Report on Smart Use of Large Language Models (LLMs) for Research

A seminar titled *"Smart Use of Large Language Models (LLMs) for Research"* was conducted on April 12, 2025, to acquaint researchers and faculty members from the Faculty of Commerce and Education with the practical applications of Large Language Models in academic workflows. The session focused on enhancing research productivity, automating repetitive tasks, and promoting the ethical and effective use of AI tools within scholarly practices.

The session commenced with a conceptual introduction to Large Language Models, articulating their core principles and mechanisms in a manner accessible to researchers without a scientific background. LLMs were positioned as valuable research assistants, designed to support and extend the capabilities of academics rather than substitute their efforts.

One of the first topics of discussion was the common challenge researchers encounter: the ability to structure and retain notes from research papers and findings in a manner that remains useful even years later during thesis composition. The session highlighted how LLMs can be leveraged to convert unstructured reading into organized representations such as mind maps or structured summaries, enabling long-term recall.

Furthermore, practical examples were presented illustrating how LLMs can assist in working with real-world datasets using Microsoft Excel, including automating routine analysis tasks and generating scripts or macros for repetitive data operations.

The seminar also introduced the concept of prompt engineering, emphasizing the significance of formulating clear, specific, and contextually meaningful prompts to obtain high-quality responses from LLMs. Practical examples demonstrated that minor alterations in the language could yield substantially enhanced results.

Subsequently, live demonstrations were conducted for each of the above topics, offering hands-on insights into the application of LLMs in actual research contexts. Examples include:

- Generating mind maps from academic notes, research papers using NotebookLM for improved comprehension, structured note taking and long term recall.

- Automating Excel workflows for analysing real world data via AI-generated VBA macros.

- Extending the above use case to an AI-Generated, HTML-based, interactive dashboard and visualization tools for data analysis, specifically designed for non-technical users (those with no programming backgrounds)

- Showcasing an AI-generated HTML tool for browsing local video files in a customizable grid layout with navigation and playback controls—designed to work seamlessly without programming knowledge or software installation.

These use cases highlighted the versatility of LLMs in addressing everyday academic needs and provided insights to how these tools can be utilized for increasing productivity for researchers.

Ethical considerations and best practices in using AI tools were also discussed, including topics such as data privacy, academic integrity, and responsible use of generative outputs. The seminar concluded with a Q&A session, where participants actively engaged in exploring advanced use cases and discussed the potential of LLMs across disciplines like finances, accountancy, arts.