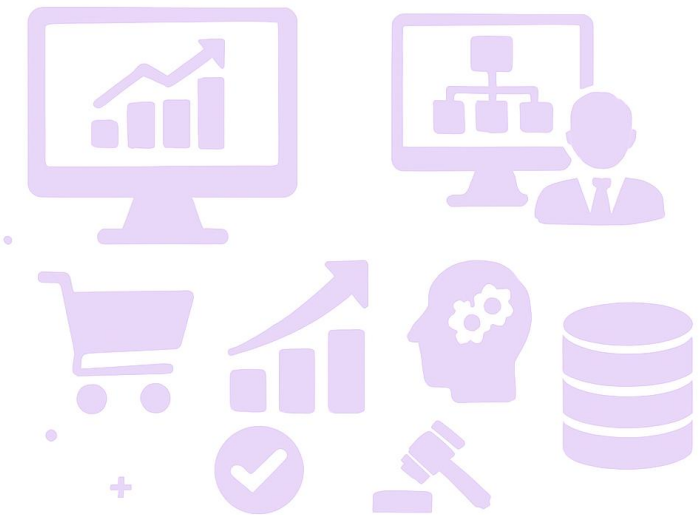
Limited visibility of real-time sales and inventory across stores.

Solution:

Implemented integrated ERP with centralised product, inventory data and pricing.

Built MIS dashboards for store managers (sales, waste, availability, labour costs).

CASE STUDY 1: RETAILER USING TPS + MIS + ERP



Case Study 1: Retailer using TPS + MIS + ERP (Sainsburys)

Ethical issues:

Use of loyalty card data for personalised offers raised privacy concerns.

Addressed via clear consent, anonymisation for analytics, and strict access controls.

Impact and takeaways:

Reduced stockouts and overstock, improved margin control, faster month-end close.

Demonstrates how TPS + MIS = ERP together drive efficiency and better decisions.

Case Study 2: Online retailer using CRM and DSS for personalisation (Lidl)

Context:

- An e-commerce company uses CRM and DSS to recommend products and optimise pricing.
- MIS is used and small prices that bring profit

Challenges:

- Intense competition, need to increase conversion and basket size.
- Large volumes of clickstream and purchase data, difficult to interpret manually.

Solution:

- Implemented CRM to consolidate customer profiles and interaction history
- Developed DSS with recommendation algorithms and A/B testing for pricing and promotions.

CASE STUDY 2: ONLINE RETAILER USING CRM AND DSS FOR PERSONALISATION



Case Study 2: Online retailer using CRM and DSS for personalisation (continues)

Ethical issues:

Risk of manipulation pricing or exploiting vulnerable customers.

Mitigated by setting ethical guidelines (no targeting based on sensitive attributes) and regular fairness reviews.

Impact and takeaways:

Higher conversation rates, improved customer satisfaction, more relevant marketing.

- Shows the power-and responsibility- of data-driven personalisation.

Case Study 3: Manufacturing firm using SCM + ERP

Context:

A manufacturer adopts SCM and ERP to manage suppliers, distribution and productions.

Challenges:

Supply distribution, excess inventory in some locations and shortages in others

Poor coordination between procurement, logistics and production.

Solution:

Implemented SCM modules integrated with ERP for demand forecasting, MRP, and supplier collaboration.

Used DSS-style planning tools to simulate different production and sourcing scenarios.

CASE STUDY 3: MANUFACTURING FIRM USING SCM + ERP



Case Study 3: Manufacturing firm using SCM + ERP (continues)

Ethical issues:

Increases visibility into supplier performance raised concerns about labour standards and sustainability.

Company introduced supplier codes of conduct and audits, using system data to monitor compliance.

Impact takeaways:

Reduced lead times and inventory costs improved on time delivery.

Demonstrates how integrated systems can support both efficiency and responsible sourcing.

Recommendations for the growing businesses

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Clarifying Business Goals

Clarify business goals first

Efficiency: Faster order processing, fewer errors, better stock control.

Decision-making: Clear KPIs, real-time dashboards, scenario planning.

Customer experience: Personalised service, quick resolution of issues and consistent communication.



Prioritise Core System

(Sousa, L., Roma, N. and Tomás, P. 2021)

Short term (0-12months):

Stabilise TPS: Ensure all sales, purchases, and inventory movements are captured accurately and quite consistently.

Introduce basic MIS: Standard reports and simple dashboards for sales, customer metrics and costs.

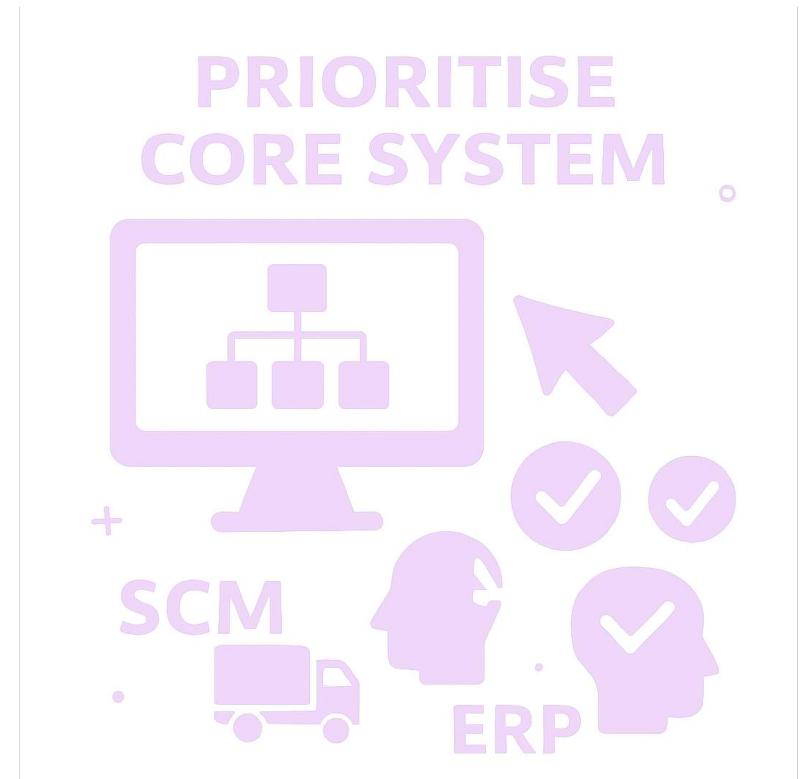
Medium Term (12-24 months):

Implement CRM: Centralise customer data, track interactions, and support targeted marketing and service.

Longer term (24+ months):

Evaluate ERP/SCM: As complexity grows, consider integrating finance, HR, operations, and supply chain into a unified platform.

Explore DSS/analytics: For forecasting, strategic planning and pricing.



Build in Ethics, privacy and Security (From day one)

Taking Action to Build Trust in Security. (2014). *IEEE Security & Privacy*, /10.1109/msp.2014.37.

Established data governance (roles, policies , standards)

Apply privacy-by-design and security-by-design to every new system.

Create an AI and data ethics policy covering fairness, human oversight and transparency.



Invest in people and change management

(Taylor, P. and Thackwray, B. 2001).

Train staff not just on “how to use the system” but why it matters.

Involve users in design and testing to improve adoption

Monitor impact on workload, wellbeing, and culture-adjust processes where needed.





Conclusion

To conclude, the main takeaway from this presentation is that modern information systems are no longer optional for a growing business ; they are the backbone of efficient operations, informed decision-making, are exceptional customer experiences. By understanding the strengths and limitations of systems such as TPS, CRM and ERP, organisations can make smarter choices about where to invest and how to scale. The case studies provide evidence that when these systems are implemented thoughtfully, they unlock measurable improvements in productivity, customer satisfaction, and strategic agility.

However, technology alone is not enough. Ethical considerations- from data privacy and cybersecurity to responsible AI and fair employee monitoring- must guide every stage of adoption. Businesses that prioritise transparency, governance, and trust not only reduce risk but also strengthen their reputation and long-term resilience.

Ultimately, the companies that thrive are those that combine the right systems with values. By embracing integrated, data-driven tools while committing to responsible and ethical use, this organisation can position itself for sustainable growth, stronger customer relationships, and a clear competitive advantage in an increasingly digital marketplace.

Thank You all for your time.



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