

Information Systems in Business

Comparing ERP, CRM and Business Intelligence

Student name:	Pellegrino Venturino
Student ID number:	2336525
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Lecturers:	Dr. Amer Kareem & Dr Oluwaseun Adegbite
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What This Presentation Covers

The task and how I have approached it

- **The scenario.** A growing company wants to modernise its information systems. It is not sure which type would suit it best, and has asked for advice.
- **What I will do.** Explain what information systems are and why they matter, compare three of them, look at the ethical risks, and use real company examples to support a recommendation.
- **Why only three systems.** ERP, CRM and Business Intelligence cover the three things the company asked about: efficiency, customer experience and decision-making. Looking at three properly is more useful than listing ten briefly.

Section	Time
1. What information systems are and what they do	2 minutes
2. Comparing ERP, CRM and Business Intelligence	4 minutes
3. Ethics: privacy, security, bias and monitoring	3 minutes
4. Three real company examples	3 minutes
5. Recommendation and conclusion	3 minutes

What Is an Information System?

Two ways of defining it

- **The technical view.** A set of connected parts that collect, store, process and share data, so that people in the organisation can control, coordinate and decide (Laudon and Laudon, 2022).
- **The business view.** An information system is a solution to a business problem. It only works if the people, the processes and the culture around it work too (Laudon and Laudon, 2022).
- **Why the difference matters.** Research on why BI projects succeed or fail keeps finding the same thing: management support, skills and data culture matter more than the software itself (Ahmad *et al.*, 2025).
- **So the right question is not** "which software is best?" but "which system fits how we already work, and how much change can we handle?"

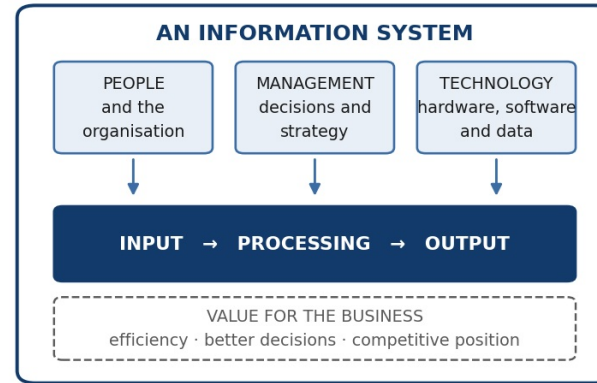


Figure 1. The three parts of an information system. Drawn by me, based on the model in Laudon and Laudon (2022).

Why Information Systems Matter to a Business

Efficiency, decisions and competitive advantage

- **Efficiency.** When systems are joined up, staff stop entering the same data twice and stop checking one department's figures against another's. Processes get faster and cost less (Laudon and Laudon, 2022).
- **Better decisions.** A review of the research found that companies with stronger business intelligence are more agile, because they can see problems earlier and react faster (Alsibhawi and Alsaïd, 2025).
- **Competitive advantage.** Information technology changes both how a company works and what it sells, so it can compete on cost, on being different, or on speed (Porter and Millar, 1985). This is an old source, but it is still the standard starting point.
- **But spending money is not enough.** Many companies invest heavily in BI and get little back. The problem is usually the organisation, not the technology (Ahmad *et al.*, 2025; Al-Okaily *et al.*, 2025).

My argument: an information system does not create an advantage by itself. It creates the conditions for one. What matters is how the company organises its data, its processes and its people around it.

The Main Types of Information System

Different systems serve different levels of the organisation

- **TPS** records everyday transactions such as sales, stock movements and payroll. Everything else depends on this data.
- **MIS** turns that data into regular reports for middle managers.
- **DSS and BI** help with problems that have no obvious answer, using models, queries and dashboards.
- **ESS** pulls together internal and external information for senior decisions ([Laudon and Laudon, 2022](#)).
- **ERP, CRM and SCM** are different: they run horizontally across departments instead of sitting at one level.

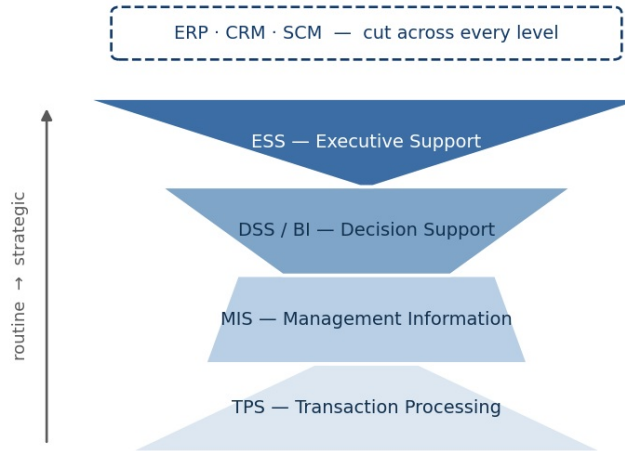


Figure 2. Types of information system by organisational level. Drawn by me, based on the classification in Laudon and Laudon (2022).

System 1 — Enterprise Resource Planning (ERP)

What it does, what it gives you, where it falls down

What it does

- Puts finance, purchasing, stock, production and HR onto one database with one set of processes ([Laudon and Laudon, 2022](#)).
- Forces the same way of working across every site and country.

Benefits

- No more separate departmental spreadsheets that disagree with each other, so management reports become reliable ([Laudon and Laudon, 2022](#)).
- Gives BI the clean data it needs to work ([Al-Okaily et al., 2025](#)).

Limitations

- The most expensive and riskiest of the three. Lidl spent around €500 million over seven years and then cancelled the project ([Dolfing, 2026](#)).
- If a company customises the software heavily to protect its existing processes, the project stops being a configuration job and becomes a rebuild ([Panorama Consulting, 2020](#)).
- Benefits take years to appear, which is hard to justify if the company needs quick results.

Best for

- Companies whose main problem is disconnected internal processes and unreliable data.

My view: ERP is important but rarely urgent for a growing company. The counter-argument is that waiting makes the mess worse, and I deal with that in the recommendation.

System 2 — Customer Relationship Management (CRM)

What it does, what it gives you, where it falls down

What it does

- Brings customer information from sales, marketing and service into one profile. Newer systems add machine learning on top ([AI Expert Network, 2024](#)).
- Automates campaigns, service requests and loyalty schemes.

Benefits

- Answers the customer-experience problem directly, and shows results faster than ERP.
- Starbucks' Deep Brew system is a good example: it personalises offers and also helps plan staffing and stock ([AI Expert Network, 2024](#)).

Limitations

- Only as good as the data put into it, and sales staff often do not use it properly.
- The more personal the service, the more personal data the company holds, and the bigger the privacy risk ([European Parliament, 2025](#)).
- Personalisation that feels intrusive can damage the brand even when it is legal.

Best for

- Companies competing on keeping customers rather than winning new ones.

Note on my sources: most of the Starbucks figures come from the company itself and from consultancies, not from academic research, so I treat them as indicative rather than proven.

System 3 — Business Intelligence (BI)

What it does, what it gives you, where it falls down

What it does

- Takes data out of the transaction systems, combines it, and shows it through dashboards, reports and forecasts (Al-Okaily *et al.*, 2025).

Benefits

- Research links stronger BI to a more agile organisation that innovates and performs better (Alsibhawi and Alsaïd, 2025).
- Cheapest of the three to start with if it is bought as a cloud service, so the company can prove the value before spending more.

Limitations

- If the underlying data is poor, BI produces confident-looking answers that are wrong.
- Researchers still disagree on how to measure BI success, so published return-on-investment figures should be read carefully (Al-Okaily *et al.*, 2025).
- Whether people actually use it depends on training and habits more than on the tool (Nithya and Kiruthika, 2025).

Best for

- Companies that already have data but cannot see what it is telling them.

Important point: BI is not an alternative to ERP or CRM. It sits on top of them. That is why the order of implementation matters.

Comparing the Three Systems

Judged against what the company actually asked for

Criterion	ERP	CRM	Business Intelligence
Main purpose	Efficiency	Customer experience	Decision-making
How much it covers	The whole company	Customer-facing teams	Reads across everything
Time to see results	Slow: 2 to 5 years	Medium: 6 to 18 months	Fast: 3 to 9 months
Risk	High — customisation and process clashes (Dolfing, 2026)	Medium — staff adoption and data quality	Lower — but depends on the source data (Ahmad <i>et al.</i> , 2025)
Main ethical risk	Employee data and monitoring (EU AI Act, Annex III, 2024)	Customer privacy and profiling (European Parliament, 2025)	Bias in the results (MIT Technology Review, 2018)
What it needs first	Nothing — it is the base	Works better with ERP data	Needs ERP or CRM data

Conclusion from this table: none of the three is best in every situation. Which one wins depends on the company's biggest problem. And the last row shows that the *order* matters as much as the choice.

Risk Against Reward

The trade-off behind my recommendation

- **The pattern is consistent.** The systems that change the most of the business are also the ones that take longest to pay back and are most likely to go wrong (Dolfing, 2026).
- **BI sits in the low-risk, fast-return corner**, which makes it a sensible place to start for a company still learning to use its data (Alsibhawi and Alsaïd, 2025).
- **ERP sits in the opposite corner.** Its value is real, but it arrives slowly, and the known failure mode is customising the core (Panorama Consulting, 2020).
- **Limitation.** These positions are my own judgement from the reading, not measured data. They would move for a company that already has good data governance.

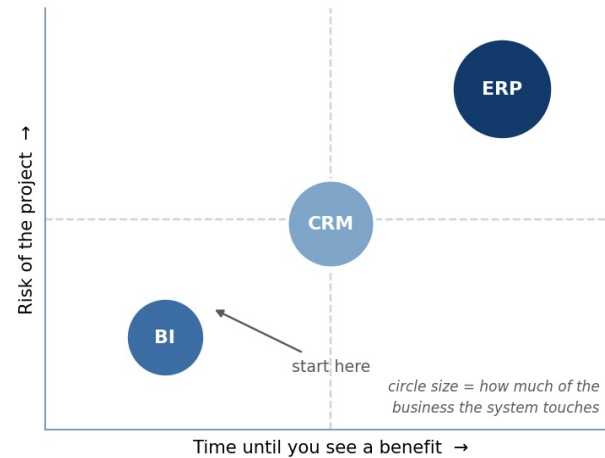


Figure 3. Where the three systems sit on risk and time to benefit. Drawn by me, based on Ahmad *et al.* (2025), Alsibhawi and Alsaïd (2025) and Dolfing (2026).

Ethics 1 — Privacy and Data Security

What happens when a company gets this wrong

- **Getting security wrong is now expensive.** In October 2025 the UK Information Commissioner's Office fined Capita £14 million after a ransomware attack exposed the data of about 6.6 million people ([Clifford Chance, 2025](#)).
- **Why it was fined matters.** The penalty was not for being attacked. It was for failing to stop attackers moving through the network and failing to act on its own security alerts ([Ropes & Gray, 2026](#)).
- **The pattern in 2025** was fewer fines but much larger ones ([URM Consulting, 2026](#)).
- **My point:** following the law is the minimum. Collecting less data, using it only for the stated purpose, and telling people what you hold are worth doing anyway.

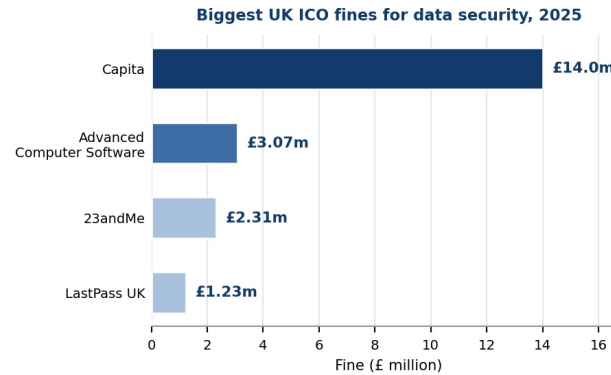


Figure 4. The largest UK data security fines issued in 2025. Drawn by me from the figures reported in URM Consulting (2026) and BDO (2026).

Ethics 2 — AI Decisions and Bias

A system can copy a company's past without anyone intending it

- **Bias is inherited, not invented.** Amazon scrapped a recruitment tool after it started preferring men. It had been trained on ten years of CVs from an industry where most applicants were men (MIT Technology Review, 2018).
- **This applies to any system** trained on a company's own history. It will repeat that history, including its unfairness, unless somebody tests for it.
- **Nobody wrote a sexist rule.** The failure was in how the data was managed: no one checked the results against protected characteristics before the tool was used.
- **It is not only about hiring.** The same risk applies to CRM lead scoring, credit checks and staff planning.

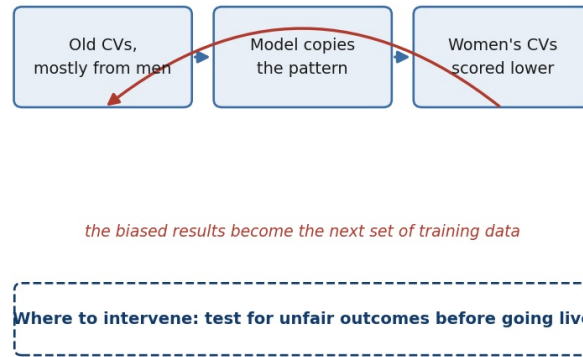


Figure 5. How bias feeds back into a machine-learning system, and where a company can break the loop. Drawn by me from the account in MIT Technology Review (2018).

Ethics 3 — Monitoring Staff and the EU AI Act

This has moved from good practice to legal duty

- **Monitoring staff is now regulated.** Under Annex III of Regulation (EU) 2024/1689, systems that hand out tasks or judge how workers perform count as high risk ([EU AI Act, Annex III, 2024](#)).
- **The duties are specific.** Workers must be told before such a system is used, a competent person must oversee it, and the logs must be kept ([EU AI Act, Article 26, 2024](#)).
- **It still matters in the UK.** The Act applies where the results are used inside the EU, and UK GDPR already requires similar transparency and impact assessments, so the practical answer is the same ([European Parliament, 2025](#)).

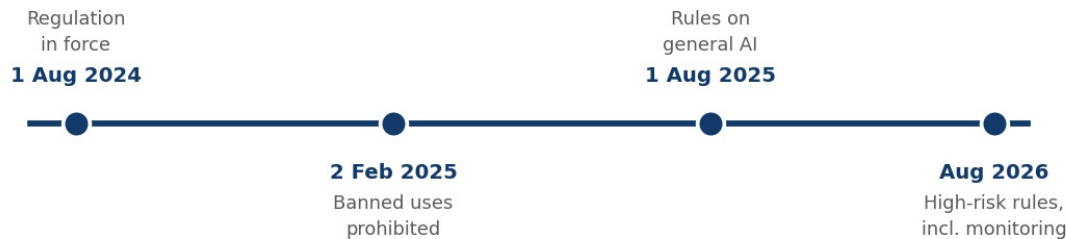


Figure 6. When the different parts of the EU AI Act take effect. Drawn by me from European Parliament (2025).

How to Reduce These Risks

Each control comes from something that actually went wrong

Risk	What to do about it	Where this comes from
Data breach	Split the network so attackers cannot move around; control admin accounts; test that security alerts are acted on	The exact failures the ICO identified at Capita (Ropes & Gray, 2026)
Collecting too much data	Do a data protection impact assessment before buying; collect less; delete on a schedule	Normal expectation for high-risk processing (European Parliament, 2025)
Biased results	Test for unfair outcomes before going live; use data that reflects the whole population; record human review of automated decisions	What went wrong at Amazon (MIT Technology Review, 2018)
Monitoring staff	Tell workers first; check the monitoring is proportionate; name who is responsible; keep the logs	Duties on deployers of high-risk systems (EU AI Act, Article 26, 2024)
Standards slipping later	A standing review group with business, IT and staff representation, meeting at least yearly	Organisational factors decide whether systems succeed (Ahmad et al., 2025)

Example 1 — Lidl and SAP

An ERP project that was abandoned

- **The problem.** Lidl's own stock system was old and could not cope, so the company decided to replace it with SAP (Dolfing, 2026).
- **Where it went wrong.** Lidl valued its stock at purchase price; the SAP software worked on retail price. Fixing this meant changing the software at its core (RetailDetail, 2018).
- **The outcome.** After about seven years and roughly €500 million, the project was cancelled in 2018 and Lidl went back to its old system (Consultancy.uk, 2018).
- **My reading.** This was not bad execution. The mismatch was there from the start, but partial launches in a few countries made it look like progress, so nobody stopped it (Dolfing, 2026).
- **What to learn.** If the way you work is your advantage, either pick a system that fits it or change the process on purpose. Do not quietly customise around it.

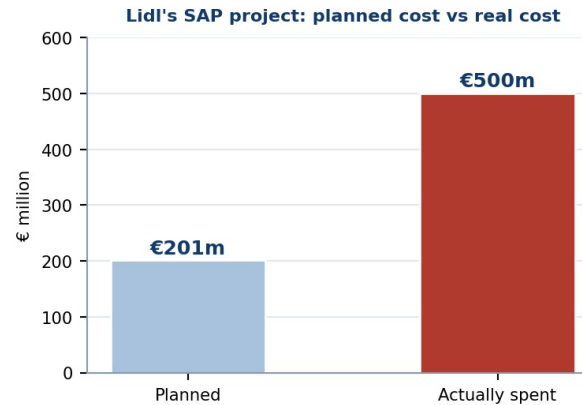


Figure 7. What Lidl planned to spend and what it actually spent. Drawn by me from figures reported in Dolfing (2026) and Consultancy.uk (2018).

Example 2 — Starbucks and Deep Brew

The opposite result, and why

- **The problem.** Starbucks had an enormous amount of data from its app and loyalty scheme, but needed a way to turn it into something useful for each individual customer.
- **What they built.** Deep Brew personalises recommendations and marketing, and is also used to plan staffing and stock in stores ([AI Expert Network, 2024](#)).
- **The intention behind it.** Senior managers framed the system around strengthening the relationship between customers and staff, rather than around replacing people ([Fortune, 2025](#)).
- **How well it worked.** Reported gains are in loyalty and efficiency, but the system is still not fully joined up across the business and needs continued investment ([AI Expert Network, 2024](#)).
- **The ethical side.** Tracking customers this closely raises consent questions, and using AI to schedule shifts falls under the worker-monitoring rules discussed earlier ([EU AI Act, Annex III, 2024](#)).
- **What to learn.** The difference from Lidl was not better technology. It was knowing exactly what business problem the system was for.

Example 3 and Comparison of the Three Cases

Amazon's recruitment tool, set against the other two

	Lidl / SAP	Starbucks / Deep Brew	Amazon / recruitment tool
Type of system	ERP	CRM with AI	Automated CV screening
Fit with the business	Basic mismatch in how stock was valued	Built on a customer relationship that already existed	Worked technically, but learned from an unrepresentative past
How it was governed	Kept going for years past the point of doubt	Purpose agreed before building it	Stopped once the bias could not be fixed
Ethical issue	Looking after shareholders' money	Customer tracking and shift planning	Discrimination in hiring
Result	About €500m lost (Dolfing, 2026)	Reported loyalty and efficiency gains (AI Expert Network, 2024)	Dropped before wider use (MIT Technology Review, 2018)

What all three have in common: the deciding factor was never the quality of the technology. It was fit, purpose and governance. That matches what the research says (Ahmad *et al.*, 2025).

My Recommendation

In what order, and why in that order

Step	What to do	Why	Based on
1 • months 0-3	Audit the data and processes, do a DPIA, put one person in charge of data	Readiness decides success, not the software	Ahmad <i>et al.</i> (2025)
2 • months 3-9	Add cloud BI dashboards on top of existing data	Quickest visible result; builds skills before bigger spending	Alsibhawi and Alsaid (2025)
3 • months 9-24	Bring in CRM with clear goals for what it should improve	Answers the customer question at moderate risk	AI Expert Network (2024)
4 • month 24 +	ERP only if disconnected processes are genuinely holding growth back, and configured to standard	Highest cost and risk; customising the core is what kills these projects	Dolfing (2026)

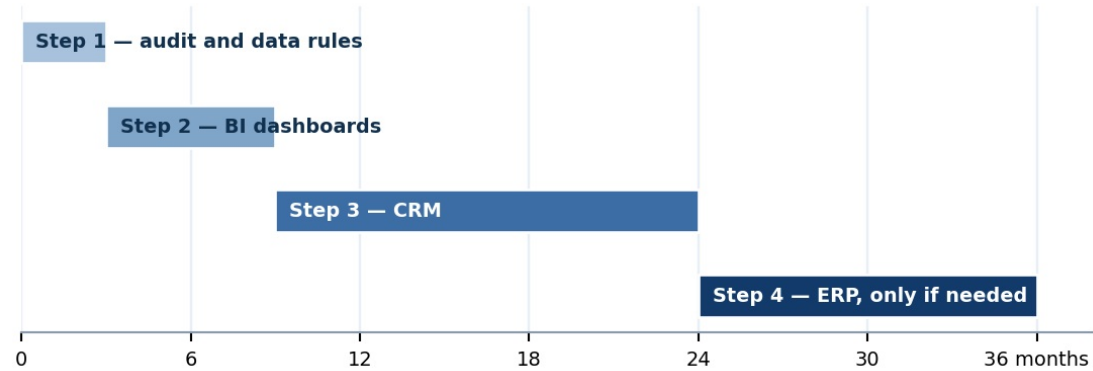


Figure 8. The four steps over three years. Drawn by me.

Conclusion

What I found, and what this analysis cannot tell you

- **Information systems enable performance; they do not guarantee it.** The evidence points at organisational fit far more often than at technical quality ([Ahmad et al., 2025](#); [Dolfing, 2026](#)).
- **The three systems work together rather than compete.** Because BI depends on the others, the order of implementation is itself a strategic decision.
- **Ethics cannot be separated from the choice of system,** given how UK regulators are now fining companies and how the EU AI Act is being phased in ([Clifford Chance, 2025](#); [European Parliament, 2025](#)).
- **Limitations of this work.** I looked at three system types, not all of them. Some of my case sources are press and consultancy analysis rather than academic research. Figure 3 is my own judgement, not measurement. And the recommendation is general, because I have not seen the company's real data.
- **In one sentence:** start by being able to see, then improve the customer relationship, and only join up the whole company when the evidence says it is worth the risk.

Thank you. I am happy to take questions.

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