



Research Reinvented with ChatGPT

In this chapter, we focus on researchers who wish to leverage ChatGPT. The chapter will go through a few main use cases ChatGPT can address, so that you will learn from concrete examples how ChatGPT can be used in research.

By the end of this chapter, you will be familiar with using ChatGPT as a research assistant in many ways, including the following:

Researchers' need for ChatGPT

Brainstorming literature for your study

Providing support for the design and framework of your experiment

Generating and formatting a bibliography to incorporate in your research study

Delivering a pitch or slide deck presentation about your study addressing diverse audiences

This chapter will also provide examples and enable you to try the prompts on your own.

Researchers' need for ChatGPT

ChatGPT can be an incredibly valuable resource for researchers across a wide range of fields. As a sophisticated language model trained on vast amounts of data, ChatGPT can quickly and accurately process large amounts of information and generate insights that might be difficult or time-consuming to uncover through traditional research methods.

Additionally, ChatGPT can provide researchers with a unique perspective on their field, by analyzing patterns and trends that might not be immediately apparent to human researchers. For example, imagine a researcher studying climate change and

wanting to understand the public perception of this issue. They might ask ChatGPT to analyze social media data related to climate change and identify the most common themes and sentiments expressed by people online. ChatGPT could then provide the researcher with a comprehensive report detailing the most common words, phrases, and emotions associated with this topic, as well as any emerging trends or patterns that might be useful to know.

By working with ChatGPT, researchers can gain access to cutting-edge technology and insights, and stay at the forefront of their field.

Let's now dive deeper into four use cases where ChatGPT can boost research productivity.

Brainstorming literature for your study

A literature review is a critical and systematic process of examining existing published research on a specific topic or question. It involves searching, reviewing, and synthesizing relevant published studies and other sources, such as books, conference proceedings, and gray literature. The goal of a literature review is to identify gaps, inconsistencies, and opportunities for further research in a particular field.

The literature review process typically involves the following steps:

- 1. Defining the research question:** The first step in conducting a literature review is to define the research question of the topic of interest. So, let's say we are carrying out research on the effects of social media on mental health. Now we are interested in brainstorming some possible research questions to focus our research on, and we can leverage ChatGPT to do so:

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I am interested in carrying out research on the effects of social media on mental health.

Generate five potential research questions to focus my research on.



Sure, here are five potential research questions related to the effects of social media on mental health that you could consider exploring further:



1. How does the frequency and duration of social media use relate to mental health outcomes, such as anxiety, depression, and stress?
2. What are the mechanisms through which social media use impacts mental health outcomes, and are there certain populations or individuals who may be more vulnerable to these effects?
3. How do different types of social media platforms (e.g., Instagram, Facebook, Twitter) impact mental health outcomes, and are there specific features or content types that are more or less harmful?
4. What are the potential benefits of social media use for mental health, such as social support, connection, and self-expression, and how can these benefits be harnessed while minimizing negative effects?
5. How can social media use be effectively moderated or managed to promote positive mental health outcomes, and what are the best practices for promoting healthy social media use among different populations and age groups?

These research questions could serve as a starting point for your investigation into the effects of social media on mental health, and you may choose to narrow or broaden your focus depending on your interests and available resources. Good luck with your research!

Figure 8.1 – Examples of research questions based on a given topic

Those are all interesting questions that could be further investigated. Since I'm particularly interested in the last one, I will keep that one as a reference for the next steps of our analysis.

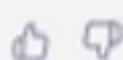
2. **Searching for literature:** Now that we have our research question, the next step is to search for relevant literature using a variety of databases, search engines, and other sources. Researchers can use specific keywords and search terms to help identify relevant studies.

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I want to investigate research questions. Please list all the relevant literature that might support my research. Include research papers, links to relevant datasets, existing books, and YT videos. Make sure to quote the source for each reference and add a summary of what it is about.



Sure, here are some relevant literature that may support your investigation into research question 5, which focuses on the effective moderation and management of social media use to promote positive mental health outcomes:



1. "Promoting Healthy Social Media Use Among Adolescents and Young Adults: A Framework for Intervention" by Moreno et al. (2018)

This research article provides a framework for promoting healthy social media use among adolescents and young adults, with a focus on identifying key risk factors, developing targeted interventions, and evaluating their effectiveness.

2. "Social Media Use and Mental Health: A Review" by Firth et al. (2019)

This literature review examines the current state of research on the relationship between social media use and mental health outcomes, with a focus on the potential benefits and harms of social media use and strategies for promoting healthy use.

3. "The Social Dilemma" (documentary film)

This documentary explores the impact of social media on society, including its potential harms on mental health and well-being, and highlights the need for greater regulation and user empowerment.

4. "Social Media and Mental Health: A Review of the Literature" by O'Dea et al. (2018)

This literature review summarizes the current research on the impact of social media on mental health outcomes, including the potential benefits and harms of social media use, and identifies key areas for future research.

5. "Digital Self-Harm: Prevalence, Motivations, and Outcomes" by Hinduja and Patchin (2018)

This research article examines the phenomenon of "digital self-harm," in which individuals post negative or self-critical comments about themselves on social media, and explores the potential mental health impacts of this behavior.

6. Pew Research Center - Social Media Use in 2021 (dataset)

This dataset provides information on the prevalence of social media use among different age groups and demographics, as well as attitudes towards social media and its impact on society.

7. "Ten Arguments for Deleting Your Social Media Accounts Right Now" by Jaron Lanier (book)

This book presents a critical view of social media and its potential harms on mental health and society, and offers suggestions for alternative approaches to online communication and connection.

These sources may provide valuable insights and perspectives on effective strategies for promoting healthy social media use and minimizing potential harms on mental health outcomes. Remember to properly cite all sources you use in your research.

Figure 8.2 – Literature search with the support of ChatGPT

Starting from the suggestions of ChatGPT, we can start diving deeper into those references.

3. **Screening the literature:** Once relevant literature has been identified, the next step is to screen the studies to determine whether they meet the inclusion criteria for the review. This typically involves reviewing the abstract and, if necessary, the full text of the study.

Let's say, for example, that we want to go deeper into the **Promoting Healthy Social Media Use Among Adolescents and Young Adults: A Framework for Intervention** research paper. Let's ask ChatGPT to screen it for us:

- V elaborate the research paper "Promoting Healthy Social Media Use Among Adolescents and Young Adults: A Framework for Intervention" by Moreno et al. (2018). Generate a summary of the paper, its research question, and the main topics discussed

The research paper "Promoting Healthy Social Media Use Among Adolescents and Young Adults: A Framework for Intervention" by Moreno et al. (2018) presents a framework for promoting healthy social media use among adolescents and young adults. The paper aims to provide practical guidance for clinicians, educators, parents, and policy makers on how to address the potential harms of social media use and promote positive mental health outcomes.

The research question of the paper is: How can interventions be designed to promote healthy social media use among adolescents and young adults?

The paper starts by reviewing the current state of research on the relationship between social media use and mental health outcomes, including the potential benefits and harms of social media use. The authors identify key risk factors for negative mental health outcomes related to social media use, such as cyberbullying, social comparison, and exposure to harmful content.

The paper then presents a framework for intervention, which includes four key components: identifying at-risk individuals, educating and empowering youth, promoting positive online behaviors, and evaluating interventions. The authors provide specific examples and strategies for each component, such as identifying warning signs of negative mental health outcomes, promoting digital literacy and critical thinking skills, and encouraging positive social media use.

Overall, the paper highlights the need for targeted interventions to promote healthy social media use among adolescents and young adults, and provides a practical framework for clinicians, educators, parents, and policy makers to address this important issue.

Figure 8.3 – Literature screening of a specific paper

ChatGPT was able to provide me with an overview of the paper and, considering its research question and main topics of discussion, I think it will be pretty useful for my own study.

Note

ChatGPT was able to generate a screening of this paper since it was evidently part of its knowledge base. If you are interested in performing the same screening on a paper written later than 2021 (the cut-off date of ChatGPT training), you will need to provide the abstract or paragraph content to ChatGPT.

4. **Extracting data:** After the relevant studies have been identified, researchers will need to extract data from each study, such as the study design, sample size, data collection methods, and key findings.

For example, let's say that we want to gather the following information from the paper *Digital Self-Harm: Prevalence, Motivations, and Outcomes* by Hinduja and Patchin (2018):

Data sources collected in the paper and object of the study

Data collection method adopted by researchers

Data sample size

Main limitations and drawbacks of the analysis

The experiment design adopted by researchers

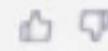
Here is how it goes:

write the following information about the paper "Digital Self-Harm: Prevalence, Motivations, and Outcomes" by Hinduja and Patchin (2018).

1. Data sources collected in the paper and object of the study
2. data collection method adopted by researchers
3. data sample size
4. main limitations and drawbacks of the analysis
5. the experiment design adopted by researchers



Sure, here's the information you requested about the paper "Digital Self-Harm: Prevalence, Motivations, and Outcomes" by Hinduja and Patchin (2018):



1. The paper examines the phenomenon of digital self-harm, which refers to the practice of individuals anonymously posting hurtful comments about themselves on social media platforms. The study aims to understand the prevalence, motivations, and outcomes of digital self-harm, as well as its potential linkages with other forms of online and offline victimization.
2. The researchers collected data through an online survey administered to a nationally representative sample of 5,593 middle and high school students in the United States. The survey included questions on various forms of online and offline victimization, including digital self-harm, as well as demographic and psychosocial variables.
3. The sample size was 5,593 middle and high school students in the United States.
4. The main limitations and drawbacks of the analysis may include potential biases and limitations of self-reported data, such as social desirability bias and memory recall errors. In addition, the study did not explore the potential cultural and contextual factors that may influence the prevalence, motivations, and outcomes of digital self-harm.
5. The researchers did not adopt an experiment design, but rather conducted a survey-based research study to collect self-reported data from participants.

Figure 8.4 – Extracting relevant data and frameworks from a given paper

5. **Synthesizing the literature:** The final step in the literature review process is to synthesize the findings of the studies and draw conclusions about the current state of knowledge in the field. This may involve identifying common themes, highlighting gaps or inconsistencies in the literature, and identifying opportunities for future research.

Let's imagine that, besides the papers proposed by ChatGPT, we have collected other titles and papers we want to synthesize. More specifically, I want to understand whether they point toward the same conclusions or not, which are common trends, and which method might be more reliable than others. For this scenario, we will consider three research papers:

The Effects of Social Media on Mental Health: A Proposed Study, by Grant Sean Bossard (https://digitalcommons.bard.edu/cgi/viewcontent.cgi?article=1028&context=senproj_f2020)

The Impact of Social Media on Mental Health, by Vardanush Palyan
(<https://www.spotlightonresearch.com/mental-health-research/the-impact-of-social-media-on-mental-health>)

The Impact of Social Media on Mental Health: a mixed-methods research of service providers' awareness, by Sarah Nichole Koehler and Bobbie Rose Parrell
(<https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=2131&context=etd>)

Here is how the results appear:

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Highlight the conclusions, research methods and considerations about reliability for the below papers. Also, highlight the common trends and findings among the three papers.

"The Effects of Social Media on Mental Health: A Proposed Study", by Grant Sean Bossard

"The Impact of Social Media on Mental Health", by Vardanush Palyan

"The Impact of Social Media on Mental Health: a mixed methods research of service providers' awareness", by Sarah Nichole Koehler and Bobbie Rose Parrell



1. "The Effects of Social Media on Mental Health: A Proposed Study" by Grant Sean Bossard:

- Conclusion: The study proposed to investigate the effects of social media on mental health and hypothesized that excessive social media use would be associated with increased symptoms of anxiety and depression.
- Research Methods: The proposed study used a cross-sectional survey design, with a sample of undergraduate students completing self-report measures of social media use, anxiety, and depression.
- Considerations about reliability: The reliability of the proposed study is unknown, as the study has not yet been conducted.

2. "The Impact of Social Media on Mental Health" by Vardanush Palyan:

- Conclusion: The paper reviewed existing literature on the impact of social media on mental health and found that social media use is associated with increased risk of depression, anxiety, and other mental health problems.
- Research Methods: The paper used a systematic review of existing literature on the topic, analyzing studies that investigated the association between social media use and mental health outcomes.
- Considerations about reliability: The reliability of the paper's findings is strengthened by the systematic review methodology, which is designed to reduce bias and increase the reliability of findings.

3. "The Impact of Social Media on Mental Health: a mixed methods research of service providers' awareness" by Sarah Nichole Koehler and Bobbie Rose Parrell:

- Conclusion: The study investigated service providers' awareness of the impact of social media on mental health and found that many service providers lack knowledge and training on the topic.
- Research Methods: The study used a mixed-methods design, with both qualitative interviews and a quantitative survey administered to service providers.
- Considerations about reliability: The reliability of the study's findings is strengthened by the mixed-methods design, which allows for triangulation of findings from different sources and methods.

Common Trends and Findings:

- All three papers investigate the impact of social media on mental health.
- The papers all find evidence to suggest that social media use is associated with negative mental health outcomes.
- The papers use different research methods, with one proposing a new study, one conducting a systematic review, and one using a mixed-methods design.

Figure 8.5 – Literature analysis and benchmarking of three research papers

Also, in this case, ChatGPT was able to produce a relevant summary and analysis of the three papers provided, including benchmarking among the methods and reliability considerations.

Overall, ChatGPT was able to carry out many activities in the field of literature review, from research question brainstorming to literature synthesis. As always, a **subject-matter expert (SME)** is needed in the loop to review the results; however, with this assistance, many activities can be done more efficiently.

Another activity that can be supported by ChatGPT is the design of the experiment the researcher wants to carry out. We are going to look at that in the following section.

Providing support for the design and framework of your experiment

Experiment design is the process of planning and executing a scientific experiment or study to answer a research question. It involves making decisions about the study's design, the variables to be measured, the sample size, and the procedures for collecting and analyzing data.

ChatGPT can help in experiment design for research by suggesting to you the study framework, such as a randomized controlled trial, quasi-experimental design, or a correlational study, and supporting you during the implementation of that design.

Let's consider the following scenario. We want to investigate the effects of a new educational program on student learning outcomes in mathematics. This new program entails **project-based learning (PBL)**, meaning that students are asked to work collaboratively on real-world projects, using math concepts and skills to solve problems and create solutions.

For this purpose, we defined our research question as follows:

How does the new PBL program compare to traditional teaching methods in improving student performance?

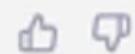
Here's how ChatGPT can help:

Determining study design: ChatGPT can assist in determining the appropriate study design for the research question, such as a randomized controlled trial, quasi-experimental design, or correlational study.

V I want to design an experiment on the following research question, "How does the new PBL program compare to traditional teaching methods in improving student performance?" What kind of study design should I carry on for this goal?



To compare the effectiveness of the new project-based learning program and traditional teaching methods in improving student performance, a randomized controlled trial (RCT) study design would be appropriate.



In an RCT, participants are randomly assigned to either the experimental group (in this case, the project-based learning program) or the control group (traditional teaching methods). This helps to ensure that any observed differences in student performance are due to the intervention (project-based learning program) and not other factors such as pre-existing differences in ability or motivation.

Both groups should be as similar as possible in terms of key characteristics, such as age, gender, academic level, and socioeconomic status. Additionally, to minimize the risk of bias, the study should be double-blinded where both the participants and the researchers are unaware of the group assignment.

To measure student performance, a standardized test or a pre- and post-test design can be used. Other factors that could potentially affect performance, such as student motivation, engagement, and satisfaction, should also be assessed through surveys or interviews.

Overall, an RCT study design would provide strong evidence to determine the effectiveness of the new project-based learning program compared to traditional teaching methods in improving student performance.

Figure 8.6 – ChatGPT suggesting the appropriate study design for your experiment

ChatGPT suggested proceeding with a **randomized controlled trial (RCT)** and provided a clear explanation of the reason behind it. It seems reasonable to me to proceed with this approach; the next steps will be to identify outcome measures and variables to consider in our experiment.

Identifying outcome measures: ChatGPT can help you identify some potential outcome measures to determine the results of your test. Let's ask for some suggestions for our study:

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I want to compare the new PBL program with traditional teaching methods in improving student performance in a research study with an RCT. What could be possible outcome measures?



There are several outcome measures that can be used to assess the effectiveness of the new project-based learning program compared to traditional teaching methods. Here are some possible options:

1. Test scores: This can be a straightforward way to measure student performance. Standardized tests can be administered to both groups of students before and after the intervention to compare their performance.
2. Grades: Another measure of student performance is their grades in the subject being studied. Both groups of students can be graded on the same assignments and exams to compare their performance.
3. Attendance: Attendance can be an indicator of student engagement and motivation. Tracking attendance for both groups of students can provide insight into the effectiveness of the intervention.
4. Surveys: Surveys can be used to gather student and teacher feedback on the effectiveness of the new project-based learning program compared to traditional teaching methods. These surveys can include questions about student engagement, motivation, and understanding of the subject matter.
5. Behavioral observations: Observing student behavior in the classroom can provide valuable insights into the effectiveness of the intervention. This can include tracking student participation, engagement, and collaboration during group work.

It is important to select outcome measures that are valid and reliable, and that align with the research question and hypothesis of the study.

Figure 8.7 – Learning outcomes for the given research study

It is reasonable for me to pick test scores as the outcome measure.

Identifying variables: ChatGPT can help the researcher to identify the independent and dependent variables in the study:

V

I want to compare the new project-based learning program with traditional teaching methods in improving student performance in a research study with a RCT. What variables should I include in my study?



To compare the new project-based learning program with traditional teaching methods in improving student performance in an RCT, the following variables could be included:

1. Independent variable: Teaching method (project-based learning program or traditional teaching method)
2. Dependent variable: Student performance (measured by a standardized test or other relevant assessment)
3. Control variables:
 - Age and grade level of the students
 - Socioeconomic status of the students
 - Prior academic achievement of the students
 - Teacher experience and qualifications
 - Classroom environment and resources

It is important to ensure that the groups being compared (project-based learning program and traditional teaching method) are similar in terms of these control variables to isolate the effects of the teaching method on student performance.

Figure 8.8 – ChatGPT generating variables for the given study

Note that ChatGPT was also able to generate the type of variables, called **control variables**, that are specific to the study design we are considering (RCT).

Control variables, also known as **covariates**, are variables that are held constant or are controlled in a research study in order to isolate the relationship between the independent variable(s) and the dependent variable. These variables are not the primary focus of the study but are included to minimize the effect of confounding variables on the results. By controlling these variables, researchers can reduce the risk of obtaining false positive or false negative results and increase the internal validity of their study.

With the preceding variables, we are ready to set up our experiment. Now we need to select participants, and ChatGPT can assist us with that.

Sampling strategy: ChatGPT can suggest potential sampling strategies for the study:

 I need to select the participant for my RCT about the effectiveness of a new project-based learning program in improving student performance, compared with traditional teaching methods. what sampling strategy should I use?

 For an RCT, the recommended sampling strategy is random sampling. This means that participants are selected randomly from the population being studied, ensuring that each member of the population has an equal chance of being selected. Random sampling helps to reduce bias and increase the generalizability of the study findings to the larger population.

In this case, you could use a random sampling strategy to select participants from the population of students who will be included in the study. This could involve randomly selecting students from a list of eligible participants or using a random number generator to select participants. However, it's important to ensure that the sample size is large enough to provide sufficient statistical power for the study.

Figure 8.9 – RCT sampling strategy suggestion from ChatGPT

Note that, in a real-world scenario, it is always a good practice to ask AI tools to generate more options with explanations behind them, so that you can make a reasoned decision. For this example, let's go ahead with what ChatGPT suggested to us, which also includes suggestions about the population of interest and sample size.

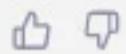
Data analysis: ChatGPT can assist the researcher in determining the appropriate statistical tests to analyze the data collected from the study, such as ANOVA, t-tests, or regression analysis.

V

I'm conducting an experiment with RCT about the effectiveness of a new project-based learning program in improving student performance, compared with traditional teaching methods. The outcome measure is score test, and the sampling strategy is random sampling. What statistical test should I use to assess the statistical significance of my results? elaborate.



Since the outcome measure is a continuous variable (i.e., scores), the appropriate statistical test for analyzing the results of your experiment would be a two-sample t-test. Specifically, you would perform an independent samples t-test, which is used to compare the means of two independent groups. In this case, the two groups are the students who received the new project-based learning program and those who received traditional teaching methods.



The independent samples t-test compares the means of the two groups and provides a p-value, which indicates the probability of obtaining a difference between the means as large as the one observed in the study, assuming that there is no difference between the two groups. If the p-value is less than the chosen significance level (e.g., 0.05), we can conclude that the difference between the means is statistically significant, and that the new project-based learning program had a significant impact on student performance compared to traditional teaching methods.

It's important to note that when performing a t-test, certain assumptions must be met, such as normality of the outcome measure and equal variances between the two groups. These assumptions can be checked using diagnostic tests, such as the Shapiro-Wilk test for normality and Levene's test for equal variances. If the assumptions are not met, alternative non-parametric tests, such as the Mann-Whitney U test, may be more appropriate.

It's also important to report effect sizes along with the p-value, as effect sizes provide information about the magnitude of the difference between the two groups, and can help interpret the practical significance of the results. Common effect sizes used in t-tests include Cohen's d and Hedges' g.

Figure 8.10 – ChatGPT suggests a statistical test for a given study

Everything suggested by ChatGPT is coherent and finds confirmation in papers about how to conduct a statistical test. It was also able to identify that we are probably talking about a continuous variable (that is, scores) so that we know that all the information ahead is based on this assumption. In the case that we want to have discrete scores, we might adjust the prompt by adding this information, and ChatGPT will then suggest a different approach.

The fact that ChatGPT specifies assumptions and explains its reasoning is key to making safe decisions based on its input.

In conclusion, ChatGPT can be a valuable tool for researchers when designing experiments. By utilizing its **natural language processing (NLP)** capabilities and vast knowledge base, ChatGPT can help researchers select appropriate study designs, determine sampling techniques, identify variables and learning outcomes, and even suggest statistical tests to analyze the data.

In the next section, we are going to move forward in exploring how ChatGPT can support researchers, focusing on bibliography generation.

Generating and formatting a bibliography

ChatGPT can support researchers in bibliography generation by providing automated citation and reference tools. These tools can generate accurate citations and references for a wide range of sources, including books, articles, websites, and more. ChatGPT knows various citation styles, such as APA, MLA, Chicago, and Harvard, allowing researchers to select the appropriate style for their work. Additionally, ChatGPT can also suggest relevant sources based on the researcher's input, helping to streamline the research process and ensure that all necessary sources are included in the bibliography. By utilizing these tools, researchers can save time and ensure that their bibliography is accurate and comprehensive.

Let's consider the following example. Let's say we finalized a research paper titled *The Impact of Technology on Workplace Productivity: An Empirical Study*. During the research and writing process, we collected the following references to papers, websites, videos, and other sources that we need to include in the bibliography (in order, three research papers, one YouTube video, and one website):

The second machine age: Work, progress, and prosperity in a time of brilliant technologies. Brynjolfsson, 2014. <https://psycnet.apa.org/record/2014-07087-000>

Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud. Demirkhan, 2013. Pages 412-421. <https://www.sciencedirect.com/science/article/pii/S0167923612001595abs/pii/S0167923612001595>

The Impact of Technostress on Role Stress and Productivity. Tarafdar. Pages 300-350. 2014. <https://www.tandfonline.com/doi/abs/10.2753/MIS0742-1222240109>

The big debate about the future of work, explained. Vox.

<https://www.youtube.com/watch?v=TUmyygCMMGA>

The Impact Of Technology And Automation On Today's Businesses". , Forbes. 2021. The Impact Of Technology And Automation On Today's Businesses ([forbes.com](https://www.forbes.com)), Forbes. 2021.

Obviously, we cannot have the preceding list in our research paper; we need proper formatting for it. To do so, we can provide ChatGPT with the raw list of references and ask it to regenerate it with the specific format, for example, APA style, the official style of the **American Psychological Association (APA)**, commonly used as a reference format style in education, psychology, and social sciences.

Let's see how ChatGPT works with that:

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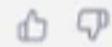
I have the following links as reference for my bibliography:

- "The second machine age: Work, progress, and prosperity in a time of brilliant technologies." Brynjolfsson, 2014. <https://psycnet.apa.org/record/2014-07087-000>
- "Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud." Demirkan, 2013. Pages 412-421. <https://www.sciencedirect.com/science/article/abs/pii/S0167923612001595>
- "The Impact of Technostress on Role Stress and Productivity". Tarafdar, 2014. Pages 300-350. <https://www.tandfonline.com/doi/abs/10.2753/MIS0742-1222240109>
- "The big debate about the future of work, explained". Vox, 2017. <https://www.youtube.com/watch?v=TUmyygCMMGA>
- "The Impact Of Technology And Automation On Today's Businesses". Tim T. Mercer, Forbes. 2021. The Impact Of Technology And Automation On Today's Businesses (forbes.com)

Regenerate those links with APA format. If you don't know some details (like the month and day of publication) don't generate them.



• Brynjolfsson, E. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. Retrieved from <https://psycnet.apa.org/record/2014-07087-000>



• Demirkan, H. (2013). Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud. MIS Quarterly, 37(4), 412-421.

<https://doi.org/10.1016/j.dss.2012.05.048>

• Tarafdar, M. (2014). The impact of technostress on role stress and productivity. Journal of Management Information Systems, 31(1), 301-328. <https://doi.org/10.2753/MIS0742-1222310109>

• Vox. (2017). The big debate about the future of work, explained. [Video]. YouTube. <https://www.youtube.com/watch?v=TUmyygCMMGA>

• Mercer, T. T. (2021). The impact of technology and automation on today's businesses. Forbes. <https://www.forbes.com/sites/forbestechcouncil/2021/05/20/the-impact-of-technology-on-workplace-productivity/?sh=1b80a8b875a6>

Figure 8.11 – A list of references generated in APA format by ChatGPT

Note that I specified not to add details if ChatGPT doesn't know them. Indeed, I noticed that sometimes ChatGPT was adding the month and day of publication, making some mistakes.

Other interesting assistance ChatGPT can provide is that of suggesting potential reference papers we might want to quote. We've already seen in the first paragraph of this chapter how ChatGPT is able to brainstorm relevant literature before the writing process; however, once the paper is done, we might have forgotten to quote relevant literature, or even not be aware of having quoted someone else's work.

ChatGPT can be a great assistant in brainstorming possible references we might have missed. Let's consider once more our paper *The Impact of Technology on Workplace Productivity: An Empirical Study*, which has the following abstract:

This empirical study examines the impact of technology on workplace productivity. The study aims to determine the extent to which technology has affected productivity in the workplace and to identify the specific technologies that have had the greatest impact. A survey was conducted among employees of various industries and the results were analyzed using regression analysis. The findings indicate that technology has a significant positive effect on workplace productivity, with the most impactful technologies being those that facilitate communication, collaboration, and task management. The study concludes that organizations should continue to invest in technology that supports these functions to maximize productivity in the workplace.

Let's ask ChatGPT to list all the possible references that might be related to this kind of research:

v List all the possible references (papers, articles, videos, blogs etc.) that might be related to the previous abstract



Sure, here are some possible references that might be related to the abstract "The Impact of Technology on Workplace Productivity: An Empirical Study":

- Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W. W. Norton & Company.
- Brynjolfsson, E., & McAfee, A. (2011). *Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy*. Digital Frontier Press.
- Demirkan, H., Spohrer, J. C., & Krishna, V. (2011). Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud. *Decision Support Systems*, 51(1), 412-421.
- McAfee, A., & Brynjolfsson, E. (2012). Big data: the management revolution. *Harvard business review*, 90(10), 61-67.
- McAfee, A., & Brynjolfsson, E. (2017). *Machine, Platform, Crowd: Harnessing Our Digital Future*. W. W. Norton & Company.
- OECD. (2016). The productivity-inclusiveness nexus. OECD.
- Pew Research Center. (2018). The future of work and automation.
<https://www.pewresearch.org/internet/2018/03/21/the-future-of-work-and-automation/>
- Ruggles, R., & Brodie, M. (2018). Technological change and the future of work. Brookings Institution. <https://www.brookings.edu/wp-content/uploads/2018/01/ed-technological-change-and-the-future-of-work.pdf>
- Tarafdar, M., Tu, Q., Ragu-Nathan, T. S., & Ragu-Nathan, B. S. (2015). The impact of technostress on role stress and productivity. *Journal of Management Information Systems*, 31(1), 301-328.
- World Economic Forum. (2018). The future of jobs report 2018. World Economic Forum.
<https://www.weforum.org/reports/the-future-of-jobs-report-2018>

Figure 8.12 – List of references related to the provided abstract

You can also repeat this process with other sections of your paper, to make sure you are not missing any relevant references to include in your bibliography.

Once you have your study ready, you will probably need to present it with an elevator pitch. In the next section, we will see how ChatGPT can also support this task.

Generating a presentation of the study

The last mile of a research study is often that of presenting it to various audiences.

This might involve preparing a slide deck, pitch, or webinar where the researcher needs to address different kinds of audiences.

Let's say, for example, that our study *The Impact of Technology on Workplace Productivity: An Empirical Study* is meant for a master's degree thesis discussion. In that case, we can ask ChatGPT to produce a pitch structure that is meant to last 15 minutes and adheres to the scientific method. Let's see what kind of results are produced (as context, I'm referring to the abstract of the previous paragraph):

V

I have to discuss my thesis titled "The Impact of Technology on Workplace Productivity: An Empirical Study" with the previous abstract. Generate a thesis discussion structure that addresses a commission of professors. It should last no longer than 15 minutes. The structure should follow the scientific approach.



Title: "The Impact of Technology on Workplace Productivity: An Empirical Study"

Thesis Discussion Structure:

I. Introduction

- Greeting and introduction of the topic
- Briefly explain the background and significance of the research question

II. Research Objectives and Hypotheses

- State the specific research objectives and hypotheses of the study
- Provide a rationale for the chosen objectives and hypotheses

III. Methodology

- Describe the research design and approach (e.g., empirical study, survey, data collection methods)
- Explain the sample selection process and data collection procedures
- Discuss the variables and measurements used in the study
- Highlight any statistical analysis techniques employed

Figure 8.13 – Thesis discussion generated by ChatGPT

That was impressive! Back in my university days, it would have been useful to have such a tool to assist me in my discussion design.

Starting from this structure, we can also ask ChatGPT to generate a slide deck as a visual for our thesis discussion.

Note

In [Chapter 1](#), we already saw an example of an AI-powered tool, Tome AI, for generating end-to-end slide decks using both text generation and image generation. In this paragraph, we will focus on the text generation component, but keep in mind that there are AI tools that can assist you in the creation of the deck itself too.

Let's proceed with this request:

V generate a slide deck template for the previous pitch.

 Sure! Here's a slide deck template for your thesis discussion presentation: Copy  

Slide 1: Title

- Title of the presentation: "The Impact of Technology on Workplace Productivity: An Empirical Study"
- Your name and affiliation

Slide 2: Introduction

- Greeting and introduction
- Briefly explain the background and significance of the research question

Slide 3: Research Objectives and Hypotheses

- State the specific research objectives and hypotheses of the study
- Provide a rationale for the chosen objectives and hypotheses

Slide 4: Methodology

- Describe the research design and approach
- Explain the sample selection process and data collection procedures
- Discuss the variables and measurements used in the study

Slide 5: Results and Findings

Figure 8.14 – Slide deck structure based on a discussion pitch

Finally, let's imagine that our thesis discussion was outstanding to the point that it might be selected for receiving research funds in order to keep investigating the topic. Now, we need an elevator pitch to convince the funding committee. Let's ask for some support from ChatGPT:

- v Generate an elevator pitch for the previous thesis. The audience is a scientific funding committee. I need to convince the audience that this study deserves funding. The style should be engaging and challenging.

 Are you ready to enter a world where technology and productivity collide? My thesis, "The Impact of Technology on Workplace Productivity: An Empirical Study," will answer the burning questions you have about how technology affects productivity in the workplace. With this study, we will be able to understand the current state of technology and its influence on productivity, identify the obstacles that limit productivity, and provide solutions to maximize the potential of technology in the workplace. The implications of this study are immense, as it will help businesses increase their bottom line and employees increase their job satisfaction. So, are you ready to invest in a study that will revolutionize the workplace as we know it? Like Dislike

Figure 8.15 – Elevator pitch for the given thesis

We can always adjust results and make them more aligned to what we are looking for; however, having structures and frameworks already available can save a lot of time and allows us to focus more on the technical content we want to bring.

Overall, ChatGPT is able to support an end-to-end journey in research, from literature collection and review to the generation of the final pitch of the study, and we've demonstrated how it can be a great AI assistant for researchers.

Furthermore, note that in the field of research, some tools that are different from ChatGPT, yet still powered by GPT models, have been developed recently. An example is humanata.ai, an AI-powered tool that allows you to upload your documents and perform several actions on them, including summarization, instant Q&A, and new paper generation based on uploaded files.

This suggests how GPT-powered tools (including ChatGPT) are paving the way toward several innovations within the research domain.

Summary

In this chapter, we explored the use of ChatGPT as a valuable tool for researchers. Through literature review, experiment design, bibliography generation and formatting, and presentation generation, ChatGPT can assist the researcher in speeding up those activities with low or zero added value, so that they can focus on relevant activities.

Note that we focused only on a small set of activities where ChatGPT can support researchers. There are many other activities within the domain of research that could benefit from the support of ChatGPT, among which we can mention data collection, study participant recruitment, research networking, public engagement, and many others.

Researchers who incorporate this tool into their work can benefit from its versatility and time-saving features, ultimately leading to more impactful research outcomes.

However, it is important to keep in mind that ChatGPT is only a tool and should be used in conjunction with expert knowledge and judgment. As with any research project, careful consideration of the research question and study design is necessary to ensure the validity and reliability of the results.

With this chapter, we also close *Part 2* of this book, which focused on the wide range of scenarios and domains you can leverage ChatGPT for. However, we mainly focused on individual or small team usage, from personal productivity to research assistance. Starting from *Part 3*, we will elevate the conversation to how large organizations can leverage the same generative AI behind ChatGPT for enterprise-scale projects, using OpenAI model APIs available on the Microsoft Azure cloud.

References

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article=2131&context=etd](https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=2131&context=etd)

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<https://www.humata.ai/>

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