Video Transcript: Guide to Producing Scoping Literature Reviews Using AI Tools

Slide 1 [Opening]

Welcome to a journey into the future of literature reviews. Today, we're diving into how artificial intelligence can revolutionize the way we conduct scoping reviews—but with a crucial twist: human expertise remains the beating heart of this process. I'm Tony Bailetti [AI] from the Technology Innovation Management program at Carleton University, and I'm thrilled to guide you through a method that blends cutting-edge AI with the timeless power of human insight. Let's get started.

Slide 2 -3: The 9-Step Method: A Roadmap to Mastery

Picture this: a nine-step method designed to make your scoping reviews not just efficient, but extraordinary. Each step harnesses AI to sharpen our focus and speed our progress, while keeping human judgment firmly in the driver's seat. Here's the whirlwind tour:

1. **Formulate the Review Question and Scope** – We craft a clear, exploratory question, with AI refining our ideas.

2. **Search for Articles** – AI casts a wide net across the literature, pulling in what matters.

3. **Select Articles** – AI screens and filters, but we validate with a critical eye.

4. **Extract Data** – AI organizes insights, saving us time.

5. **Analyze and Synthesize** – AI spots trends and gaps, while we weave the story.

6. **Interpret Results** – AI offers suggestions, but we bring the depth.

7. **Write the Review** – AI drafts and structures, yet our voice shines through.

8. **Incorporate Ethics** – We ensure integrity, guiding AI's role.

9. **Disseminate Findings** – AI amplifies our reach with summaries and visuals.

To top it off, we've got a checklist—a trusty companion for authors and reviewers alike. It ensures every step is complete, ethical, and primed for impact. This isn't just a process; it's a partnership between technology and intellect.

Slide 4: Why Human Expertise Still Reigns

Now, let's pause for a moment. AI is a marvel—it can summarize, categorize, and churn through data at lightning speed. But here's the catch: it's not enough. Think of AI as a high-powered telescope. It scans

the skies, pinpointing stars in the vast darkness, but it takes a skilled astronomer—you—to interpret what those stars mean, to uncover the story they tell. In scoping reviews, AI gathers and sorts, but it's our critical thinking—questioning assumptions, weighing evidence, spotting biases—that transforms raw data into wisdom. For those of us in technology innovation and management, this isn't just a nice-to-have; it's essential.

Slide 5: Step 1: Crafting the Perfect Question

Let's zoom into the first step: formulating your review question and scope. A scoping review demands a question that's broad yet focused, one that captures the full landscape of knowledge. Here, AI can be a brainstorming buddy. Ask ChatGPT, 'Give me five variations of What do we know about AI in mining businesses?' and watch it refine your thinking. But don't hand over the reins—AI might suggest something too vague or off-target. You ensure the question fits the scoping review's purpose, aligning it with frameworks like PCC—Population, Concept, Context. Compare it to published reviews, tweak it with theory, and make it sing.

Slide 6: The PCC Framework: Your Three-Legged Stool

Speaking of PCC, let's unpack this gem. Imagine it as a three-legged stool:

- **Population**: Who are we studying?

- **Concept**: What are we exploring?

- **Context**: Where does this unfold?

Together, these legs steady your review question, giving it clarity and balance. It's simple, yet profound— a foundation TIM students and faculty can rely on to cut through the noise.

Slide 7 -8: PCC in Action: Stories That Stick

Let's bring this to life with a couple of examples. First, picture a startup building AI-powered products. Their **population** is startups, their **concept** is the challenge of scaling prototypes, and their **context** is venture acceleration programs. Their question becomes: *'What are the key challenges and success factors in scaling AI-driven prototypes within tech startups in venture programs?'* Clear, compelling, actionable.

Now, imagine a mid-sized manufacturing firm in Canada. Their **population** is mid-sized firms, their **concept** is adopting Industry 4.0 tech—think IoT, AI, blockchain—and their **context** is North America's smart manufacturing scene. Their question: *'What barriers and facilitators shape Industry 4.0 adoption in Canadian mid-sized manufacturers?'* See how PCC turns abstract ideas into vivid inquiries?

Slide 9: Beyond PCC: A Toolbox of Options

But PCC isn't the only game in town. Depending on your question, other frameworks might fit better. Take **CIMO**—Context, Intervention, Mechanism, Outcome—for complex interventions, like how AI project management software boosts decision-making in remote startups. Or **ECLIPSE**, perfect for evaluating services, say, cybersecurity frameworks in regulated industries. There's **PEO** for qualitative studies, like remote work's impact on software engineers, and **SPIDER** for mixed-methods research on agile methodologies. The trick? Pick the tool that matches your mission.

Slide 10: Defining Your Scope: The Art of Balance

So, how do we shape the scope of our review? It's a high-wire act. Go broad to map an emerging field—like AI-powered business models—drawing from diverse sources across industries. Or dive deep into a niche—like AI adoption barriers in North American SMEs—focusing on top-tier studies. Time matters too: five years for fast-moving fields like quantum security, or decades for a historical take on open innovation. Will you blend academic journals with industry reports? Go global or regional? Focus on developers or end users? Every choice sculpts your review's impact.

Slide 11: Outputs of Step 1 – Formulating the Research Question and Scope

Step 1 sets the foundation for your scoping review, yielding five key outputs:

1. **Research question** – A focused, framework-based question (like PCC or CIMO) that guides your entire review.

2. **Review objectives** – Clear goals (e.g., mapping trends or identifying research gaps) that keep you on track.

3. **Keywords and search terms** – A preliminary list of relevant terms, including synonyms and Boolean operators, to capture the right studies.

4. **Search strategies** – Choices about which databases (e.g., Scopus, Web of Science) and AI tools you'll use for efficient, targeted searches.

5. **Defined scope** – Inclusion/exclusion criteria, source types, and disciplines that outline the boundaries of your review.

These five elements form the essential toolkit and launchpad for a thorough, well-structured scoping review.

Slide 12: Step 2 – Search for Articles

Step 2 centers on systematically searching for articles—casting a wide net across both academic databases and grey literature to ensure comprehensive coverage. AI can supercharge this process by generating keyword variations and Boolean strings, but **human oversight remains crucial**. Review and refine AI-suggested queries, testing them across multiple databases (e.g., PubMed, Scopus), and include grey literature like government or industry reports. This iterative, transparent approach ensures you capture the "signal" while filtering out the "noise.".

Slide 13: Develop a Search Strategy

Alright, Step 2 is underway, and now we're crafting our search strategy—the playbook for tracking down the literature we need. This isn't guesswork; it's a deliberate, structured hunt.

First, define key terms and concepts. Brainstorm keywords, synonyms, and use Boolean operators—AND to narrow, OR to broaden. For example, digital transformation OR Industry 4.0 AND business models. Tailor these to each database (e.g., Scopus, Google Scholar), then set inclusion/exclusion criteria (study types, years, regions). This strategy evolves as you refine your scope, helping you snag the most relevant material while avoiding the noise.

Slide 14: Recommended AI Tools

Let's talk tools—specifically, AI tools that turbocharge our scoping review. These aren't just gadgets; they're our co-pilots in navigating the literature jungle.

ChatGPT generates synonyms, related terms, and complex Boolean strings—speeding up your keyword creation and identifying gaps. Consensus ranks papers by relevance and consensus strength, acting like a supercharged filter. Perplexity pulls from both academic and non-academic sources, serving up current insights without indexing delays. Elicit sifts through thousands of papers to extract and compare key findings, and OpenRead retrieves documents by meaning—not just keywords—and distills them into digestible summaries. Together, these tools don't just save time—they make our search smarter, sharper, and more comprehensive. Why go it alone when you've got this crew?

Slide 15: Sources of Evidence

Scoping reviews thrive on diversity, especially in a field like Technology and Innovation Management. We're not just digging through academic journals—we're blending peer-reviewed rigor with real-world insights.

Start with heavy hitters like Scopus, Web of Science, IEEE Xplore, and ACM Digital Library for peer-reviewed insights. Then add industry reports (e.g., Gartner, McKinsey, CB Insights) for market trends,

along with preprints (arXiv, SSRN) for emerging ideas. Finally, check patent databases (Google Patents, USPTO) to see what's in the pipeline. This mix balances academic depth with real-world impact, giving you a full picture rather than just one corner.

Slide 16: Databases and Search Engines

Let's get tactical—databases and search engines are the engines of our literature hunt. Picking the right ones isn't a luxury; it's a must to avoid bias and cover all bases.

Choose databases aligned with your domain—Scopus or Google Scholar for broad coverage, IEEE Xplore for engineering, ABI/INFORM for business, PsycINFO for social sciences. Indexing varies; some focus on peer-reviewed work, others include grey literature and preprints. Use specialized search features like PubMed's MeSH or IEEE's filters to reduce noise. Don't neglect grey literature repositories (OpenGrey, OAIster, Think Tank Search) to capture the full knowledge landscape. This mix delivers both depth and breadth for a balanced, robust review.

Slide 17: Search Queries

Time to get hands-on with search queries—the DNA of our literature search. These aren't random stabs; they're precision tools, and we've got examples to prove it.

Take **digital transformation in SMEs**: *'(digital transformation OR Industry 4.0 OR AI adoption) AND (small and medium enterprises OR SMEs) AND (barriers OR challenges OR opportunities)'*—filtered to peer-reviewed, last five years, English. Or **AI in venture capital**: *'(artificial intelligence OR machine learning) AND (venture capital OR startup investment) AND (decision-making OR risk assessment)'*—global scope, last seven years.

Tools like Scite or Semantic Scholar can refine these further. The trick? Start broad, then sculpt—Boolean operators are your chisel.

Slide 18: Manage Search Results

Step 2's humming along, and now we've got a pile of articles. How do we tame the chaos? That's where managing search results comes in—it's about control, not clutter.

First, grab **reference management software**—Mendeley, Zotero, EndNote. These are your digital filing cabinets, keeping articles organized and accessible. Next, **remove duplicates**. Automated tools in these managers spot doubles fast—no one's got time to sift manually.

Track search strategies—log every database, every term, every result. This isn't busywork; it's our reproducibility insurance. Then, **refine iteratively**. Initial findings too broad? Tighten Boolean queries. Too thin? Expand synonyms. **Troubleshooting** is key—if results swamp us, pivot to niche databases.

Now, **document the process**. Use a **PRISMA-ScR Flow Diagram** to map records identified, screened, and cut. Note **search dates and limits**—timeframes, languages—and **justify selection criteria**. Why skip certain studies? Spell it out. This isn't just management—it's building a trail anyone can follow.

Slide 19: Outputs of Step 2 – Search for Articles

Step 2's done, and what's in our hands? The outputs of our article search—a haul that proves we've done the heavy lifting right.

We've got a **documented search strategy**: every term, Boolean twist, database hit, and date logged. Then, a **collection of relevant articles**, all meeting our criteria, neatly stored in a reference manager. Our **PRISMA-ScR flow diagram** lays it bare—how many records we found, screened, kept, or ditched.

There's a **refined search query** too—tweaked with synonyms and subject headings based on what we've learned. And a **list of excluded articles**, with reasons—too old, off-topic, whatever. These outputs aren't just deliverables; they're the backbone of a transparent, rock-solid review. We're ready to roll into Step 3.

Slide 20: Step 3 – Select Articles

Welcome to Step 3: selecting articles. This is where we sift the wheat from the chaff—keeping only what's relevant. It's structured, transparent, and built on a two-step dance: title/abstract screening, then full-text review. The PRISMA-ScR flow diagram tracks every move.

AI's role? Huge. It can classify articles, rank them by relevance, summarize abstracts, even spot duplicates. But **human oversight** is our anchor. AI might misjudge a study's fit if metadata's off—we manually check inclusion criteria. AI ranks by algorithm, not insight—we assess quality. And it might skew recent—we dig for foundational gems.

Guidance seals it: spot-check AI's exclusions, cross-reference key studies from past reviews, and double-team with human screening for accuracy. This isn't just selection—it's curation, ensuring our review stands on the strongest pillars possible.

Slide 21: Screen Articles Strategy

Picture this: you're sifting through a stack of resumes to find the perfect hire. That's our article screening process. We've got two phases. First, **title and abstract screening**—we use Rayyan AI to quickly ditch the irrelevant stuff, like a smart assistant flagging the no-gos. But we double-check manually with our inclusion criteria. Second, **full-text screening**—we grab the full articles, dive deep, and confirm they fit. Rayyan helps sort, but our judgment rules. We log every tweak to our criteria and every exclusion. AI's our helper, not our boss—ensuring we build a rock-solid review.

Slide 22: Select Studies Using Rayyan AI

Meet Rayyan AI—our wingman for study selection. Here's the playbook: **Upload references** from Scopus or IEEE, set our criteria—like focusing on empirical studies—and let multiple reviewers tackle it together. **Screening** kicks in—Rayyan ranks studies by relevance, we tag them like 'keeper' or 'toss,' and blind mode keeps bias at bay. **Dual screening** means two sets of eyes on every study, hashing out disagreements for consistency. Once done, we export to Zotero. It's like assembling a dream team—Rayyan speeds it up, but we call the shots.

Slide 23: Importance of Dual Screening

Why dual screening? Imagine two chefs tasting a stew—one might miss the salt. Two reviewers catch biases solo eyes might skip, especially in wild fields like quantum security or DeFi. Disagree? We talk it out or call a third umpire. It's gold for complex topics—think AI in cybersecurity—where perspectives clash. Plus, it's a credibility booster for R and D or policy stakes. Dual screening isn't extra work—it's our trust anchor.

Slide 24: Outputs of Step 3 – Select Articles

Step 3's wrapped—what's in the bag? A **tight list of eligible articles**, a **PRISMA-ScR flow diagram** showing our screening journey, and a **list of rejects** with reasons—too old, off-topic, whatever. We've tweaked our **inclusion/exclusion criteria** if needed, and logged results from **title/abstract** and **full-text screening**. These aren't just outputs—they're our proof of a clean, transparent process.

Slide 25: Step 4 – Extract Data

Step 4: extracting data—like mining gold from our studies. **AI** summarizes, spots themes, and sorts studies, but **we** verify it. AI might misread a table or skip nuance, so we check accuracy and keep methods consistent. Start with a manual sample, use a form like Excel, and align AI categories with our question. It's tech and human smarts in sync—efficient yet precise.

Slide 26: Extract Key Information

Extracting key info? We've got tools: **ChatGPT** for summaries, **Elicit** or **SciSpace** for tables, **Research Rabbit** or **VOSviewer** for citation webs. They pull citations, study types, findings, gaps—fast. But we steer the ship, tweaking categories as themes pop up. It's like sketching a map of the research landscape—tools draw the lines, we plot the course.

Slide 27: Key Data Elements to Extract

What's worth extracting? Think puzzle pieces: **citations**—who, when, where; **study type**—survey or case study; **population**—who's involved; **key concepts**, **findings**, and **gaps**. As we go, we tweak our templates to snag emerging ideas. It's about capturing the story each study tells—and where it leaves us hanging.

Slide 28: Extract Data and Organize into Tables

Time to table it. **Elicit** lets us build custom columns—findings, regions, whatever fits. **SciSpace** turns PDFs into tidy summaries. Alternatives like **Retica** or **Diffbot** pull structured data too. We get study details, key findings, gaps—sometimes 15+ columns. AI fills it fast, but we ensure it's spot-on and relevant. It's like organizing a messy desk—everything in its place.

Slide 29: Visualize Insights

Let's make it visual. Say we're reviewing AI in venture financing—trends like risk assessment pop, but human-AI gaps linger. **Concept maps** with CmapTools connect themes. **AI summaries** from ChatGPT distill the pile. **Citation networks** via Research Rabbit show who's influencing who. These aren't just pretty—they make complexity click.

Slide 30: Ensure Data Quality and Consistency

Quality's king. We **spot-check AI summaries** for slip-ups, **review charts** for uniform categories, and run an **ethical review**—do these reflect the studies' soul? We lean on JBI guidelines, maybe RoBVis for bias. Document it all—final templates, tweaks, handling. It's not just clean data—it's honest data.

Slide 31: Outputs of Step 4 – Extract Data

Step 4's haul: **data extraction tables** summing up each study, a **structured dataset**—clean and ready, **AI-human summaries**—polished and true. Plus, a **final template** and **adjustment logs**. These aren't just files—they're our launchpad for analysis, built step by careful step.

Slide 32: Step 5 – Analyze and Synthesize Data

Step 5 is where we transform raw data into a story. **AI** is a star here—summarizing themes, sorting studies, sketching patterns. But **we're** in charge. AI might mix up apples and oranges or miss hidden connections. We check its work, align methods, and sharpen categories with our know-how. It's like a map: AI draws the rough lines, we fill in the details.

Slide 33: Analysis Approaches

Analysis comes in flavors. **Descriptive summary** tallies studies by year, place, or method—like a scorecard. **Narrative synthesis** bundles them into themes, think book chapters. **Thematic and visual analysis** maps gaps and clusters with cool visuals—concept maps, citation webs. AI like ChatGPT can kickstart it, but we double-check. It's not just numbers—it's a tale we're weaving.

Slide 34: AI-Assisted Analysis and Synthesis

AI's our wingman here. Tools like Custom GPT or SciSpace slice data, spot gaps, even draft tables. But we keep the log—every table, figure, choice. Transparency's the name of the game; we're not just analyzing, we're earning trust.

Slide 35: Outputs of Step 5 – Analyze and Synthesize Data

Step 5 delivers: a **descriptive summary** of trends, a **thematic report** grouping studies, **visuals** like maps and networks, and a **list of knowledge gaps**. These aren't just results—they're our guide forward.

Slide 36: Step 6 – Interpret Results

Step 6: making sense of it all. **AI** can highlight trends, spot oddities, suggest next steps. But **we** dive deeper—checking context, tying in theory, sorting contradictions. AI's a helper, not a guru. We match its ideas to the studies, chat with experts, and ground it in reality.

Slide 37: Translating Research into Action

Scoping reviews aren't just for scholars—they spark action. Spot a product idea, weigh tech options, craft intel reports, or find partners. Picture this: a review on AI in healthcare could birth a new diagnostic gadget. It's about turning data into deeds.

Slide 38: Avoiding Over-Reliance on AI

AI's a sidekick, not the boss. It can misread vibes, invent facts, or skip the hard stuff. We've got to fact-check, cross-check, and trust our gut. Use AI to assist, not decide. Think of it as GPS—handy, but we're still driving.

Slide 39: Outputs of Step 6 – Interpret Results

Step 6 wraps up with: a **discussion of key findings**, a **list of research gaps**, a **limitations section**, and **refined conclusions**—AI-boosted but human-stamped. These aren't just words—they're the runway to our final review.

Slide 40: Step 7 – Write the Scoping Review

Step 7 is where the magic happens—turning raw research into a polished masterpiece. **AI** can whip up summaries, intros, and structure ideas fast. But **we're** the bosses here—refining clunky text, ensuring rigor, and fixing those sneaky citation errors AI might miss. Think of AI as your sous-chef—it preps the ingredients, but you cook the meal.

Slide 41: Turn Review Findings into Valuable Assets

Scoping reviews are more than papers—they're treasure maps! They spark **startup pitches**, inspire **product ideas**, guide **tech choices**, and dish out **market insights**. Picture this: a gap in AI healthcare tools becomes your next big venture. Or blockchain trends reshape supply chains. It's research with a purpose—ready to launch something big.

Slide 42: Templates to Translate Scoping Reviews into Actionable Insights

Need a game plan? Templates are your cheat code. For **product development**, map trends and gaps. For **tech adoption**, weigh risks and rewards. For **competitive intel**, track rivals' moves. For **partnerships**, spot key players. These aren't just charts—they're your roadmap to winning.

Slide 43: Solicit Feedback from AI Tools and Experts

Feedback's your superpower. **AI** tools like Gemini or Perplexity catch gaps and polish drafts fast. Then **experts** swoop in with context and strategy—stuff AI can't dream up. It's a tag team: AI tunes the details, experts set the vision. Like a pit crew—everyone's got a role to make it race-ready.

Slide 44: Structure the Manuscript

Structure's king. We use **PRISMA-ScR**: intro, methods, results, discussion, conclusion—boom, done. **AI** like ChatGPT drafts quick, but we sharpen it—clarity, flow, rigor. Grammarly sweeps for errors. It's like building a bridge: AI pours the concrete, we shape the arches.

Slide 45: Outputs of Step 7 – Write the Scoping Review

Step 7 pays off with a **structured manuscript**, **AI-polished drafts**, a **clear methods section**, and a **final, shiny version**. It's not just a document—it's your story, prepped to impress.

Slide 46: Step 8 – Incorporate Ethical Considerations

Ethics aren't optional. **AI** flags biases and suggests guidelines, but **we** decide what's right—checking fairness, inclusivity, integrity. It's like a lifeguard: AI spots the waves, we dive in to save the day.

Slide 47: Ethical Implications of AI in Technology Innovation Management

AI's a game-changer in TIM, but it's tricky. It speeds things up yet risks bias, privacy hiccups, and murky decisions. Think skewed funding or bad tech calls. We counter with audits, transparency, and human know-how. It's not just innovation—it's trust on the line.

Slide 48: AI Transparency and Documentation

Be upfront: say how AI pitched in—search, drafts, whatever. Document every step. Double-check AI's work for truth and bias. It's like a recipe—list every spice so everyone knows what's cooking.

Slide 49: Compliance with Ethical Guidelines

Stick to the rules—ACM Code, institutional policies, no sketchy AI tools. Log it all. It's not just about ticking boxes—it's about earning respect.

Slide 50: Outputs of Step 8 – Incorporate Ethical Considerations

Step 8 delivers: an **AI usage statement**, a **plagiarism and bias report**, an **audit trail**, and a **compliance checklist**. These aren't just files—they're your ethical stamp of approval.

Slide 51: Step 9 – Disseminate Findings

Step 9 is where your work hits the stage—sharing findings that shape research, policy, and practice. **AI** can crank out summaries, infographics, even journal picks, but **we** refine it. Check accuracy, tweak for the audience, keep it ethical. Think of AI as a rough sketch—we turn it into the final portrait.

Slide 52-53: Research Vignette and Pitch Templates

Need to wow decision-makers? Vignettes boil down your findings—problem, insights, impact, next steps. Pitch decks take it further—problem, solution, market, roadmap. These aren't just templates; they're your treasure maps, guiding research to real-world gold.

Slide 54: Publication and Conference Presentations

Where's your audience? **Journals**—business, tech, open-access—reach scholars. **Conferences**—IEEE, policy summits—spark live debates. It's like picking the right stage: match the venue to your message and watch it resonate.

Slide 55: Digital and Open Science Platforms

Go big or go home. Preprints, repositories like Zenodo, even social media—cast a wide net. These platforms don't just store findings; they amplify them, boosting visibility and trust for all to see.

Slide 56: Outputs of Step 9 – Disseminate Findings

Here's what you get: a **journal article**, a **conference talk**, a **policy brief**, **open datasets**, and **engagement tools** like blogs. These aren't just deliverables—they're seeds, sprouting ideas that grow far and wide.

Slide 57: Checklist for Authors and Reviewers

Quality matters. This checklist is your toolkit—rigor, clarity, impact, locked in. From question to dissemination, it's how we build reviews that stand the test of time.

Start strong: **Question**—sharp PCC focus. **Studies**—smart searches, AI-tuned. **Screening**—Rayyan AI plus human eyes. **Data**—extracted, synthesized, set. It's like building a house—nail the foundation, and the rest holds firm.

Finish big: **Visuals**—maps that pop. **Action**—products, tech picks, intel. **Disseminate**—vignettes, pitches, impact. **Ethics**—bias-free, transparent. It's turning raw data into a polished gem, ready to shine.

Slide 58: Closing

Step into a world where your research doesn't just keep up—it sets the standard. With AI as your partner, you'll slice through data, uncover insights, and produce scoping reviews that raise the bar. AI speeds you up, but your human oversight—your ethics, your judgment—keeps the outcomes sharp and trustworthy.

Follow our nine-step framework to build reviews so thorough they redefine rigor in Technology Innovation Management. Let AI handle the grunt work while you steer the ship. Document everything—your tools, your steps, your logic—to earn credibility and serve as a beacon others can trust and replicate.

But remember: this isn't static. As AI evolves, so must you. Stay sharp, adapt, and keep pushing forward. Take the reins, apply the framework, record each move, and keep learning—because the future of TIM research is here, and it's yours to shape. Let's make it extraordinary.