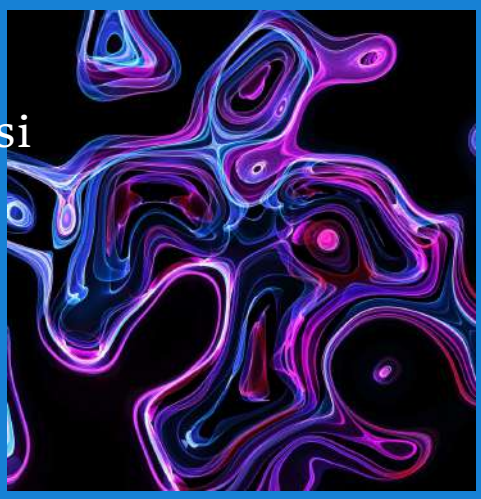
II 1200
Pengantar
Sistem dan Teknologi Informasi

Minggu 7
Komponen Sistem Informasi-3



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Semester 2 2024-2025

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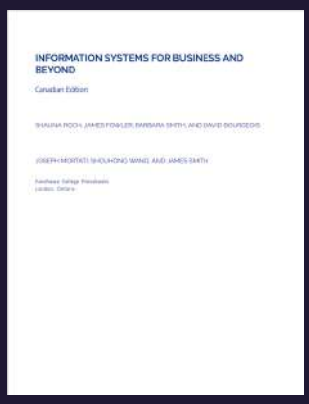
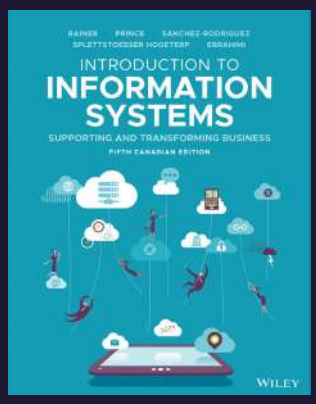
REFERENSI





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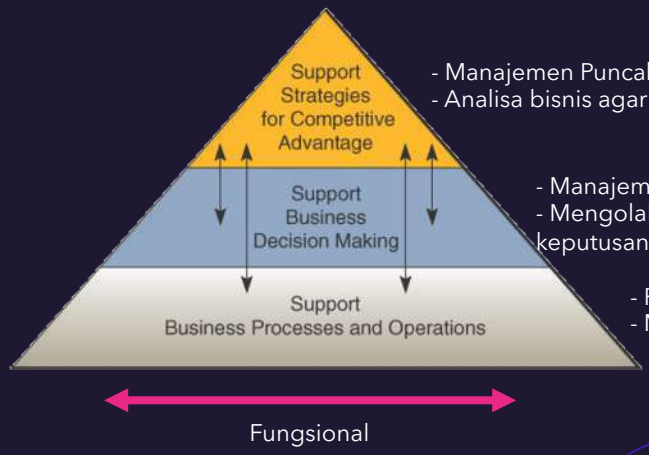
PERAN DASAR SISTEM INFORMASI



- Manajemen Puncak
- Analisa bisnis agar bisa berkompetisi

- Manajemen menengah
- Mengolah pelaporan, analisis untuk pembuatan keputusan

- Para Pelaksana
- Mengolah transaksi operasi

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KOMPONEN SISTEM INFORMASI

- Teknologi (Technoware)
  - Teknologi Informasi: HW, SW, Jaringan Data (Infoware)
  - Teknologi Pendukung
- Organisasi (Organoware)
  - Struktur
  - Kebijakan
  - Prosedur Bisnis (Operasi Standard)
- Sumber Daya Manusia (Brainware)
  - Pengguna (customer, pelayan, kasir,...)
  - Pengelola (sysadmin,help desk,...)
  - Pengembang
- Sumber Daya Data

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Proses Bisnis

- Kumpulan aktivitas terstruktur yang menghasilkan produk atau layanan.
- Membantu pencapaian tujuan bisnis secara efisien
- Contoh:
  - Memesan makanan,
  - Berbelanja online,
  - Melakukan registrasi kuliah.

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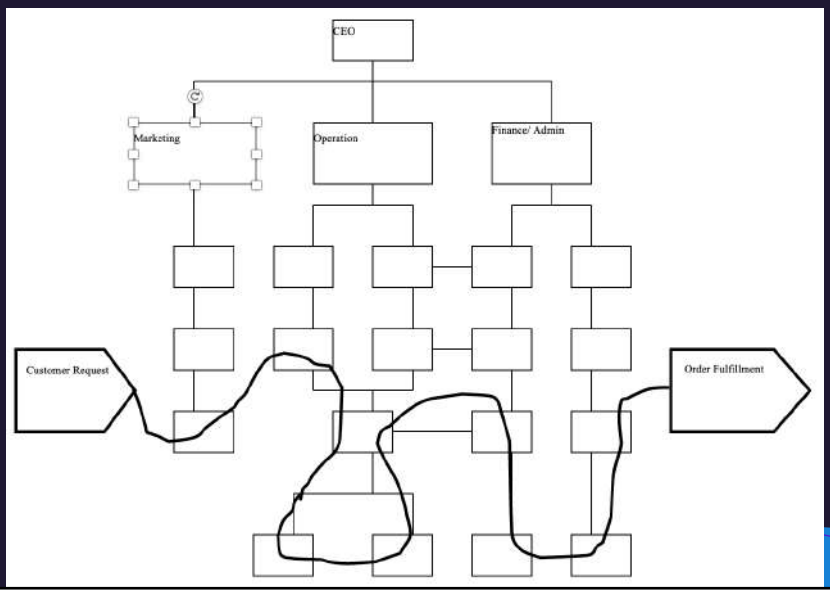
Alur Proses Bisnis



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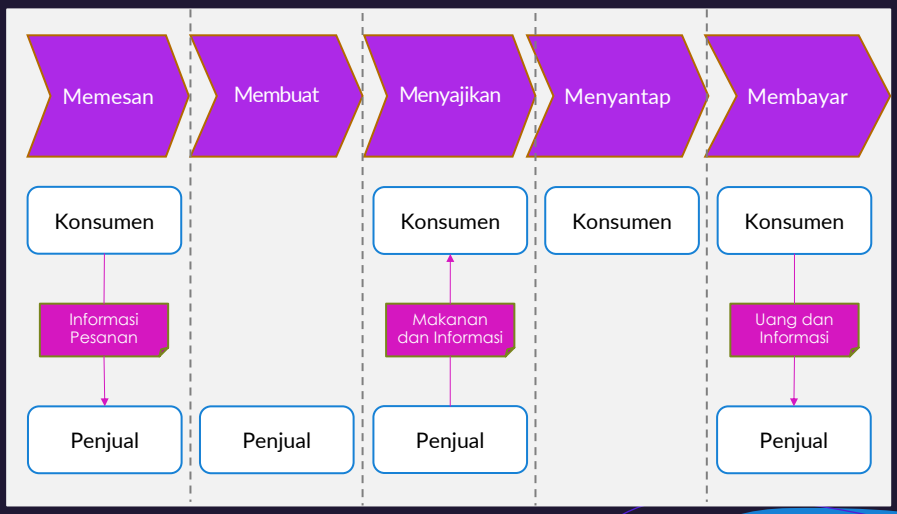
Ingat Kasus Tukang Baso?



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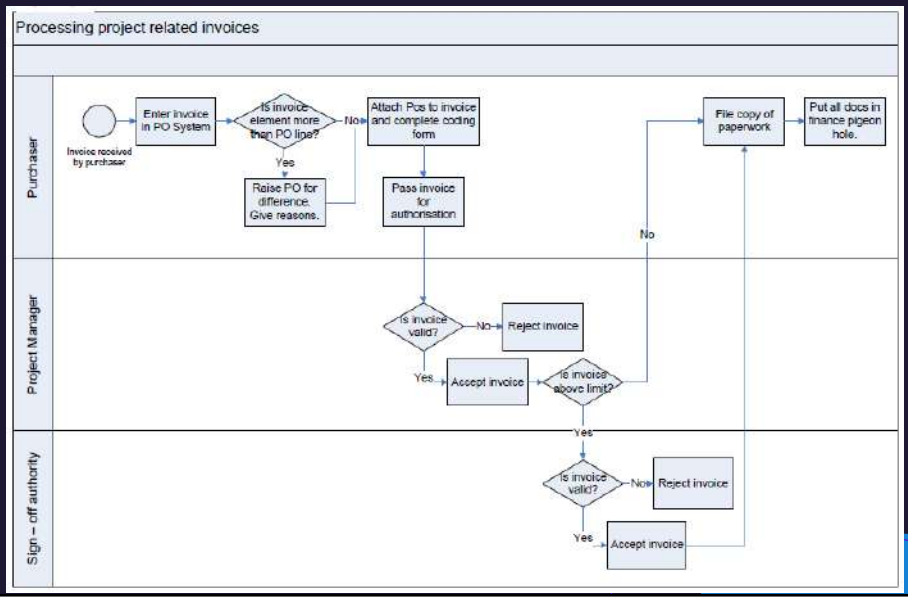
Contoh: Proses Penagihan Projek



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Pentingnya Proses Bisnis dalam SI

- Proses bisnis merupakan inti dari setiap organisasi.
- Sistem Informasi mendukung, memonitor, mengotomasi, dan mengoptimasi proses bisnis.
- Tanpa proses yang terdefinisi, implementasi SI tidak akan terarah.

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Proses Bisnis dalam Sistem Informasi

[Customer Order] ---> [Kitchen Prepares] ---> [Serve Food] ---> [Customer Pays]
| | | |
POS System Kitchen Display Order Alert Payment System

Step	IS Component Involved	Example
Customer Order	Point of Sale (POS) System	Waiter enters order via tablet or terminal
Kitchen Prepares Food	Kitchen Display System (KDS)	Order appears automatically on kitchen screen
Waiter Serves	Order Tracker / Notification System	Waiter gets alert that food is ready
Customer Pays	Payment Processing System	Payment via card, e-wallet, QR code

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Mengapa Proses Perlu Dimodelkan?

a. Memperjelas bagaimana proses dilakukan
b. Sebagai penghubung komunikasi antara pihak bisnis dan TI
c. Identifikasi ketidakefisienan dan hambatan proses
d. Memungkinkan otomasi dan perbaikan

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Mengapa Proses Perlu Dimodelkan?
a. Memperjelas bagaimana proses dilakukan

Contoh: Penerimaan Karyawan Baru

- Tanpa proses terdokumentasi, SDM bisa lupa mengingatkan pihak TI untuk menyiapkan komputer baru.
- Dengan adanya model Penerimaan Karyawan Baru (dengan BPMN), setiap tugas – pembuatan akun, penyiapan akses, penjadwalan orientasi – jelas tergambarkan untuk semua pihak yang terlibat.

✅ Helps avoid missed steps and ensures consistency.

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Mengapa Proses Perlu Dimodelkan?

b. Sebagai penghubung komunikasi antara pihak bisnis dan TI

Contoh: Pengembangan Sistem Pesan pada Restoran

- Manajer berkata, "Kecepatan pesanan perlu diperbaiki", tapi pihak TI tidak tahu keterlambatan dimana
- Dengan adanya diagram **BPMN** dapat dianalisis bahwahambatan terjadi di pencetakan tiket dapur. Perbaikan solusi dapat diusulkan (mis. Sistem Display Dapur).

✅ *Visual models ensure both sides understand the process the same way.*

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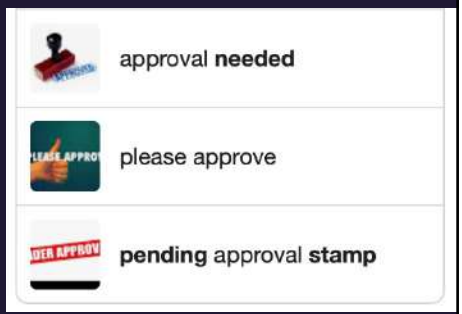
Mengapa Proses Perlu Dimodelkan?

c. Identifikasi ketidakefisienan dan hambatan proses

Contoh: Registrasi Pengambilan Mata Kuliah di Universitas

- Proses registrasi melibatkan 5 langkah – tapi pemodelan memperlihatkan hambatan pada proses "menunggu persetujuan wali"
- Dengan visualisasi proses, masalah tersebut dapat terdeteksi sehingga penambahan staf atau pembuatan sistem persetujuan otomatis bisa dikembangkan.



✅ *Modeling helps spot and fix slow, redundant, or manual tasks.*

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Mengapa Proses Perlu Dimodelkan?

d. Memungkinkan otomasi dan perbaikan

Contoh: Layanan Pengiriman Makanan Online

- Suatu restoran memodelkan proses makan di resto atau pengiriman pesanan.
- Jika proses digambarkan dengan jelas, maka langkah yang diotomasikan- penggunaan chatbot untuk penerimaan pesanan dan penggunaan e-wallet.

✅ *Once modeled, processes are ready for automation, tracking, and optimization.*

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BPMN 2.0 Basics

- BPMN = Business Process Model and Notation
- Standard untuk pemodelan proses bisnis
  - Dapat dimengerti pihak bisnis dan teknis
  - Elemen kunci
    - Events
    - Activities
    - Gateways
    - Flows
    - Swimlanes

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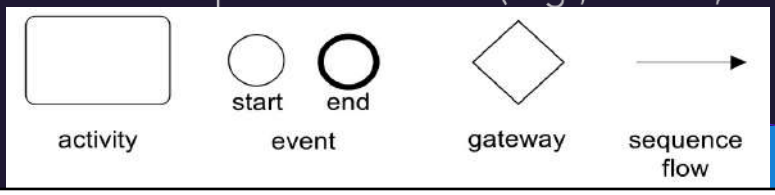
Simbol BPMN

- Start Event: Circle
- Activity/Task: Rounded rectangle
- Gateway: Diamond
- End Event: Bold circle
- Sequence Flow: Arrow
- Pool/Swimlane: Represents actors (e.g., Waiter, Chef)



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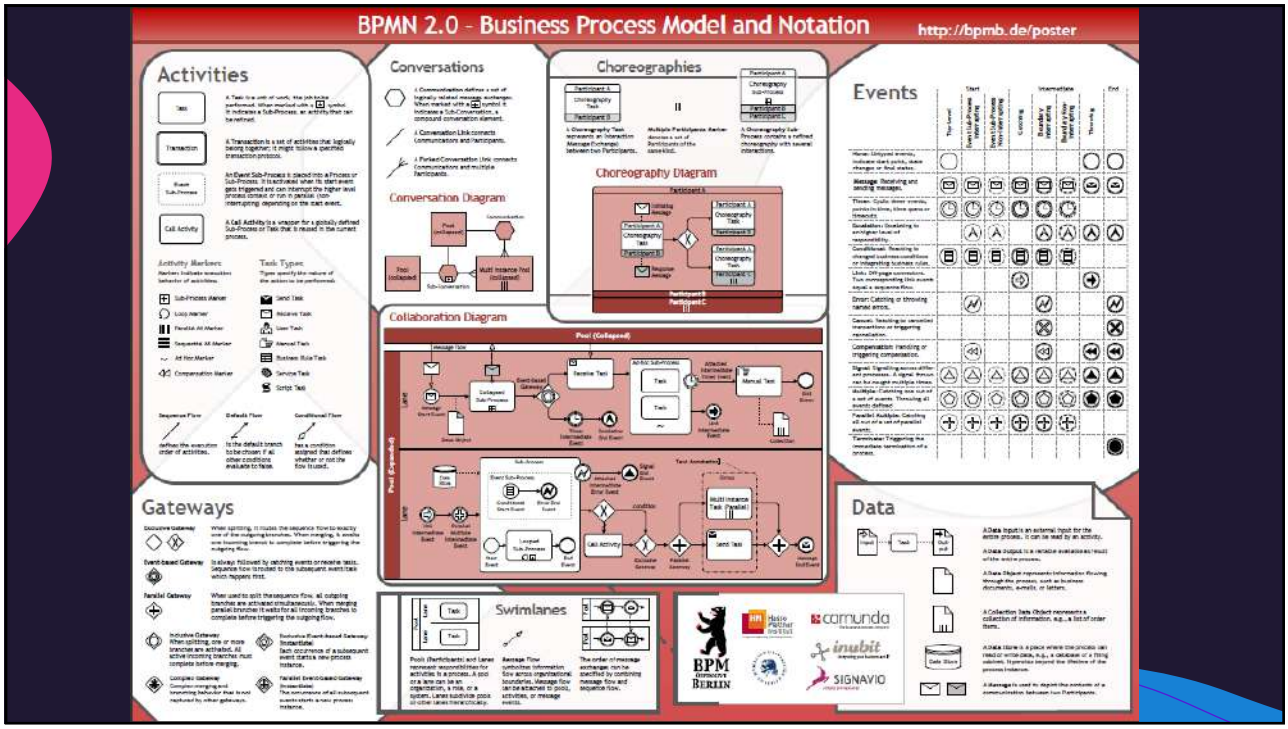

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Business Case: Order-to-cash

- Proses order-to-cash diakyifkan ketika ada penerimaan PO (Purchase Order) dari konsumen
- Setelah diterima, PO harus dicek terhadap stok barang untuk menentukan jika barang yang dipesan tersedia.

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Business Case: Order-to-cash

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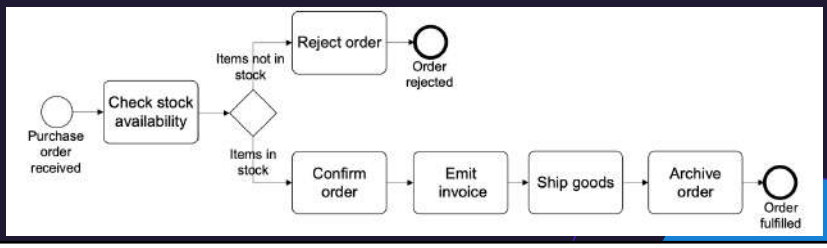
- Setelah diterima, PO harus dicek terhadap stok barang untuk menentukan jika barang yang dipesan tersedia.
- Berdsasar kesediaan barang, pesanan ditolak atau dikonfirmasi untuk disiapkan lalu dikirim.
- Proses berhenti ketika pesanan ditolak atau pesanan didokumentasikan.



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Business Case: Mineral Water Ordering

- Untuk memesan air, pelanggan dapat menghubungi *hotline* pemesanan atau mengirim email. Saat ini, 90% pesanan berasal dari panggilan telepon, sementara 10% dilakukan melalui email. Asisten layanan pelanggan yang menerima pesanan akan memeriksa apakah pelanggan tersebut adalah pelanggan lama atau pelanggan baru. Jika pelanggan belum pernah memesan sebelumnya, asisten layanan pelanggan akan membuat akun pelanggan untuknya sebelum melanjutkan pengiriman air.
- Pengiriman air, dilakukan seminggu sekali setiap hari Rabu. Jadi setiap Rabu pagi, asisten layanan pelanggan akan meneruskan pesanan ke Departemen Logistik untuk pengiriman. Setelah manajer di Departemen Logistik menerima pesanan, ia akan mengatur pengiriman dengan menugaskan pekerja untuk pesanan yang berbeda, mencetak dan memposting jadwal. Para pekerja menerima panggilan dan mengirimkan air kepada pelanggan sesuai dengan pesanan.

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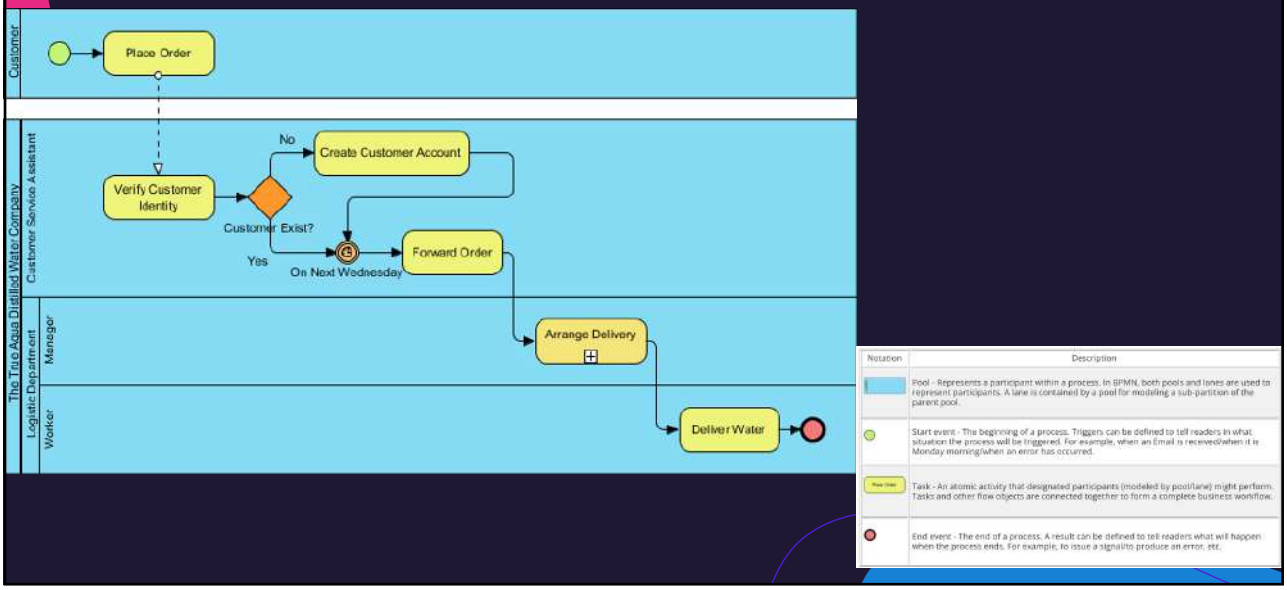
Business Case: Mineral Water Ordering



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Hands-on BPMN Exercise

Task: Model a simple business process in BPMN

1. Define a *real-world process* (e.g., online order fulfillment, leave request)
2. Identify key *tasks, events, and decision points*
3. Create a BPMN diagram using a BPMN tool or on paper
4. Present and discuss common errors and improvements

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Exercise: **Restaurant Order Process**

- Scenario: A customer dines in at a restaurant
- Steps:
  - Customer places order
  - Waiter inputs order
  - Kitchen prepares food
  - Waiter serves food
  - Customer eats
  - Customer pays
- Participants: Customer, Waiter, Chef, Cashier

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Build BPMN Diagram Together

Step-by-step construction:

- Show swimlanes for Customer, Waiter, Kitchen, Cashier
- Add tasks in sequence
- Show gateway for conditional flow (e.g., "Customer requests special dish?" → Yes → Manual approval task)

Final result:

- A complete BPMN diagram for the dine-in process

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Analisa Proses Bisnis

1. Identifikasi proses (objective, start, end).
2. Petakan proses Yang Berjalan ('As-Is') dengan BPMN.
3. Ases performansi yang terjadi dan titik keluhan.
4. Identifikasi kemungkinan perbaikan
5. Disain proses Yang Diinginkan ('To-Be').
6. Validasi dan simulasikan proses yang baru.

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Analisa Proses Bisnis

1. Identifikasi proses (objective, start, end).
   - What is the process called?
   - Where does it start and end?
   - What is the objective?
2. Petakan proses Yang Berjalan ('As-Is') dengan BPMN.
   - Use tools like BPMN to map out how the process currently works.
   - Identify key steps, actors, decisions, tools used.
3. Ases performansi yang terjadi dan titik keluhan.
   - Where are the delays?
   - Are there manual steps that can be automated?
   - Are roles clearly defined?
   - Are customers satisfied?

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Analisa Proses Bisnis

4. Identifikasi kemungkinan perbaikan
   - Eliminate redundancies
   - Automate repetitive tasks
   - Clarify unclear responsibilities
   - Add performance tracking or feedback loops
5. Disain proses Yang Diinginkan ('To-Be')
   - Map a better version using BPMN or other modeling tools
   - Include automation or systems where needed
   - Ensure the process supports business goals
6. Validasi dan simulasikan proses yang baru.
   - Review the new process with stakeholders
   - Use tools or walkthroughs to simulate the process flow

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Example:
Customer Support Ticket Handling at a Tech Company

As-Is Process (Current)

1. Customer submits a support request via email.
2. Receptionist manually forwards the email to the support team.
3. Support staff checks inbox daily and assigns tickets to themselves.
4. Staff responds to customer.
5. If issue unresolved, customer sends another email.
6. Ticket is closed manually by support staff once issue seems resolved.

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Example:
Customer Support Ticket Handling at a Tech Company

Prob

Issue	Impact
No central ticket system	Emails are easily lost or forgotten.
Manual assignment	Delays and unbalanced workloads.
No SLA tracking	No way to know if response time is acceptable.
No customer feedback	No insight into service quality.
Follow-up is manual	Difficult to track open vs. resolved tickets.

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Example:
Customer Support Ticket Handling at a Tech Company

To-B

1. Customer submits request via **web portal** or **chatbot** (creates ticket automatically).
2. Ticket is **logged and time-stamped** in a central **Ticket Management System (TMS)**.
3. **TMS auto-assigns** ticket based on category and availability.
4. Support staff is **notified** and works on issue.
5. Staff updates ticket with notes/status.
6. System **notifies customer** of progress.
7. Once resolved, **customer confirms** via link.
8. System **automatically closes** ticket or escalates if no response in 3 days.
9. Optional: Customer provides **feedback rating**.

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Example:
Customer Support Ticket Handling at a Tech Company

To-Be BPMN Highlight

- **Start Event:** Customer submits ticket via portal/chatbot
- **Tasks:** Auto-create ticket → Auto-assign → Notify → Resolve → Notify customer
- **Gateways:** Is the ticket confirmed as resolved?
- **End Event:** Ticket closed or escalated
- **Swimlanes:** Customer, Ticket System (automated), Support Staff

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Kesimpulan untuk Proses Bisnis

- Proses Bisnis merupakan INTI dari organisasi.
- Proses tersebut memungkinkan pencapaian objektif bisnis secara efisien.
- Dengan memodelkannya, proses tersebut dapat dianalisa dan diperbaiki.

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Berikutnya

Komponen dari Sistem Informasi**:**

Brainware/ Peopleware,

yang sering diremehkan – meski merupakan komponen **paling penting**.

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BRAINWARE

Category	Who They Are
End Users	Employees, customers, or anyone using the system
IT Professionals	Developers, system analysts, IT support, DBAs
Managers	Decision-makers and process owners
Trainers & Consultants	Those responsible for onboarding, guiding, and supporting system adoption
Change Agents	People who champion and lead IS-related change initiatives

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Mengapa Penting?

- Ketika teknologi (hardware dan software) dapat dibeli atau dikembangkan, **Brainware/ Peopleware menentukan apakah SI akan berhasil.**
  - Tanpa manusia yang tepat: Sistem terbaikpun akan gagal
- **Peran Brainware:**
  1. **Design & Development**: Systems are built by people, and their expertise, creativity, and collaboration affect quality.
  2. **Adoption & Usage**: Systems only work if people use them correctly and consistently.
  3. **Training & Support**: Without proper training, users underutilize or misuse systems.
  4. **Change Management**: People's resistance or openness to change determines success of new systems.

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Komponen Organisasi dalam Brainware

1. Struktur Organisasi

1. Menentukan "who is responsible for what"
2. APa ada tim TI internal?
3. Contoh: Unit e-Gov Unit pada suatu kementerian

2. Tata Pamong (Governance)

1. Aturan, kebijakan, dan struktur untuk mengelola SI dan SDMnya
2. Contoh: IT Steering Committee, SOPs for system usage

3.Peran dan Tanggung Jawab

1. Users: input data, use the system
2. Admins: configure and manage systems
3. Analysts: identify needs, design solutions
4. Managers: use information for decision-making

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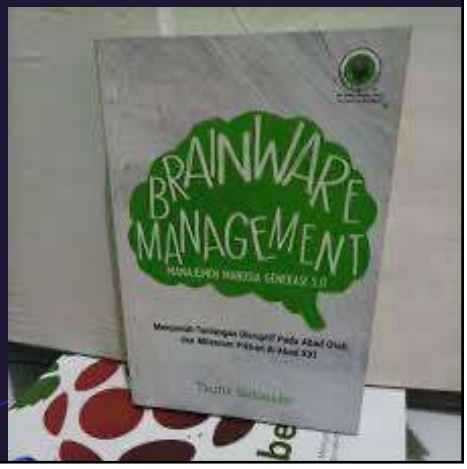
Managing Brainware

1. Recruitment & Role Assignment
2. Training & Development
3. Communication & User Engagement
4. Change Management
5. Performance & Motivation



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Managing Brainware(1)

- To ensure system success, the people involved must be managed effectively across these areas:

1. Recruitment & Role Assignment

- Hiring people with both IT and business domain expertise
- Example: An ERP business analyst who understands finance

2. Training & Development

- Onboarding training for new systems
- Ongoing learning and skill development
- Professional certifications (e.g., ITIL, Microsoft, SAP)

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Managing Brainware (2)

3. Communication & Engagement

- Involve users from the early stages of system planning
- Conduct workshops, surveys, and feedback sessions
- Example: Include lecturers in designing an academic information system

4. Change Management

- Many IS projects fail not because of tech issues, but due to resistance to change
- Strategies include:
  - Educating users about system benefits
  - Assigning change agents
  - Piloting the system before full rollout

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Managing Brainware (3)

5. Performance & Motivation

- Evaluate employee performance based on system use and impact
- Provide incentives or recognition for system adoption
- Create a culture that values data and digital processes

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Business Case: Digital Attendance System at a University

- **Problem:**
  The system works technically, but lecturers and students often ignore it or forget to use it.

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Business Case: Digital Attendance System at a University

Peopleware Analysis:

- No proper training was provided
- Lecturers don't feel the system adds value
- Students aren't aware of the consequences

Solutions (Managing Peopleware):

- Provide ongoing training with digital SOPs
- Give lecturers real-time feedback or reports
- Use automatic reminders for students
- Reward consistent usage

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Kesimpulan untuk Brainware/Peopleware

- SDM dalam SI bukan hanya "pengguna/users"
- SDM merupakan faktor kesuksesan utama dalam projek SI
- Pengelolaan organisasi dan manusia terkait memastikan bahwa teknologi dipergunakan untuk tujuannya
- SIstem yang paling canggihpun akan gagal jika SDM tidak dilibatkan, dilatih, dan didukung.
  Even the most advanced system

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