Exercise 3.1: Qualitative Decision Making

Course: Qualitative and Quantitative Decision Making | **Program:** Graduate Certificate in Digital Engineering

Question 1: Identify and briefly describe each of the four steps in the decision-making process.

The decision-making framework outlined in Chapter 6 consists of four distinct steps that guide individuals and organizations from initial problem recognition to final execution:

1. Identify the Need for a Decision: Recognizing that a specific problem or emerging opportunity exists that requires action, rather than relying strictly on routine habits or administrative 'scripts.'

2. Develop Alternative Responses: Generating and exploring potential courses of action or creative solutions to address the identified situation.

3. Choose the Appropriate Alternative: Evaluating the developed options against available information, organizational goals, and consensus to select the best pathway.

4. Implement the Choice: Putting the selected decision into real-world practice and actively monitoring its outcomes to ensure the original issue was effectively resolved.

Question 2: Which of the four steps do you think is the most challenging for decision makers, and why?

Out of the four steps, **Step 4 (Implementing the Choice)** is the most challenging for decision makers because it is where a decision transitions from comfortable theoretical planning to real-world execution. While identifying problems or choosing options happens in a controlled room where everyone easily agrees on paper, implementation requires managing human dynamics, securing ongoing commitment, and overcoming administrative inertia.

In practice, it is common to see strong enthusiasm during a meeting when a plan is approved—where everyone says 'yeah, go us!'—only for team members to be nowhere to be found once the actual workload begins. Overcoming this execution gap requires genuine buy-in, clear accountability, and ongoing stakeholder participation rather than assuming that an initial agreement will automatically translate into real-world action.

Question 3: Advice on corporate socially responsible decision-making (Dennis Gioia / Ford Pinto case).

To bring socially responsible decision-making into an organization that lacks a reputation for it, my strongest advice is that ethics and responsibility cannot be treated as an afterthought or something reserved only for major crises and publicity moments—it must be a core part of who we are at our foundation and practiced in our daily choices.

As seen in the Ford Pinto case, Dennis Gioia allowed standard corporate 'scripts' and cost-benefit metrics to dictate his routine work as Recall Coordinator, which quietly dulled his personal moral compass until red flags were overlooked. When social responsibility is integrated into small, daily workplace choices rather than

brought out only for high-stakes events, it creates a consistent habit of mind. Practicing ethics daily helps protect individuals from being silently absorbed into irresponsible organizational routines and promotes a meaningful shift toward Sustainable Organizational Behavior.

Question 4: School or major selection process (Graduate Certificate in Digital Engineering).

My decision to pursue a **Graduate Certificate in Digital Engineering** followed the four-step decision-making process closely, aligning my professional development goals with my employer's strategic needs:

1. Identify the Need: My decision began when my company recognized that digital engineering capabilities—specifically Systems Modeling Language (SysML)—were strategic areas we needed to strengthen.

2. Develop Alternatives: I explored various post-secondary institutions offering graduate-level credentials and specialized coursework in digital engineering.

3. Choose the Alternative: The choice came down to this school's strong academic reputation in digital engineering and, most importantly, its practical focus. Rather than remaining purely theoretical, the program offered a hands-on approach focused on turning theory into real-world models and simulations—a true 'where the rubber meets the road' methodology.

4. Implement the Choice: I implemented the decision by enrolling in the Graduate Certificate program and applying these model-based engineering tools directly to my ongoing work projects.

For me, **Step 3 (Choosing the Alternative)** was the most critical step because finding an accredited graduate program that emphasized practical, simulation-driven application was the key factor that drove my final selection.

Question 5: Common decision-making criteria in chosen major & unintended negative consequences.

In the field of **Digital Engineering**, practitioners primarily rely on decision-making criteria centered on **explicit knowledge**—such as technical requirement compliance, system architecture optimization metrics, interface verification, and digital simulation performance. In Chapter 6's framework, this heavy emphasis reflects a **Conventional Organizational Behavior (OB)** approach, which prioritizes codified, quantifiable data to drive certainty and technical conformity.

While these quantitative criteria are essential for engineering complex systems, relying on them exclusively produces significant unintended negative consequences:

• **Neglect of Tacit Knowledge and Stakeholder Needs:** An exclusive focus on explicit, codified metrics ignores **tacit knowledge**—the uncodified intuition, real-world field experience of operators, and qualitative human factors that cannot easily be rendered in a SysML diagram. As Chapter 6 emphasizes, a **Sustainable OB** approach requires balancing explicit data with tacit insights and broader stakeholder well-being.

• **Paralysis by Analysis:** Attempting to achieve a textbook **Rational Choice** ideal with perfect information often leads engineers into 'paralysis by analysis,' endlessly tweaking digital simulation parameters and

model configurations instead of moving forward with physical prototyping and real-world deployment.

• **Information Distortion and Escalation of Commitment:** Over-confidence in computer models can foster **information distortion**, where decision-makers overlook or downplay real-world warning signs and testing anomalies simply because the explicit digital model predicted success on paper.