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RESEARCH PROJECT REPORT

On

"A psychological study of cognitive offloading in Gen Z employees leading to mental laziness in the AI age."

By

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Research Project Completion Certificate

This is to certify that Mr./ Ms. Shraddha Ganesh Shinde of MBA II Year (Specialization: HRM) at IMCC has completed the Research Project titled A psychological study of Cognitive offloading in Gen Z employees leading to mental laziness in the AI age to my satisfaction and as per the requirements of the two-year full-time MBA (Autonomous) program (Batch 2024-26) of Savitribai Phule Pune University.

Date:

Faculty Guide (Name & Sign)

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HOD – MBA & Deputy Director

External Examiner Name: _____ Sign: _____

Internal Examiner Name: _____ Sign: _____

External VIVA Date: _____

Declaration

I Shraddha Ganesh Shinde Student of MBA **2nd** year, Roll No. 2402183, hereby declare that the Research Project work titled "A psychological study of cognitive offloading in Gen Z employees leading to mental laziness in the AI age." at Kothrud, Pune which has been submitted to Maharashtra Education Society's Institute of Management and Career Courses (MES IMCC) is an original work of the undersigned and has not been reproduced from any other source. I further declare that the material obtained from other sources has been duly acknowledged in the report.

Date: Signature

Place: Pune Shraddha G Shinde

Acknowledgement

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Date: Signature

Place: Pune Shraddha G Shinde

RP 01 – Research Project

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Executive Summary:

The rapid integration of Artificial Intelligence (AI) into the workplace has transformed how employees perform tasks, offering efficiency and speed but also raising concerns about overreliance on technology.

This research explores the psychological phenomenon of cognitive offloading among Gen Z employees and examines its relationship with mental laziness in the AI age. Gen Z, as digital natives, represent the first workforce generation raised in an environment of constant technological connectivity, making them particularly relevant for such a study.

The study adopted a descriptive and analytical research design. Primary data was collected from 103 respondents through a structured online questionnaire focusing on AI usage habits, independent problem-solving effort, and self-reported cognitive behaviors. The data was analyzed using descriptive statistics, charts, and cross-tabulations to identify patterns of reliance and psychological outcomes.

Findings indicate strong evidence of cognitive offloading among Gen Z. A significant proportion of participants reported minimal independent effort before using AI, reduced attention spans, and decreased motivation to brainstorm. Importantly, 65.05% of respondents acknowledged that AI has made them mentally lazy at times, confirming the psychological cost of excessive reliance. Furthermore, only 36.89% expressed confidence in performing tasks without AI, highlighting weakened self-confidence. However, some respondents displayed conscious efforts to regulate AI usage by planning prompts, suggesting opportunities for balanced engagement.

The study concludes that while AI enhances productivity, unchecked dependence risks diminishing critical thinking, creativity, and decision-making skills. To address this, HR strategies such as AI-free interventions, structured prompting workshops, and renewed focus on soft skills are recommended. The willingness of over half the respondents to attend such programs demonstrates a strong appetite for corrective interventions.
This research contributes to understanding the cognitive and psychological effects of AI in the workplace and offers practical insights for organizations aiming to balance technological efficiency with human intelligence.

Keywords:
Cognitive Offloading, Mental Laziness, Artificial Intelligence (AI), Digital Dependency, Critical Thinking, Cognitive Effort, Technological Reliance

1. Introduction:

1.1 Introduction:

AI tools are software applications or platforms that use artificial intelligence techniques to perform various tasks that normally require human intelligence, such as learning, reasoning, and problem-solving. AI tools are those tools which analyze data, recognize patterns, make predictions, or generate content with minimal human intervention. AI tools are widely used across different industries including healthcare sector, finance, marketing, customer service, manufacturing, and many more to improve efficiency, accuracy, and decision-making.

Embracing Artificial intelligence continues to increasingly define the nature of how an organization operates in the 21st century with technology advancements changing us more quickly along. AI has made it easier and faster to offload more complicated thinking tasks. While this can be time saving task it can also make us more dependent on AI tools. Such too much reliance on AI might cause us to think less deeply or forget how to solve problems on our own. From scheduling to decision-making, AI-infused tools are increasingly an employee's crutch for getting through tasks that used to take up too much cognitive energy.

Gen-Z workers, who were born between the mid-1990s and the early 2010s, are the first generation growing up with massive technological progress. Gen Z employees, often called i-Generation or Zoomers, represent the newest generation which is entering the workforce. They have been raised entirely in the digital age, growing up with smartphones, social media, and constant internet connectivity. As a result, they are highly fluent with technology and expect workplaces to integrate modern digital tools seamlessly. Today, they make up about 27–30% of the global workforce and are rapidly increasing in presence. They have early and ongoing assess to technology which has influenced their thought patterns, work ethic, and also their efficiency which is expected from them in the workplace. It has been observed that heavy reliance on AI is making Gen-Z employees relatively more mentally lazy as compared to their activeness before reliance on AI tools.

Mental laziness is a state of cognitive inertia characterized by a reluctance to engage in effortful thinking or challenging mental tasks, often leading to automatic thinking and avoidance of deeper thought. Mental laziness occurs when individuals allow their thoughts to become automatic, often opting for easier paths instead of engaging in critical thinking. As per many studies Gen Z shows low motivation to develop soft skills only 35% of them value interpersonal skills and 31% prioritize emotional intelligence. AI reduces face-to-face communication and mentorship opportunities, potentially cultivating social and collaborative deficits. Mental laziness can significantly impact productivity, creativity, and personal growth.

In organizational settings, mental laziness can limit creativity, adaptability, and independent problem-solving. For Gen Z employees, who are otherwise seen as innovative and tech-savvy, excessive dependence on AI may reduce deeper engagement and critical thinking. This makes it vital to understand how reliance on digital tools shapes work behavior, leading into the discussion of cognitive offloading in the AI age.

One of the new psychological issues in this background is cognitive offloading. What do you mean by this term Cognitive Offloading? Basically it's a human brain tendency to rely on external resources for performing any particular task to reduce the mental effort which is needed for the task. This tendency enables people to work more quickly and with less error, but it is also likely to lead to mental laziness, in which individuals lose motivation or capability for meaningful engagement in critical thinking, problem-solving, and autonomous decision-making.

This tendency of cognitive offloading is more specifically pertinent in the AI age, in which Artificial Intelligence tools are not only aiding but even substituting human judgment in some instances. Unchecked dependence on AI may lead to a generation of employees who are efficient task executors but lack deeper analytical abilities and adaptability in unfamiliar situations. This raises a two-fold challenge to organizations: how to find the perfect balance of benefits of technology-driven productivity without compromising the long-term cognitive and psychological development of their human capital.

This study investigates how cognitive offloading impacts Gen Z employees in professional environments, with a focus on whether heavy reliance on AI leads to reduced cognitive engagement. This research mainly aims to provide insights that bridge the gap between technological advancement and human potential in the modern workplace. By understanding this dynamic, organizations can design strategies that balance technological efficiency with the development of resilient, innovative, and psychologically empowered employees.

1.2 Historical Background:

The roots of cognitive offloading can be traced back to the evolution of human tools and technologies designed to reduce mental effort. Historically, humans have sought external aids to supplement memory and cognition:

Ancient Era: The invention of writing systems allowed people to record knowledge, freeing them from the need to memorize vast amounts of information. Philosophers like Plato even criticized writing for weakening memory.

Medieval to Early Modern Period: Tools such as the abacus, navigational instruments, and mechanical clocks enabled externalization of cognitive processes like calculation and time management.

Industrial Revolution (18th–19th Century): Machines began to replace repetitive labor tasks, but humans still retained primary responsibility for problem-solving and decision-making.

20th Century: The rise of calculators, computers, and the internet significantly increased cognitive outsourcing. Tasks like mathematical computation, data storage, and information retrieval shifted from human memory to digital systems.

21st Century – The AI Era: With smartphones, AI-enabled tools like chatbots, recommendation engines, and workplace automation, cognitive offloading has reached unprecedented levels. Gen Z, born into this digital landscape, has never known a world without instant information access, leading to habitual reliance on technology for even simple cognitive tasks.

1.3 Problem Statement:

The increasing reliance on Artificial Intelligence (AI) and digital technologies has introduced a new psychological challenge in the modern workplace: cognitive offloading. While this practice enables employees to delegate tasks such as remembering, analyzing, or decision-making to technological tools, it may also reduce their intrinsic ability to think critically and independently. Gen Z employees, being digital natives, are more inclined to depend on AI-driven applications, which raises concerns about mental laziness, reduced creativity, and diminished problem-solving capacity. If left unaddressed, this dependence could weaken workforce resilience and innovation, impacting both individual career growth and organizational competitiveness. Despite the growing discourse on technology adoption, limited research has examined the psychological cost of cognitive offloading among Gen Z in professional environments, making it imperative to study this phenomenon in the AI age.

1.4 Research Variables:

1. Independent Variable (IV):

Cognitive Offloading — reliance on AI tools and external aids to reduce internal mental effort.

2. Dependent Variable (DV):

Mental Laziness — reduced motivation for critical thinking, creativity, and problem-solving due to AI reliance.

3. Mediating / Moderating Variables (optional but relevant for HRM context):

i. AI Usage Intensity (frequency and type of AI tools used)

ii. Self-Regulation / Conscious Prompt Planning (effort to engage critically while using AI)

iii. Attention Span and Motivation to Brainstorm (psychological indicators of cognitive engagement)

iv. Confidence Level Without AI (psychological self-reliance indicator)

4. Control Variables (for demographic consistency):

Age, Gender, Education Level, and Occupation Sector of Gen Z respondents.

1.5 Research Objectives:

- To assess the extent to which Gen Z employees rely on AI tools and how this impacts their analytical and critical thinking abilities and whether it leads to mental laziness.

  This objective tries to examine the dependency on AI tools for day-to-day tasks at the workplace such as decision-making, problem-solving, and memory-related activities. It

further aims to understand whether this reliance enhances efficiency while simultaneously diminishing independent analytical skills and critical reasoning.

- To study and understand HR strategies that balance AI usage with active thinking and continuous learning among Gen Z employees.

  This objective focuses on developing practical recommendations for organizations to integrate AI tools effectively without compromising employees' cognitive ability and growth. The aim is to design HR interventions, training programs, and workplace policies that encourage innovation, critical engagement, and continuous learning while still leveraging the benefits of AI technology.

1.6 Hypotheses:

H_1 (Alternative Hypothesis): There is a significant relationship between AI usage and mental laziness among Gen Z employees.

H_0 (Null Hypothesis): There is no significant relationship between AI usage and mental laziness among Gen Z employees.

1.7 Significance Of The Study:

This study is important because it looks at a new kind of challenge in today's tech-savy workplaces. While technology and AI make work easier, they may also cause employees, especially Gen Z to depend too much on external tools. In future, this can affect how they make important decisions, think effectively and learn new things. So, for whom this study is beneficial;

For Employees: Gen Z workers become aware of their own habits while using AI and reflect on whether it is helping them grow or making them overly dependent and mentally lazy.
For Organizations: The findings will guide HR managers and leaders in designing training programs and work practices that keep employees both tech-savvy and mentally active which is important for any organization to thrive.
For the Academic: Very few studies are currently available on how cognitive offloading influences psychology and work behavior in the AI age, especially focusing on the Gen Z workforce.
For the Future Workplace: By highlighting both the benefits and risks of relying on AI, the study will provide insights that help balance efficiency with human creativity, resilience, and continuous learning.

1.8 Scope and Limitations:

Scope of the Study -

This research focuses on understanding how Gen Z employees rely on AI tools in their workplace and how this reliance affects their thinking abilities. The study specifically examines the psychological aspect of cognitive offloading and its link to mental laziness in the AI age. It also looks at the role of HR in creating strategies that encourage active learning and critical thinking while still using technology effectively. The scope is limited to Gen Z employees working in different sectors and does not cover older generations or non-working students.

Limitations of the Study -

This study uses a convenience sampling method, so the results may not represent all Gen Z employees across different industries.

Data collection is done through self-reported questionnaires, which may include personal bias or socially desirable answers.

The research is limited to the responses available within a fixed time frame, which may restrict the sample size.

Since AI and workplace practices keep changing rapidly, the findings reflect the situation at present and may evolve in the future.

In conclusion, the first chapter established the foundation of the study by highlighting the growing influence of Artificial Intelligence on modern workplaces and its psychological impact on Gen Z employees. It outlined how cognitive offloading—though beneficial for efficiency—may gradually lead to mental laziness and reduced critical thinking among young professionals who have grown up in a digitally dependent environment. The chapter also presented the research problem, objectives, hypotheses, significance, and scope of the study, emphasizing the need to examine this emerging issue from both psychological and HRM perspectives. By identifying the challenges of technological overreliance and the importance of maintaining human cognitive strength, this study sets the stage for a deeper academic exploration.
The next chapter, Literature Review, builds upon this foundation by examining existing theories, empirical studies, and research findings related to cognitive offloading, mental laziness, and AI dependency, thereby providing a strong theoretical base for the current investigation.

2. Literature Review:

2.1 Introduction To Literature Review:

Cognitive offloading; the use of external resources (notes, phones, search engines, or AI) to reduce internal cognitive demand has become a central concept for understanding how digital tools reshape thinking, memory, and effort. Below I synthesize ten high-impact papers (classic theory, systematic reviews, empirical and AI-era work) to map what we know, where gaps remain, and how this informs a study of Gen Z employees and mental laziness.

2.2 Literature Review On:

Foundations: the Google effect and theoretical framing

Sparrow, Liu, and Wegner's (2011) seminal paper demonstrated the "Google effect": when people expect information to be easily retrievable online, they preferentially remember where to find information rather than the information itself. This finding established that external availability of information changes memory encoding and retrieval strategies, and it anchors most later work on cognitive offloading. The paper is essential for defining operational constructs (offloading vs. internal memory) and for arguing that reliance on external stores represents a shift in cognitive ecology.

Building on this, Risko and colleagues provide a theoretical and empirical review of cognitive offloading, synthesizing mechanisms (metacognitive judgments, perceived task difficulty, cost–benefit calculations) that prompt people to offload and summarizing cognitive consequences such as reduced practice and altered monitoring. Their metacognitive framework is particularly useful for forming hypotheses about when and for whom offloading leads to reduced cognitive engagement (i.e., "mental laziness").

Scope and synthesis: systematic reviews and meta-analyses

Systematic reviews and meta-analyses consolidate the growing, sometimes inconsistent literature. Pandey et al.'s 2023 decade review organizes methodological paradigms (intention-offloading tasks, transactive memory paradigms, reminder-setting designs) and highlights population and task gaps that an MBA workplace-focused study can address. A 2024 Frontiers meta-analytical review further quantified "Google effects," showing robust associations between intensive internet-search behavior and changes in memory performance and cognitive strategy use — and pointed to moderators such as prior internet familiarity and device type (mobile vs. desktop). These syntheses justify treating cognitive offloading as measurable, situationally variable, and moderated by user differences — all critical for an empirical Gen Z workplace design.

Individual differences and task paradigms

Meyerhoff et al. (2021) examined individual differences across offloading paradigms and showed that people vary systematically in their tendency to offload (traits, working memory capacity, metacognitive beliefs). This literature signals the need to measure moderators (e.g., WM capacity, metacognition, habitual device use) in any study claiming cognitive decline or "laziness" — what looks like reduced effort may be an adaptive reallocation of cognitive resources. Related meta-analyses on technology and cognition point to nuanced effects by age and baseline ability, which is important when focusing on Gen Z employees who grew up with ubiquitous devices.

Consequences: performance vs. engagement tradeoffs

A recurring theme in the literature is a tradeoff: offloading can boost immediate performance (accuracy, speed) but reduce deeper learning, retention, or cognitive control over time. Several empirical studies document reduced spontaneous recall or weaker encoding after relying on external aids; others show that offloading may lower cognitive effort metrics (self-reported cognitive engagement, time-on-task) — which is the core of the "mental laziness" claim. Meta-analytic work suggests these effects vary by task type (rote facts versus reasoning), which helps shape hypotheses about the kinds of workplace tasks likely to suffer when AI is heavily used.

AI-era evidence: generative AI and cognitive effort

Very recent work begins to test offloading specifically onto generative AI. Chen et al. (2025) experimentally investigated how students collaborating with generative-AI tools allocated cognitive effort and found reductions in measured cognitive effort in some conditions, though performance outcomes were mixed (sometimes higher performance despite lower effort). Gerlich (2025) frames AI-tool usage as a societal-level offloading force that can mediate declines in critical thinking if users treat AI outputs uncritically. These AI-era studies are valuable for an MBA thesis: they provide contemporary methods (human–AI collaboration tasks, cognitive-effort scales) and show the need to separate performance outcomes from engagement and longer-term skill retention.

Gen Z and contextual relevance

A handful of conceptual and early empirical pieces have focused on Gen Z's attitudes and patterns of AI use, arguing that their seamless integration of AI into everyday tasks makes them a high-risk/high-opportunity group for studying offloading. Conceptual frameworks for Gen Z AI dependency highlight potential cognitive costs but emphasize contextual moderators (motivation, workplace supervision, task meaningfulness). These works justify sampling Gen Z employees and measuring workplace-specific outcomes

(problem-solving autonomy, initiative, learning transfer) rather than only laboratory memory tests.

HRM and workplace relevance of cognitive offloading

Beyond individual cognitive consequences, organizational studies have started to highlight how AI-mediated offloading impacts workplace behaviors. Deloitte's (2024) Gen Z and Millennial Survey reports that younger employees demonstrate both enthusiasm and dependency toward AI, with many relying on AI assistants for everyday decision-making at work.

The Society for Human Resource Management (SHRM, 2023) has raised concerns that unchecked AI reliance could diminish employees' problem-solving autonomy and critical thinking, creating a skills gap over time.

Similarly, PwC's Future of Work Report (2024) emphasizes that while Gen Z employees are highly adaptive to digital tools, overuse risks weakening experiential learning and independent judgment. Academic work in HRM further shows that AI-assisted learning platforms can improve efficiency but reduce opportunities for deliberate practice, potentially fostering passivity if employees are not encouraged to reflect and engage deeply.

Together, these insights reinforce the workplace relevance of studying cognitive offloading: what begins as a cognitive shortcut may evolve into an HR challenge affecting employee engagement, training effectiveness, and long-term talent development.

2.3 Gaps and direction for the present study:

Although prior work has established the mechanisms and consequences of cognitive offloading, important gaps remain in understanding its impact within organizational contexts. Much of the psychological research focuses on laboratory tasks, student samples, or short-term recall experiments, while HR and workplace studies often address AI adoption in broad terms without measuring underlying cognitive processes. There is limited integration between these two strands of literature.

Specifically, three gaps stand out. First, there is a lack of empirical studies examining how Gen Z employees, as a distinct workforce segment, experience cognitive offloading in real or simulated workplace tasks. Second, while HR reports acknowledge concerns such as reduced problem-solving autonomy and skill development, few studies explicitly test whether AI reliance mediates a decline in cognitive engagement or fosters patterns that can be described as "mental laziness." Third, organizational factors such as training design, supervision, and workplace culture have rarely been modeled as potential moderators of the offloading engagement relationship.

The present study addresses these gaps by focusing on Gen Z employees in the AI age, linking psychological constructs of cognitive offloading with HRM concerns about critical thinking, learning, and engagement. By doing so, it aims to bridge disciplinary perspectives and provide insights relevant both for theory and for practical HR strategies.

2.4 Summary Of Literature Review:

The review of literature highlights that cognitive offloading has become a defining psychological phenomenon in the digital era, where individuals increasingly rely on external tools like Artificial Intelligence (AI) to reduce mental effort. Earlier studies by Sparrow et al. (2011) and Risko & Gilbert (2016) established that constant access to information changes how people think, remember, and make decisions. While such technological dependence improves efficiency and accuracy, it also reduces intrinsic motivation to think critically and independently. Recent research in the AI age, such as by Chen et al. (2025) and Gerlich (2025), confirms that when users depend heavily on AI systems, their cognitive engagement and effort levels decline, even if their task performance appears improved.

Organizational studies by Deloitte (2024), PwC (2024), and SHRM (2023) extend this understanding to the workplace context, especially among Gen Z employees. As digital natives, Gen Z are highly comfortable with technology but also more prone to over-reliance on it. Surveys show that this generation frequently uses AI for decision-making, writing, and brainstorming—activities that traditionally demanded deeper thinking. This dependence raises concerns about reduced attention spans, mental laziness, and loss of creativity in the long run. Despite these findings, limited research has explored the psychological and behavioral dimensions of AI reliance among Gen Z employees within actual organizational environments.

Most existing studies remain theoretical or focused on student populations rather than professionals. Similarly, HRM literature tends to address AI from a technological adoption viewpoint rather than as a cognitive or psychological challenge. This gap reveals the need for a focused investigation that connects cognitive psychology with HR practices, helping organizations balance technological advancement with human capability development.

Thus, the present study seeks to bridge this gap by examining how cognitive offloading through AI usage affects Gen Z employees' mental engagement, critical thinking, and self-confidence. It also aims to propose HR strategies that encourage mindful AI use and restore active learning. The next chapter, Research Methodology, outlines the design, data collection, and analytical tools used to study this relationship systematically.

3. Research Methodology:

3.1. Research Design:

This study adopts a descriptive and analytical research design which aims to describe how Gen Z employees use AI tools in their daily work and analyze how much this reliance on such AI tools affect their cognitive abilities such as memory, problem-solving, and critical thinking.

3.2 Population and Sample:

Population: Gen Z employees (born between the mid-1990s and early 2010s) currently working in different organizations.

Sample Size: 103 respondents

Sampling Method: Convenience sampling has been used, where respondents are chosen based on accessibility and willingness to participate.

Convenience sampling was chosen for this study primarily due to practical considerations such as time constraints, limited resources and ease of access to participants. Since the target population (Gen-Z employees) is dispersed across various organizations, using a probability-based sampling method would have required extensive time, effort, and coordination which was not feasible within the scope of this research.

3.3 Data Collection:

- Primary Data: A structured questionnaire distributed online via Google Forms. The questionnaire includes multiple-choice questions and Likert-scale questions to measure AI usage, cognitive offloading behaviors, and mental laziness patterns.

- Secondary Data: Data Gathered from research papers, academic journals, articles, and organizational studies related to AI, Gen Z behavior, and workplace psychology.

3.4 Tools Of Data Collection:

Main tool used for data collection is questionnaire. This questionnaire mainly has three sections:

These three sections include:

1. Demographic Information – age, gender, occupation, education.

2. AI usage Habits – Frequency, type of tools used, and dependence level.

3. Cognitive Effect – Questionnaire include questions on critical thinking, problem solving, attention span, and reliance on AI tools for decision making.

3.5 Data Analysis Techniques:

- Data coded and organized in Excel sheet
- Bar charts, pie charts and tables to present demographic data, AI usage, and cognitive offloading.
- Cross-tabulation to study the relationship between demographic factors and AI reliance.

In conclusion, this chapter outlined the methodological framework adopted to investigate the relationship between cognitive offloading and mental laziness among Gen Z employees in the AI age. The study employed a descriptive and analytical design supported by both primary and secondary data sources.

Through a structured questionnaire distributed online, data was gathered from 103 respondents representing diverse professional and educational backgrounds. The chosen methodology ensured a systematic approach to understanding how AI usage habits influence cognitive effort, attention, and independent problem-solving tendencies.

The application of statistical tools such as descriptive analysis, charts, and cross-tabulations enabled the identification of significant behavioral patterns.

The following chapter presents the data analysis and interpretation, offering empirical insights derived from the responses and linking them to the research objectives and hypotheses formulated earlier.

4. Data Analysis & Interpretation:

4.1 Introduction to Data Analysis:

This chapter represents the detailed analysis of the data collected through the research questionnaire. The primary objective of this analysis is to understand the extent to which Gen Z employees rely on AI tools and how this reliance affects their cognitive abilities such as critical thinking, problem-solving, and decision-making; Along with that to understand and find out whether heavy reliance on these tools is making them mentally lazy or not.

The responses collected from participants have been systematically arranged into tables, charts, and graphs for better understanding. Each set of data is interpreted in relation to the research objectives and hypotheses formulated earlier.

The analysis focuses on the following aspects:

- Demographics of respondents (age, gender, education, occupation).
- Patterns of AI usage among Gen Z employees.
- Extent of cognitive offloading in daily tasks.
- Impact on analytical and critical thinking skills.
- Employee attitudes and perceptions regarding AI dependence and mental laziness.

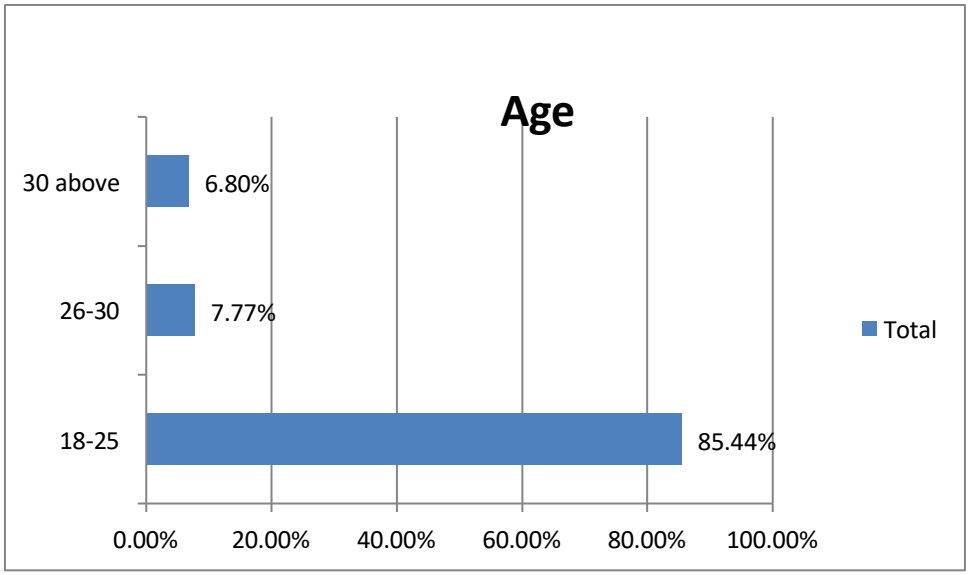
By examining these, this chapter aims to provide insights into whether the convenience of AI usage has led to a tendency of mental laziness among Gen Z employees, and how organizations might address this through some of the HR strategies.

First let's see demographic analysis of respondents. This section will cover aspects like age, gender , education, qualification, industry type respondents working in.

After that we will see analysis of AI knowledge and AI usage among Gen-z.

4.2 Demographic & Question-wise Analysis:

1. Age



Age	Frequency	Percentages
18-25	88	85.44%
26-30	8	7.77%
30 above	7	6.80%
Grand Total	103	100.00%

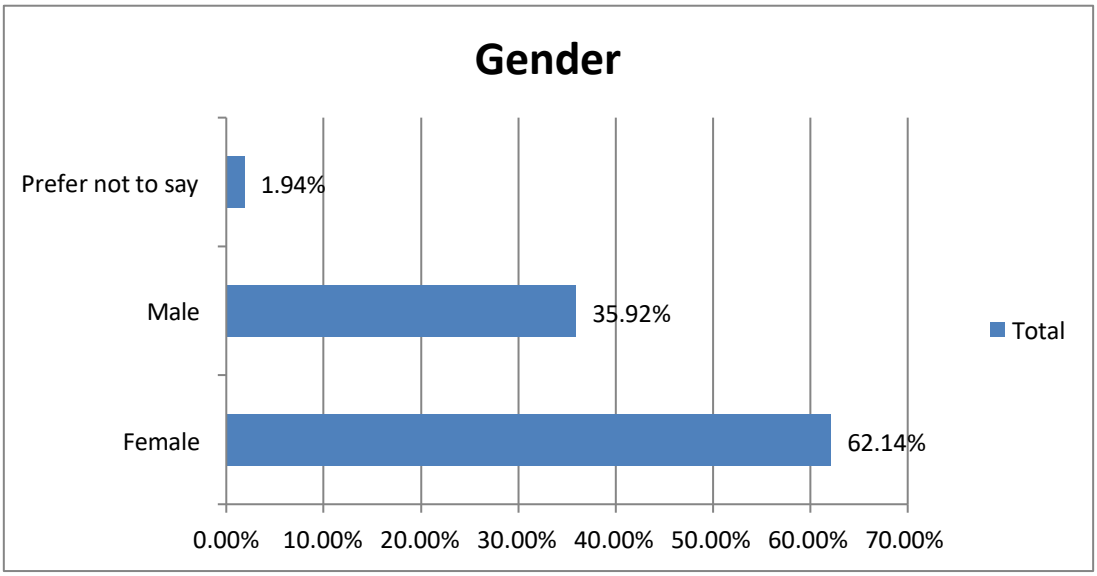
The data collected from questionnaire shows the survey participants are mostly in the age of 18-25; around 85.44% of total responses representing the youngest segment of Gen-Z. This suggests that mostly participants are students and young professionals who are are presently adjusting to emerging technologies such as AI.

The 26–30 age group constitutes the second largest group; that is around 7.77% representing slightly more experienced Gen Z workers who are likely to utilize AI in both professional and personal tasks.

A very small percentage; 6.80% falls under the 30 above category, which indicate that the dataset is seriously biased towards Gen Z respondents of younger ages.

The distribution implies that the study's findings will primarily represent the attitudes and experiences of Gen Z individuals who are younger, who will be more exposed to AI tools at the time of their education and initial career stage.

2. Gender



Gender	Frequency	Percentage
Female	64	62.14%
Male	37	35.92%
Prefer not to say	2	1.94%
Grand Total	103	100.00%

The gender distribution of respondents indicates that a majority of participants in the study are female (62.14%), followed by male respondents (35.92%), and a very small proportion (1.94%) who preferred not to disclose their gender. This gender ratio highlights that female participants were more actively engaged and willing to respond to the research questionnaire compared to their male counterparts.

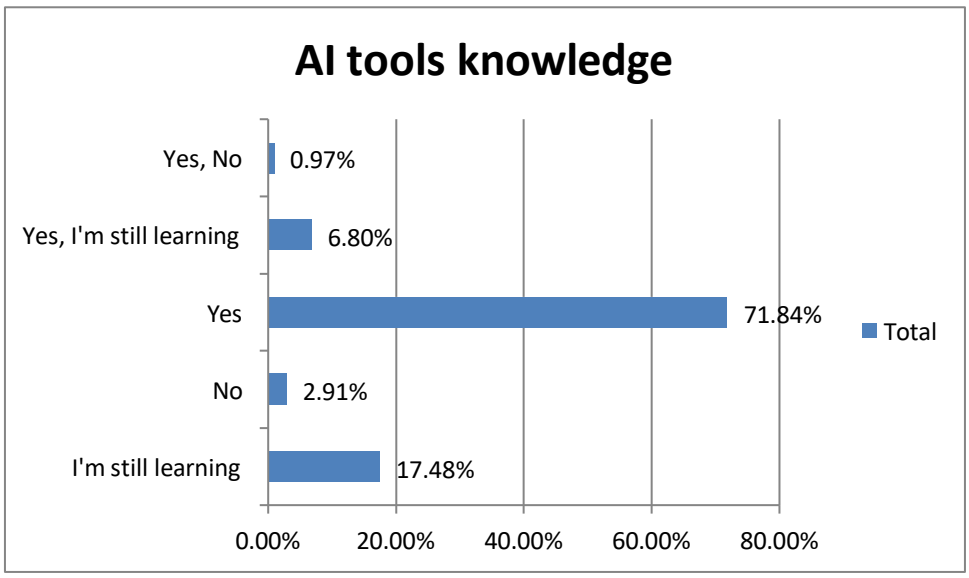
From a research interpretation perspective, this gender balance offers an interesting psychological and behavioral dimension to the study. Studies in workplace behavior often suggest that female employees tend to demonstrate higher engagement in reflective and self-assessment-based research, which could explain their stronger participation. This also allows the study to analyze potential gender differences in cognitive offloading tendencies and AI dependency, since males and females may exhibit distinct patterns of technology adoption and emotional response.

For instance, earlier literature indicates that female employees may show more self-regulation, cautious use of technology, and awareness of over-reliance, whereas males are often quicker adopters of digital shortcuts for efficiency. Hence, the slightly higher participation of females strengthens the study by providing diverse insights into how both genders perceive and manage AI-assisted tasks.

Overall, the gender-wise data reflects a balanced representation that enables comparative interpretation of behavioral trends across male and female respondents. This diversity contributes

to the reliability of the research outcomes, ensuring that conclusions drawn about cognitive offloading and mental laziness are inclusive and reflective of different gender perspectives within the Gen Z workforce.

3. AI Knowledge

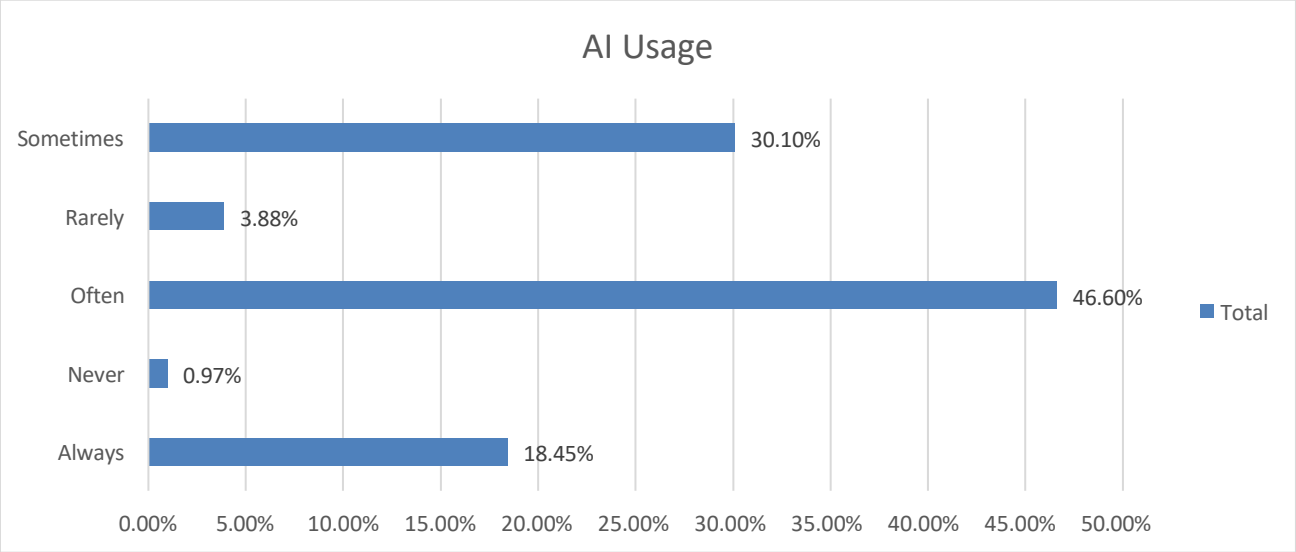


AI Knowledge	Frequency	Percentage
I'm still learning	18	17.48%
No	3	2.91%
Yes	74	71.84%
Yes, I'm still learning	7	6.80%
Yes, No	1	0.97%
Grand Total	103	100.00%

The 71.84% of respondents answered "Yes", which indicate a high level of awareness and familiarity with AI tools among Gen Z.

This shows the fact that Gen-Z are naturally more exposed to new technology advancements and actively experiment with them in both academic and professional contexts. A smaller group selected "I'm still learning", which suggest that they have basic idea about AI tools but may lack deeper knowledge or confidence in using AI tools effectively. Very few respondents answered "No", indicating that AI literacy has already become a common skill in this generation.

4. AI Usage



AI Usage	Frequency	Percentage
Always	19	18.45%
Never	1	0.97%
Often	48	46.60%
Rarely	4	3.88%
Sometimes	31	30.10%
Grand Total	103	100.00%

The responses indicate different levels of reliance on AI tools among Gen Z respondents. Around 46.60% respondents selected using AI tools "often" and 30.10% selected "sometimes", shows that AI has already become important part into their day-to -day academic and professional activities. A smaller proportion indicated "rarely" or "never", suggests that while AI adoption is widespread, it is not yet universal. Specially, a notable segment selected "always", highlighting complete dependency on AI for tasks.

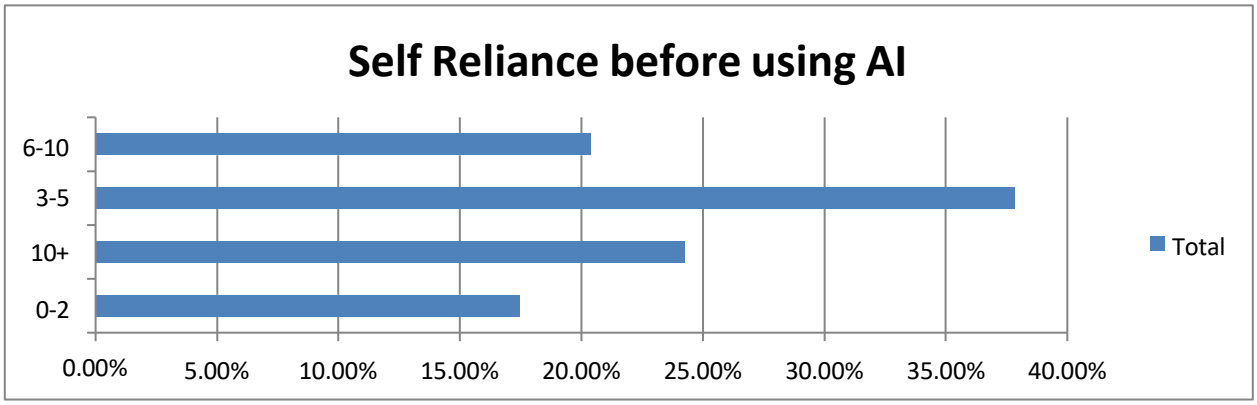
This distribution emphasizes that while most Gen Z individuals view AI as a regular support tool, there is also a growing subgroup of individuals for whom AI has become a habit, which indicates potentially reinforcing patterns of cognitive offloading.
After understanding how frequently Gen Z uses AI tools, it is equally important to examine how much time they invest in independent thinking before using AI tools. This gives insight into their patience level and problem-solving tendency before cognitive offloading.

❖ Distribution of Independent Problem-Solving Time Before AI Use:

The responses show that most Gen Z participants invest 3-5 minutes in independent effort before turning to AI, while a considerable share rely on AI within just 0–2 minutes,

reflecting quick dependency. A relatively smaller group persists for 10+ minutes, indicating stronger self-reliance. Overall, the findings suggest that although some respondents attempt problem-solving on their own, many display a tendency toward minimal effort before cognitive offloading to AI.

Minutes	Self-Reliance Time Before AI Usage
0-2	17.48%
10+	24.27%
3-5	37.86%
6-10	20.39%
Grand Total	100.00%



2. Self-Regulation and Emotional Response in AI Usage:

Statement	Mean	Standard Deviation	Interpretation
Consciously plan prompt	3.49	0.86	Respondents show a moderately positive tendency to plan their AI prompts, indicating average self-regulation.
Feel guilty after using AI	3.30	1.04	Respondents show a neutral to slight feeling of guilt after using AI, suggesting mild emotional response.

After understanding how often Gen Z employees uses AI, it is important to explore their self-regulation and emotional responses while using and interacting with these tools. Questions 19 and 20 in the research questionnaire focus on whether respondents consciously make an effort to give proper prompt for what they actually want and think critically before using AI and whether they experience feelings of guilt when depending on AI for tasks they could handle themselves. These aspects provide deeper insights into the psychological balance between active thinking and cognitive offloading.

Q. "I consciously plan prompts to improve my own thinking"

Mean = 3.49, SD = 0.86

The average mean score of 3.49 indicates that respondents lean toward agreement, suggesting that many Gen Z individuals consciously plan and structure prompts to enhance their own thinking while using AI. The relatively low standard deviation (0.86) shows that responses are fairly consistent, with most participants falling around the "Neutral" to "Agree" range.

This finding shows that although cognitive offloading is common, a significant portion of respondents still show self-regulation and attempt to engage their critical thinking skills. It implies that Gen Z is not entirely passive in AI usage but tries to use AI as a supportive tool rather than as a complete substitute for their own thought process.

Q. "I feel guilty after using AI for tasks I could do myself"

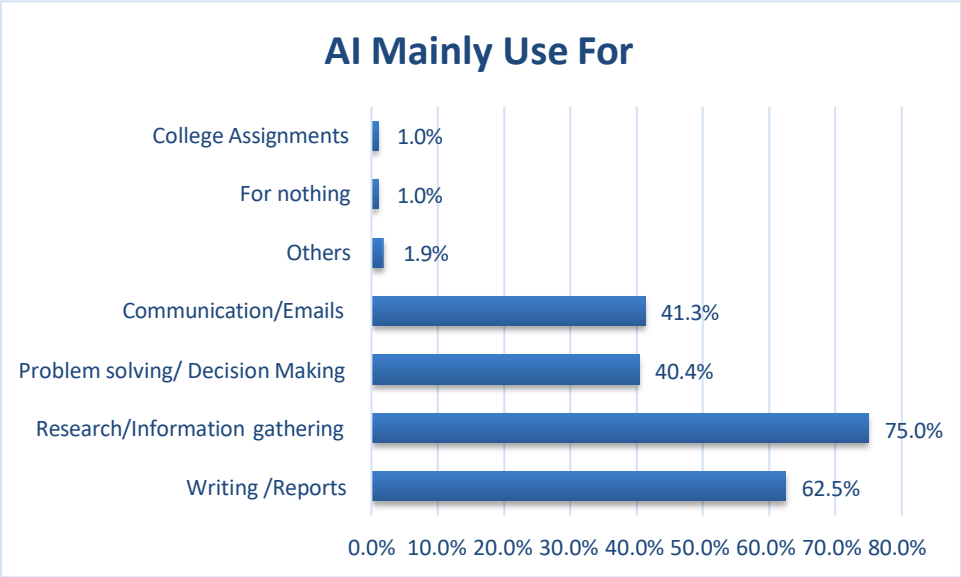
Mean = 3.30, SD = 1.04

Now let's look at this from psychological side. The mean score of 3.30 places respondents in the neutral to slightly agree range, showing that while some Gen Z respondents experience guilt when overusing AI, the overall tendency is mild. The higher standard deviation (1.04) compared to last question indicates that opinions are more spread out, with some respondents feeling no guilt at all, while others strongly agree that AI use causes guilt.

This suggests that emotional responses toward AI use are mixed. While a portion of respondents are concerned about over-reliance on such AI tools and the potential loss of personal effort, at the same time many have normalized AI usage, viewing it as a practical productivity builder rather than something to feel guilty about.

3. Common Applications of AI Among Respondents:

After understanding the frequency of AI usage, it is important to identify the specific areas where Gen Z applies AI tools in their academic and professional lives.



The above analysis reveals that AI tools are most frequently used for research and information gathering with 75% of respondents choosing it, followed closely by writing and report preparation with 62.5%. A significant number of respondents also use AI for problem-solving and idea generation, indicating that AI is viewed as a supportive tool for both academic and creative purposes.

This distribution shows that Gen Z relies on AI not only for efficiency in repetitive work but mostly for cognitive support in higher-order tasks, reinforcing the idea of cognitive offloading.

Overall, the analysis of Q9 in the questionnaire suggests that use of AI tools among Gen Z is not limited to routine support like grammar checks but extends into core cognitive activities, demonstrating both the utility of AI and the potential risk of mental laziness if overused.

Q. "I use AI mainly to:"

Tasks for which AI is mainly used	Responses [in %]
Avoid hard thinking	4.85%
Check my work	5.83%
I don't use ai	0.97%
Learn faster	5.83%
Learn faster, Check my work	3.88%
Save Time	30.10%
Save Time, Avoid hard thinking	10.68%
Save Time, Avoid hard thinking, Check my work	0.97%
Save Time, Avoid hard thinking, Learn faster	4.85%
Save Time, Avoid hard thinking, Learn faster, Check my work	5.83%
Save Time, Check my work	6.80%
Save Time, Learn faster	8.74%
Save Time, Learn faster, Check my work	10.68%
Grand Total	**100.00%**

This analysis shows that the dominant reason Gen Z uses AI is to save time, either alone (30.10%) or in combination with other purposes. When combined with other goals like learning faster (8.74%) or checking work (6.80%), the importance of efficiency becomes even more pronounced. This clearly reflects that time-saving is the main motivation behind using AI tools.

A considerable amount of respondents also selected multi-purpose combinations such as Save Time + Learn Faster + Check my work (10.68%) or Save Time + Avoid Hard Thinking (10.68%). These choices highlight that while efficiency is central, AI is simultaneously being used to reduce cognitive effort.

Smaller proportions of respondents use AI primarily to avoid hard thinking (4.85%), or as a direct tool to learn faster (5.83%) or check work (5.83%), indicating that these are secondary benefits compared to saving time.

Interestingly, only 0.97% reported not using AI at all, suggesting that near-universal adoption exists among Gen Z which we can't ignore.

- Cognitive Offloading Indicator:

The fact that time-saving is the main reason for AI use that is 30.10% + strong combinations shows that Gen Z prefers AI to handle tasks instead of fully engaging themselves.

Options like "Avoid Hard Thinking" that is 4.85% directly, but much higher when combined with other motives like saving time are a clear evidence of cognitive offloading, because respondents consciously transfer mental effort to AI.

- Mental Laziness Indicator:

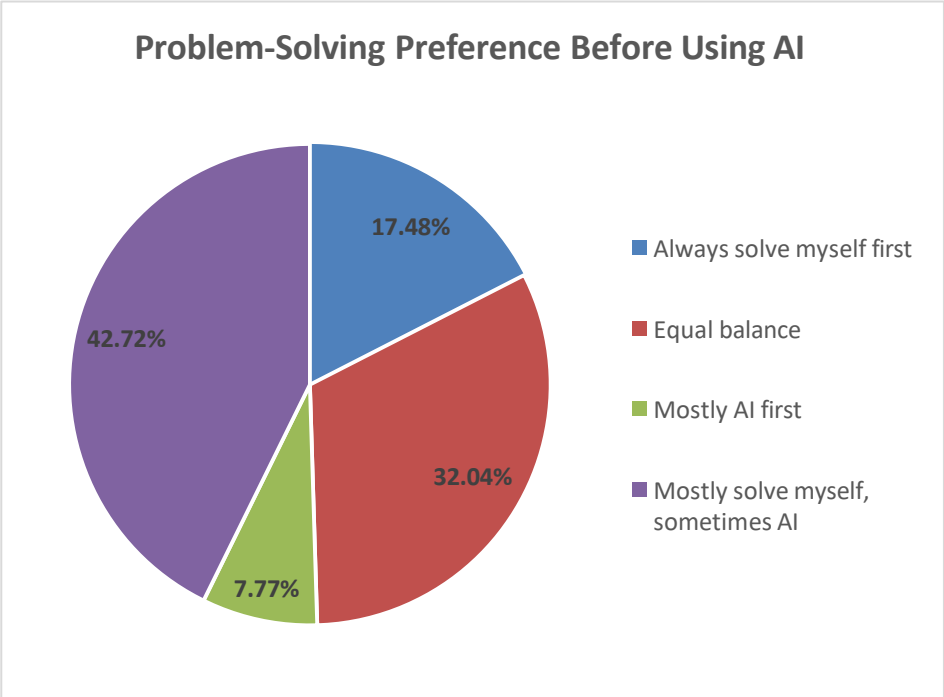
The combination of Saving Time + Avoid Hard Thinking (10.68%) and Saving Time + Avoid Hard Thinking + Learn Faster (4.85%) demonstrates that some respondents not only rely on AI for efficiency but also to escape effortful thinking.

This aligns with the "mental laziness" aspect of research problem, where Gen Z prefer immediate AI solutions rather than exercising patience and deep thinking.

The analysis of responses for Question "I use AI mainly for" strongly support the core research argument. Gen Z respondents primarily rely on AI to save time and reduce effort, with a significant number openly admitting that they use AI to avoid hard thinking. This pattern confirms that AI is functioning as a tool for cognitive offloading, and in certain cases, it is fostering mental laziness, as respondents prefer fast AI-generated solutions over own independent effort.

Q. “When faced with a complex task, do you first try to solve it yourself or directly use AI?”

It is equally important to examine Gen-Z approach when faced with complex tasks, whether they solve the said task by themselves or directly rely on AI.



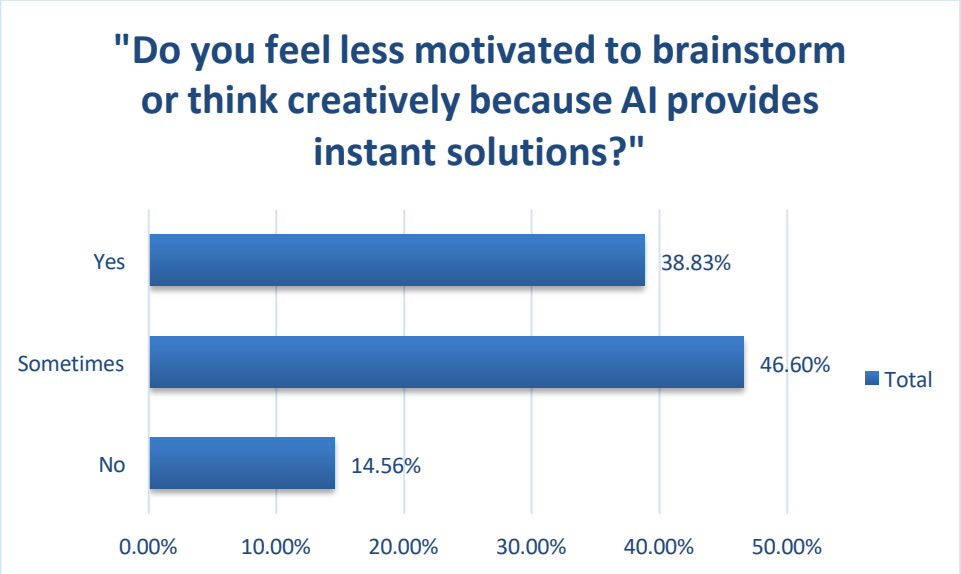
The analysis shows that the largest share of respondents (42.72%) prefer to mostly solve tasks themselves but use AI sometimes, indicating a balanced but cautious approach. Around 32.04% reported maintaining an equal balance between personal effort and AI reliance, while 17.48% always try to solve problems independently first. Only 7.77% admitted that they rely on AI first when faced with complex tasks.

These results suggest that although a majority of Gen Z respondents still attempt some level of independent problem-solving, the fact that nearly 40% either balance equally or lean heavily on AI highlights an underlying tendency toward cognitive offloading. This balance reflects the dual mindset of Gen Z: valuing efficiency and AI support, while also recognizing the importance of exercising their own thinking.

4. Impact of AI on Motivation to Brainstorm and Think Creatively:

Another important dimension to explore whether AI influences Gen-z employees intrinsic motivation to think creatively. Question 14 in the questionnaire investigates if the availability of instant AI-generated solutions discourages brainstorming and original idea generation.

It is an important factor from research point of view to see whether reliance on AI tools reducing employees motivation to think originally which in result leads to mental laziness among Gen-Z employees.



The above results show that 38.83% of respondents admitted that they feel less motivated to brainstorm or think creatively because AI provides instant answers. A much larger group around 46.60% said that this happens sometimes, which indicates a fluctuating but noticeable reduction in intrinsic motivation. Only 14.56% stated that AI does not affect their creative drive at all.

This result suggests that for the most of Gen Z employees, AI has at least some role in reducing their willingness to engage in creative thinking and independent brainstorming. The combined share of Yes and Sometimes (85.43%) highlights a strong presence of cognitive offloading and potential mental laziness, as instant AI responses may be replacing deeper thought processes.

5. Impact of AI on putting Mental Effort in performance of task among Gen-Z:

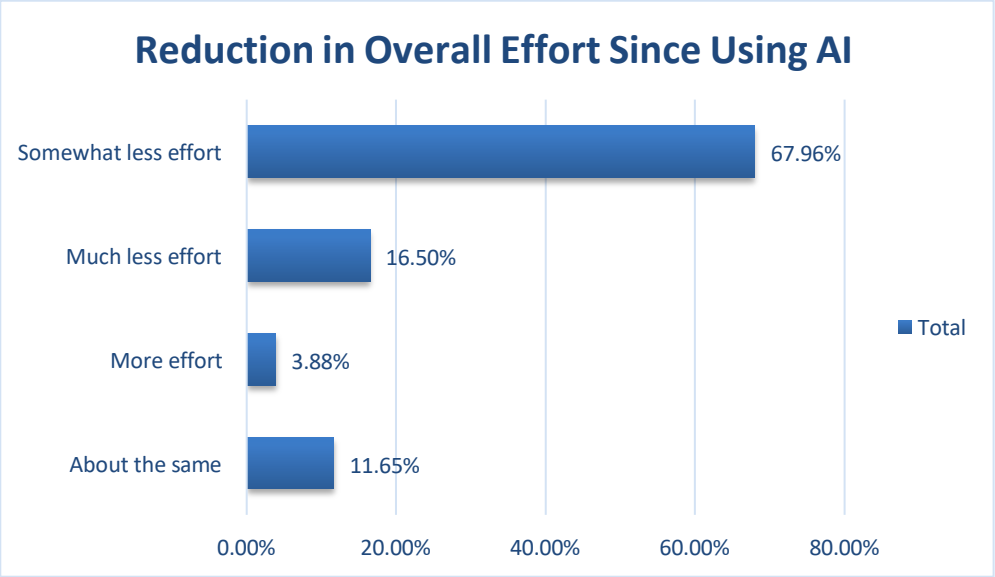
Building on the finding that AI affects motivation to brainstorm, next analysis is whether respondents perceive a reduction in their overall effort levels in tasks after adopting AI.

Since this study investigates whether use of AI tools leads to reduced effort and mental laziness among Gen Z, respondents are asked to self-reflect on whether their overall effort has reduced since adopting AI, making it one of the most direct indicators of effort reduction and laziness.

Effort reduction indicates that tasks previously requiring sustained attention, problem-

solving, or creativity are now being outsourced to AI tools. This confirms the process of cognitive offloading, where individuals shift responsibility for thinking and problem-solving task to technology.

If Gen Z employees/students perceive reduced effort, it suggests potential challenges in workplaces such as reduced persistence, shallow learning and over-dependence on AI tools.



Q. "How much mental effort do you put in when completing a task with AI compared to doing it fully yourself?"

The data collected from respondents reveals that the majority of respondents around 67.96% reported experiencing "somewhat less effort" in their tasks since they began using AI. Additionally, 16.50% admitted to putting in "much less effort", while only a small fraction that is 11.65% felt their effort levels remained the same. Interestingly, 3.88% reported exerting more effort despite AI tools usage.

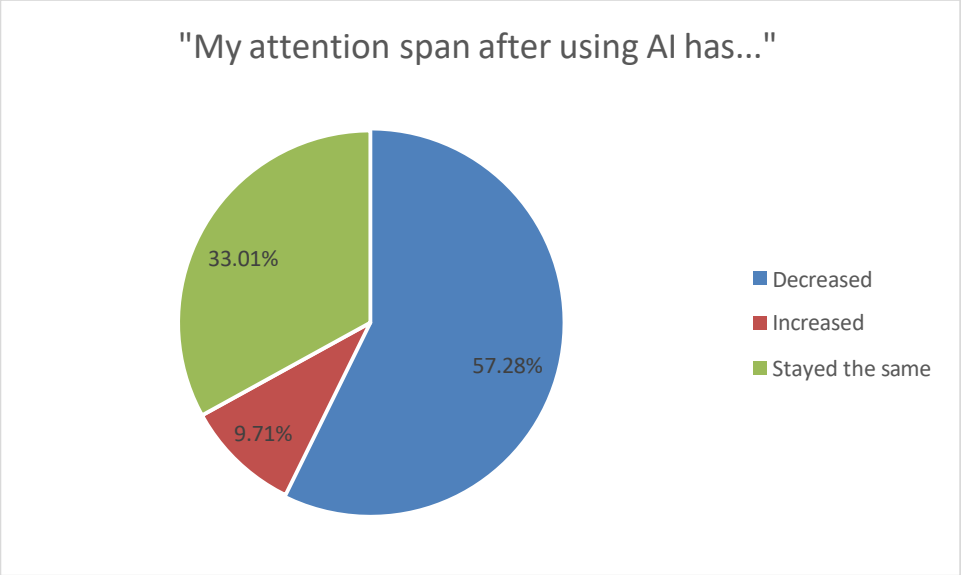
This distribution highlights that for more than 84% of respondents, AI usage has led to at least some level of effort reduction. The dominance of the "somewhat less effort" category suggests that while AI is not completely eliminating independent work, it is significantly lowering the intensity and persistence of effort required to complete tasks.

The findings from this question strongly validate the research hypothesis. With more than four out of five respondents admitting reduced effort, it is evident that AI tools are functioning as enablers of cognitive offloading, which further leads to a noticeable decline in individual mental efforts and contributing to mental laziness among Gen Z.

6. Does AI Shorten Gen Z's Attention Span?

Attention span is the amount of time someone can focus on a single task without distracted. Many studies show that attention span among Gen-z employees is getting shorter day by day.

That's what bring us to another crucial psychological dimension to analyze whether the use of AI impacts Gen-z employees attention span during tasks. Question 16 in the questionnaire focuses on how respondents perceive changes in their concentration levels after relying on AI support, offering insights into whether AI use strengthens efficiency or contributes to reduced focus and mental engagement.



The results show that a majority of respondents (57.28%) reported that their attention span has decreased after using AI during tasks. About 33.01% stated that their attention span has remained the same, while only 9.71% felt that their attention span has increased.

This distribution indicates that for most Gen Z respondents, AI usage is associated with reduced focus and concentration, which can be attributed to the habit of depending on AI for instant answers rather than maintaining prolonged mental engagement. The fact that one-third reported no change suggests that not all users are equally affected, but the dominant trend points toward a negative impact on attention span.

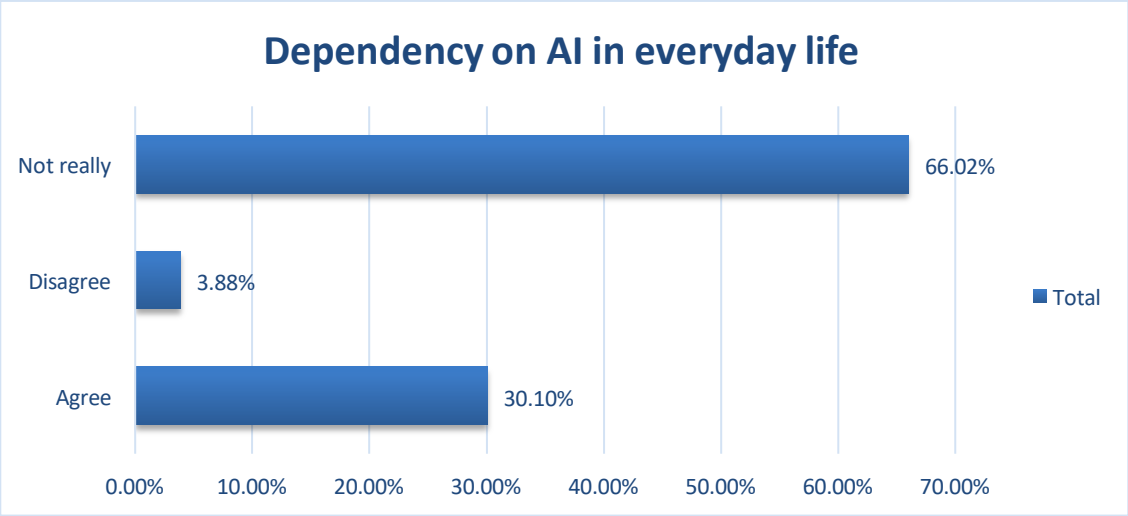
This finding strongly supports research hypothesis that AI contributes to cognitive offloading and mental laziness. A shortened attention span implies that respondents may be less willing to sustain effortful thinking, preferring the speed and ease offered by AI. Over time, this behavioral pattern reflects a decline in cognitive stamina, reinforcing the psychological risk of over-reliance on AI.

As a result, responses to this question provide strong evidence that AI usage is linked to a reduction in attention span for the majority of Gen Z respondents, validating the hypothesis that cognitive offloading is contributing to mental laziness and lower persistence in tasks.

7. Perceived Over-Reliance on AI in Daily Tasks:

It is necessary to explore whether respondents consciously recognize their own dependency on AI in everyday life. This analysis addresses the extent to which Gen Z feels they have become over-reliant on AI for routine tasks.

Q: "I feel over-reliant on AI for everyday tasks"



The analysis shows that a majority of respondents (66.02%) answered "Not really", suggesting that they do not perceive themselves as heavily over-reliant on AI in their daily lives. However, a notable 30.10% openly agreed that they feel dependent on AI, while only 3.88% outright disagreed.

This pattern reflects a mixed perception: while most respondents are not ready to admit complete dependency, nearly one-third of Gen Z respondents recognize a sense of over-reliance on AI for routine activities. This indicates that AI usage has become deeply integrated into everyday functioning, even if individuals downplay its influence.

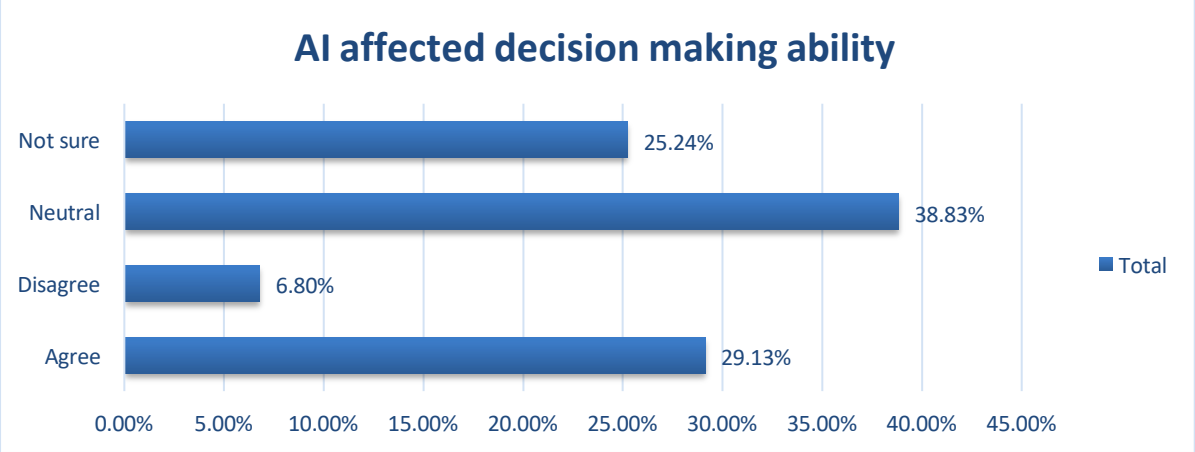
From a research perspective, this question provides critical evidence. Even though the majority claim they are "not really" over-reliant, the 30% who admit dependency confirms the presence of cognitive offloading behavior. This self-awareness of reliance strengthens hypothesis that AI use fosters mental laziness, as those who admit over-reliance are effectively acknowledging a reduction in independent effort.

This highlights that while two-thirds of respondents downplay their dependency, nearly one-third openly admit over-reliance on AI for everyday tasks. This recognition validates the hypothesis by illustrating that cognitive offloading is not only occurring but also consciously acknowledged among Gen Z.

8. Effect of over reliance on AI tools on Gen-z employees decision making ability:

Q: "I feel that my critical decision-making is affected by AI dependence"

After assessing effort, motivation, and dependency, it is essential to understand whether AI reliance is influencing critical decision-making abilities. This question explores respondents' self-perception of how AI impacts their independent judgment.



The analysis shows that 29.13% of respondents agreed that their critical decision-making is affected by AI dependence, while 6.80% disagreed. A significant portion of respondents remained neutral 38.83%, and 25.24% were not sure about the effect.

This distribution suggests that while nearly one-third of Gen Z openly recognize an impact on their decision-making, a large segment either lacks clarity (not sure) or is undecided (neutral). The relatively small percentage of disagreement indicates that very few respondents believe their decision-making is entirely unaffected.

From a research perspective, these findings support hypothesis. The fact that almost two-thirds (neutral + not sure) hesitate to take a strong stance highlights an underlying uncertainty and cognitive reliance on AI. This ambiguity itself reflects cognitive offloading, as respondents may no longer fully trust or exercise their own decision-making processes without AI assistance.

The 29% agreement directly aligns with the concern of mental laziness, where

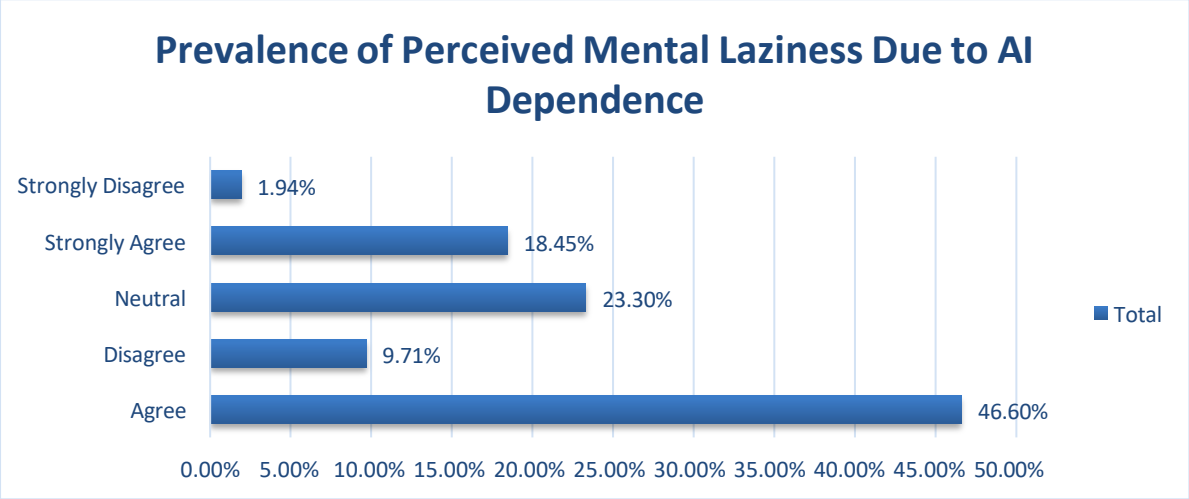
respondents consciously acknowledge that their independent judgment is weakened by AI dependence.

This result reveals that while only one-third explicitly admit that AI affects their decision-making, the high levels of neutrality and uncertainty further indicate that Gen Z's reliance on AI is subtly reshaping their critical thinking skills, reinforcing the hypothesis of cognitive offloading leading to mental laziness.

9. Perceived Mental Laziness Due to AI:

Q: Do you agree: "AI has made me mentally lazy at times."

This question asks respondents directly whether AI has made them mentally lazy at times. This item is a direct self-report measure of mental laziness and therefore is crucial for evaluating the prevalence of cognitive offloading in the sample.



The responses show a strong indication of perceived mental laziness associated with AI use. Combined, 46.60% of respondents agree and 18.45% strongly agree that "AI has made me mentally lazy at times," giving a total agreement rate of 65.05%. A further 23.30% are neutral, while only 11.65% (Agree + Strongly Disagree combined: 9.71% disagree + 1.94% strongly disagree) reject the statement.

This distribution indicates that a solid majority of Gen Z participants perceive that AI sometimes reduces their own mental effort. The sizeable neutral group suggests some ambivalence or situational variation, but the dominance of agreement around 65% provides clear empirical support for the presence of cognitive offloading in the sample. The small dissenting group implies that complete resistance to or rejection of this phenomenon is uncommon.

Hypothesis: Gen Z's reliance on AI leads to cognitive offloading and contributes to

mental laziness.

This question directly supports the hypothesis because 65.05% agreement shows a majority self-report mental laziness tied to AI.

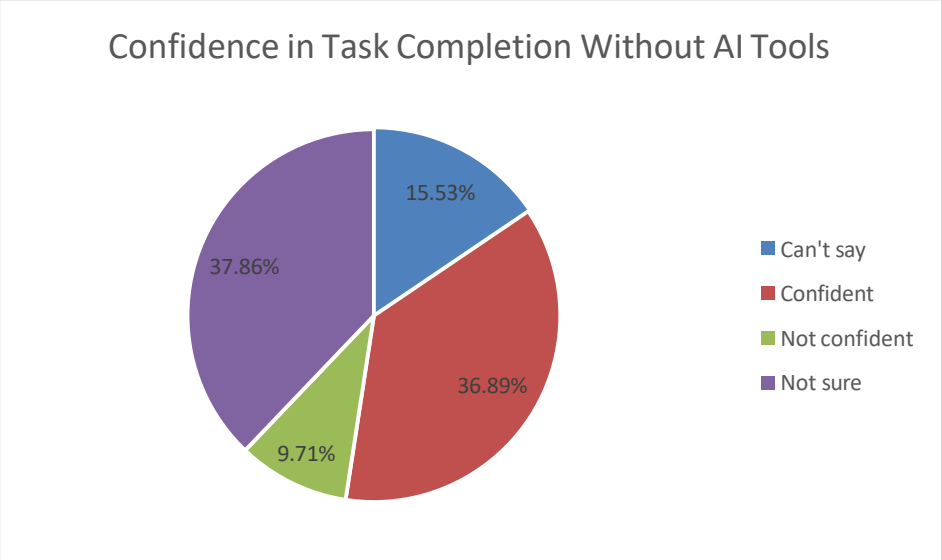
Objective 1 of the research - measure prevalence of cognitive offloading; this result gives a direct prevalence estimate that is 65% agreeing.

This result also provides evidence of the psychological consequence which is reduced mental effort—consistent with "mental laziness.

The majority agreement on this question (65%) provides direct self-reported evidence that AI fosters cognitive offloading and contributes to mental laziness in this Gen Z sample, fulfilling the study's primary objective to quantify the behavioral impact of AI reliance.

10. Self-Assessed Confidence Level if AI Tools Were to Cease Functioning:

It is important to evaluate how confident Gen Z employees would feel if they were suddenly deprived of AI tools. Last question in the questionnaire captures respondents' self-reliance and confidence in handling tasks without AI support.



The results show that only 36.89% of respondents felt confident about completing their tasks without AI. In contrast, 9.71% admitted that they are not confident at all. A significant portion of the sample expressed uncertainty: 37.86% selected 'Not sure', while 15.53% chose 'Can't say'.

This distribution highlights that while about one-third retain a sense of self-reliance, nearly half of the respondents expressed doubt or lack of confidence in their ability to

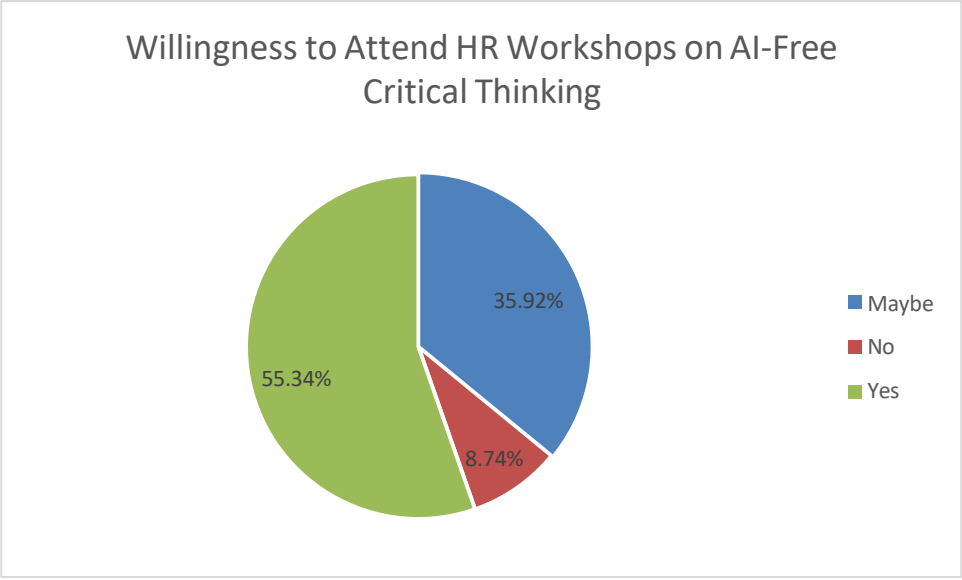
perform tasks independently. The dominance of the Not sure and Can't say categories suggests a strong psychological dependence on AI, where respondents are uncertain about their own capabilities in the absence of technological support.

The fact that more than half of respondents (63%) were unsure, not confident, or hesitant reflects weakened self-confidence and reduced trust in their own problem-solving ability.

The findings reveal that while a minority of respondents around 36.89% remain confident in their independent abilities, the majority express doubt or hesitation. This reinforces the study's hypothesis that heavy reliance on AI fosters cognitive offloading, reduces self-confidence, and may cultivate mental laziness among Gen Z.

11. The Role of Training: Assessing Interest in Mitigating AI Dependence:

While earlier questions explored how AI influences effort, motivation, and confidence, Last question in the questionnaire examines whether Gen Z employees are willing to participate in HR-led interventions that focus on strengthening critical thinking and decision-making skills without relying on AI.



The responses show that a majority (55.34%) of respondents are open to attending HR workshops designed to improve their independent thinking and decision-making. Another 35.92% answered 'Maybe', indicating a cautious willingness depending on the context, while only 8.74% said 'No'.

This distribution suggests that most Gen Z respondents acknowledge the importance of human-led critical thinking skills, even in an AI-driven environment. The large Maybe segment reflects some hesitation, which could be influenced by time, workload, or perceptions of the value of such workshops. However, the very low outright rejection

highlights an overall positive attitude toward skill-building initiatives.

The results indicate that Gen Z employees are not only aware of AI's impact on their mental processes but are also willing to engage in HR interventions. With more than half showing openness and only a small fraction resisting, this finding provides practical direction for organizations to design workshops that preserve and enhance human decision-making in the AI age.

This aligns with research objective of not only identifying risks of AI reliance but also exploring potential HR solutions.

Organizations can design and implement critical thinking workshops, problem-solving exercises, and decision-making simulations without AI, since employees are both interested and open to participation. This creates a pathway for balancing AI use with human cognitive development.

Table X: Mapping of Questionnaire Items to Research Objectives with Item-wise Interpretation

Q. No.	Questions	Linked Research Objective	Interpretation
1	Age	Objective 1	Majority (85.44%) are 18–25, representing young Gen Z. This age group is highly exposed to AI, influencing strong cognitive offloading patterns.
2	Gender	Objective 1	More females (62.14%) responded than males. Differences may affect perceptions of AI reliance, but overall trends of offloading were consistent across gender.
3	Education Level	Objective 1	Most respondents are graduates/postgraduates, indicating strong academic exposure to AI tools which increases routine AI usage.
4	Current Employment	Objective 1	Majority are students or interns; early-career Gen Z rely more on AI for academic/professional support, contributing to offloading.
5	Work Sector	Objective 1	Respondents belong to tech, education, finance etc., all of which have high AI exposure creating a natural environment for cognitive offloading.

6	Do you know how to use AI tools?	Objective 1	71.84% said "Yes"; high AI awareness increases likelihood of AI dependency and reduced independent thinking.
7	How often do you use AI tools?	Objective 1	46.6% use AI often, 18.45% always clear evidence of high-frequency AI use, supporting increased cognitive offloading.
8	For which tasks do you mostly use AI?	Objective 1	Mostly used for research (75%) and writing (62.5%) critical cognitive tasks, indicating shifting cognitive load from humans to AI.
9	I use AI mainly to: (Save time, Avoid hard thinking etc.)	Objective 1	Saving time is the major motive (30.10%), but combinations like "avoid hard thinking" clearly reflect mental laziness tendencies.
10	Before using AI, I usually try on my own for __ minutes	Objective 1	37.86% try only 3–5 mins; 17.48% try 0–2 mins. Shows quickly shifting to AI without much independent effort.
11	When faced with a complex task, do you solve it yourself or use AI?	Objective 1	Majority maintain an "equal balance" but ~40% lean toward AI first strong indicator of cognitive offloading.
12	How often do you double-check AI answers?	Objective 1	Responses show inconsistent verification habits; depending on AI without analyzing increases mental laziness.
13	Do you feel less motivated to brainstorm because AI gives instant answers?	Objective 1 (Mental Laziness)	Yes + Sometimes = 85.43%. Strong evidence that AI reduces creative thinking motivation.
14	Effort comparison: mental effort with AI vs. without AI	Objective 1	84.46% report reduced effort. Direct proof of cognitive offloading leading to lazy cognitive habits.
15	Attention span after using AI	Objective 1	57.28% say attention span decreased → clear signal of reduced mental stamina due to AI reliance.
16	How often do you copy–paste AI output with minimal edits?	Objective 1	Frequent copy-pasting indicates shallow processing and passive behavior instead of active thinking.
17	I feel over-reliant on AI for everyday tasks	Objective 1	30.10% agree; majority (66.02%) deny but other behavioral data contradicts this → psychological denial of dependency.
18	I consciously plan prompts to improve my thinking (Likert scale)	Objective 1 & Objective 2	Mean = 3.49 (moderate). Shows some level of self-regulation which HR strategies can strengthen further.
19	I feel guilty after using AI for tasks I could do myself	Objective 1	Mean = 3.30. Mild guilt shows awareness of overdependence but not enough to prevent offloading.

20	My decision-making ability is affected by AI dependence	Objective 1	29.13% agree, 38.83% neutral → indicates subtle but real influence of AI on independent judgement.
21	AI has made me mentally lazy at times	Objective 1 (Direct measure of mental laziness)	65.05% agree/strongly agree → strongest evidence supporting hypothesis.
22	Would you attend HR workshops on AI-free critical thinking?	Objective 2 (HR Strategies)	55.34% say YES; only 8.74% said no. Strong willingness for HR intervention programs.
23	Confidence if AI tools stopped working tomorrow	Objective 1 & 2	Only 36.89% confident; majority unsure or not confident → reduced self-reliance showing psychological dependence.

This integrated table serves as a connecting layer between the questionnaire framework and the analytical findings. By linking each item with the respective research objective and providing a concise insight based on the collected responses, the table enhances the coherence of the data analysis chapter. It also ensures that every question directly contributes to understanding AI reliance, cognitive offloading tendencies, and behavioral patterns among Gen Z respondents. With these descriptive interpretations outlined, the subsequent section delves into hypothesis testing to statistically validate whether AI usage and mental laziness are significantly associated.

4.3 Hypothesis Testing:

In quantitative research, hypothesis testing is used to statistically examine whether there is a meaningful relationship between variables. It helps determine whether the patterns observed in the sample data are strong enough to be generalized to the larger population. For this study, hypothesis testing was conducted to understand whether the frequency of AI usage among Gen Z employees has a significant association with mental laziness, a key indicator of cognitive offloading in the AI age.

To analyze this relationship, the Chi-Square Test of Independence was used. This test is appropriate because both variables AI usage frequency and perception of mental laziness are categorical in nature. By applying this test, the study aimed to determine if variations in AI usage are statistically linked to differences in self-reported mental laziness.

Hypothesis for Testing:

Null Hypothesis (H_0):
There is no significant relationship between AI usage and mental laziness among Gen Z employees.

Alternative Hypothesis (H_1):
There is a significant relationship between AI usage and mental laziness among Gen Z employees.

Statistical Test Used: Chi-Square Test of Independence:

The Chi-Square test examines whether two categorical variables are associated.
In this study:
Independent Variable:
Q8 – Frequency of AI usage (Always, Often, Sometimes, Rarely, Never)

Dependent Variable:
Q22 – Agreement with the statement "AI has made me mentally lazy at times."

Observed Table						
AI Usage Frequency	**Agree**	**Disagree**	**Neutral**	**Strongly Agree**	**Strongly Disagree**	**Grand Total**
Always	6	2	6	5	0	19
Often	30	4	7	7	0	48
Sometimes	11	4	10	5	1	31
Rarely	1	0	0	2	1	4
Never	0	0	1	0	0	1
Grand Total	48	10	24	19	2	103

Expected value: row total*column total/grand total						
AI Usage Frequency	**Agree**	**Disagree**	**Neutral**	**Strongly Agree**	**Strongly Disagree**	**Grand Total**
Always	8.85436893	1.844660	4.427184	3.50485436	0.36893203	
Often	22.3689320	4.660194	11.18446	8.85436893	0.93203883	
Sometimes	14.4466019	3.009708	7.223300	5.71844660	0.60194174	
Rarely	1.86407767	0.388349	0.932038	0.73786407	0.07766990	
Never	0.46601941	0.0970874	0.233009	0.18446601	0.01941747	
Grand Total						

(observe-expected)^2/expected						
AI Usage Frequency	**Agree**	**Disagree**	**Neutral**	**Strongly Agree**	**Strongly Disagree**	**Grand Total**
Always	0.920158406	0.0130812	0.558763413	0.637818358	0.368932039	
Often	2.603307039	0.0935275	1.565542408	0.38836016	0.932038835	
Sometimes	0.822273985	0.3258378	1.067386992	0.09026324	0.26323207	
Rarely	0.400536003	0.3883495	0.932038835	2.158916709	10.9526699	
Never	0.466019417	0.0970874	2.524676375	0.184466019	0.019417476	
Grand Total						

Chi-Square Test Results:

Sum of X square (O-E) ^2/E	28.7747011
Degree Of Freedom (Row-1*coloumn-1= 5-1*5-1=16)	16
P value	**0.025500302**

If p value > 0.05, then Accept the H0 (Null Hypothesis)
If p value < 0.05, then Reject the H0 (Null Hypothesis)

Since **$p < 0.05 \rightarrow$ Reject H_0**.

The p-value = 0.0255, which is less than 0.05.

This means the relationship between AI usage frequency and mental laziness is statistically significant.

In simple terms:

How often Gen Z employees use AI tools is significantly related to how mentally lazy they feel because of AI.

Interpretation of Results

The chi-square analysis reveals a significant association between AI usage frequency and perceived mental laziness among Gen Z respondents. Specifically:

Respondents who used AI tools more frequently (Always/Often) showed higher agreement with the idea that AI has made them mentally lazy.
Those who used AI less frequently (Rarely/Sometimes) showed lower levels of agreement or were more neutral.
This pattern suggests that increased exposure to AI tools may contribute to cognitive offloading, where individuals depend more on technology and exert less mental effort.

The significant p-value validates that this relationship is not due to random chance.
Thus, the frequency of AI usage plays a meaningful role in shaping mental laziness tendencies.

Conclusion for Hypothesis Testing:

Based on the chi-square results ($\chi^2 = 28.775$, $p = 0.0255$), the study rejects the null hypothesis (H_0) and accepts the alternative hypothesis (H_1).

Therefore, there is a statistically significant relationship between AI usage and mental laziness among Gen Z employees.

Higher use of AI tools is associated with greater feelings of mental laziness, supporting the claim that AI reliance contributes to cognitive offloading**.**

To conclude, the data analysis has provided clear empirical evidence supporting the core objectives of this study. The responses gathered from Gen Z employees demonstrate a consistent pattern of cognitive offloading, where frequent reliance on Artificial Intelligence tools has led to a noticeable reduction in independent analytical thinking and sustained mental effort. The results indicate that while AI has undeniably enhanced efficiency and time management, it has also contributed to diminished motivation to brainstorm, reduced attention spans, and lower self-confidence in performing tasks without AI assistance. At the same time, a segment of respondents displayed conscious self-regulation, showing that balanced and mindful AI use is achievable through awareness and training. Overall, the analysis highlights both the benefits and the psychological costs of technological dependence, establishing a foundation for deeper interpretation.

The following chapter, Findings, Results, and Discussion, will further connect these statistical insights with theoretical concepts and explore their broader implications for HR practices and organizational development.

5. Findings & Suggestions:

5.1 Key Findings and Results:

The analysis focuses on the study's core objectives: assessing the extent of AI reliance, identifying cognitive offloading behaviors, and measuring the self-reported incidence of mental laziness.

I. Demographic and AI Usage Profile:
The study primarily captures the attitudes of the younger segment of Gen Z, with 85.44% of participants aged 18-25.

AI Knowledge & Usage: A high majority of respondents (71.84%) reported "Yes" to having knowledge of AI tools, reflecting the generation's digital fluency. Use is frequent, with 46.60% using AI "often" and 30.10% using it "sometimes".

Time-Saving Motivation: The dominant reason for AI use is to save time, selected by 30.10% of respondents alone, and even higher when combined with other motives.

II. Evidence of Cognitive Offloading and Reduced Effort:

The data strongly validates the presence of cognitive offloading; the tendency to shift mental effort to external tools.

Minimal Independent Effort: The largest share of respondents (37.86%) only invest 3-5 minutes in independent effort before turning to AI. Alarmingly, a "considerable share" relies on AI within just 0–2 minutes (17.48%).

Perceived Effort Reduction: The most direct indicator of offloading is the self-reported reduction in mental effort. A combined 84.46% of respondents admitted to putting in "somewhat less effort" (67.96%) or "much less effort" (16.50%) when completing a task with AI compared to doing it fully themselves.

Reduced Motivation to Brainstorm: 85.43% of participants (38.83% 'Yes' and 46.60% 'Sometimes') admitted that they feel less motivated to brainstorm or think creatively because AI provides instant answers.

Impact on Attention Span: A majority (57.28%) reported that their attention span has decreased after using AI during tasks.

III. Self-Reported Mental Laziness:

The findings provide compelling direct support for the primary hypothesis that excessive

offloading leads to mental laziness.

Direct Agreement on Mental Laziness: A significant 65.05% of respondents Agree (46.60%) or Strongly Agree (18.45%) with the statement:
"AI has made me mentally lazy at times". This constitutes a strong majority self-report confirming the psychological consequence of AI reliance.

Acknowledged Decision-Making Impact: 29.13% of respondents agreed that their critical decision-making is affected by AI dependence. The high level of Neutral (38.83%) and Not sure (25.24%) responses, totaling 64.07%, suggests underlying uncertainty and cognitive reliance on AI.

Low Confidence in AI's Absence: Only 36.89% of respondents felt confident in completing their tasks if AI tools stopped working tomorrow. Nearly half
(a combined 53.39%) expressed doubt, choosing "Not sure" (37.86%) or "Can't say" (15.53%), highlighting weakened self-confidence and strong psychological dependence.

5.2 Discussion and HR Strategies:

IV. Discussion of Results: Cognitive Offloading to Mental Laziness:

The collected data provides strong empirical support for the study's core hypothesis:

There is a positive relationship between excessive cognitive offloading to AI tools and signs of mental laziness among Gen Z employees.

1. Efficiency vs. Effort Trade-off: The primary motivation for AI use is time-saving. However, this efficiency comes at a cost, as 84.46% of employees report a corresponding reduction in mental effort. This suggests that Gen Z is prioritizing speed and convenience over deeper cognitive engagement, which is the definition of cognitive offloading; relying on external resources to reduce mental effort.

2. Psychological Consequences: The shift in effort translates directly into the phenomenon of mental laziness. The 65.05% self-agreement on feeling mentally lazy, combined with the reported decrease in attention span and motivation to brainstorm confirms that the convenience of AI is weakening internal cognitive functions.

3. The Crisis of Confidence: The low self-confidence in the hypothetical "AI shutdown" scenario (only 36.89% confident) is a critical finding. This uncertainty reflects that AI has become an "employee's crutch", and respondents are genuinely unsure about their unaided competence. This reliance, if left unchecked, can lead to a workforce that are "efficient task executors but lack deeper analytical abilities and adaptability.

4. Mixed Self-Regulation: While the desire for efficiency is strong, Gen Z is not

Entirely passive. A moderate mean score of 3.49 on “consciously plan prompts to improve my own thinking” suggests that a significant portion attempts to use AI as a supportive tool rather than a complete substitute for thought.

5.3 Recommendation-HR Strategies:

The study successfully provides insights into the psychological costs of AI reliance, aligning with the research objective to suggest HR strategies that balance AI usage with active thinking.

The final survey question demonstrated a strong "Appetite for Intervention"
A majority of respondents (55.34%) are open to attending HR workshops on critical thinking and decision-making without AI. Only 8.74% outright rejected the idea.
This high level of willingness to engage in training provides a clear directive for organizations.

HR Strategies should focus on:

1. **Mandatory "AI-Free" Zones:** Design workshops, problem-solving exercises, and decision-making simulations that explicitly exclude AI tools to rebuild confidence and cognitive stamina.

2. **"Prompting for Thinking" Training:** Shift the focus from using AI for answers to using AI as a Socratic dialogue partner. Train employees to consciously structure prompts to challenge their own assumptions and refine their independent thought processes.

3. **Re-emphasizing Soft Skills:** Given the observation that Gen Z shows low motivation for soft skills, HR must integrate interpersonal, problem-solving, and emotional intelligence training to counteract the reduced face-to-face communication caused by AI.

Ultimately, the findings underscore that while AI has become an indispensable tool for efficiency, it cannot replace the value of human creativity, judgment, and critical thinking. By implementing proactive HR strategies that encourage deliberate practice of these skills, organizations can transform the risk of mental laziness into an opportunity for growth. Gen Z’s openness to interventions signals that the workforce is ready for this balance, and it is now the responsibility of HR leaders to create and maintain a culture where technology empowers, but human intelligence leads.

In conclusion, organizations must find the "perfect balance" between technology-driven productivity and the long-term cognitive development of their human capital. The risk of mental laziness is real, but the willingness of Gen Z employees to self-correct offers a promising pathway for intervention.

6. Conclusion:

This study set out to examine the psychological phenomenon of cognitive offloading among Gen Z employees in the AI age, with particular emphasis on its relationship to mental laziness. Gen Z, the first generation to be fully immersed in the digital environment, represents a workforce highly fluent in technology but also highly susceptible to its potential downsides. The objective was twofold: first, to assess the extent of reliance on AI tools and its impact on analytical and critical thinking abilities; and second, to propose HR strategies that balance AI usage with active thinking and continuous learning.

Summary of Key Findings:

The research confirmed that AI tools are deeply embedded in the daily work and study habits of Gen Z. A majority of respondents reported frequent usage of AI, primarily motivated by time-saving and efficiency. However, this convenience comes at a cost. The study revealed strong evidence of cognitive offloading, as many participants admitted to putting in minimal independent effort before turning to AI. Moreover, 84.46% acknowledged that AI reduced their overall mental effort, while 85.43% confessed to feeling less motivated to brainstorm or think creatively when instant AI solutions were available.

The psychological consequence of this reliance is clear: mental laziness. Nearly two-thirds of respondents directly agreed that AI has made them mentally lazy at times. Additionally, decreased attention span, reduced self-confidence in the absence of AI, and uncertainty in decision-making were significant indicators of weakened cognitive independence. Yet, not all results were negative. A moderate proportion of respondents displayed conscious self-regulation, particularly in planning prompts thoughtfully to guide their own thinking. This shows that Gen Z employees are not entirely passive but can be guided toward more balanced AI usage.

Implications of the Study

The implications of this research extend beyond academic interest. For employees, the findings highlight the urgent need for self-awareness in how they use AI tools. While AI improves productivity, unchecked dependence can erode problem-solving stamina and self-confidence. For organizations, the results emphasize the importance of designing HR practices that integrate AI without compromising employee development. Left unaddressed, overreliance on AI risks producing a workforce that excels in efficiency but struggles in adaptability, creativity, and leadership qualities vital for long-term organizational success.

HR Strategies and Practical Recommendations

The study identified actionable strategies that HR leaders can implement.

These include: AI-Free Interventions such as workshops, simulations, and brainstorming sessions without AI support, to strengthen critical thinking and restore confidence.
Prompt Training for encouraging employees to treat AI not as a shortcut but as a tool for guided reflection, helping them refine their thought processes.
Soft Skill Reinvestment including interpersonal communication, teamwork, and emotional intelligence, to counteract the reduced human interaction and over-reliance on technology.

Importantly, Gen Z employees demonstrated a strong willingness to engage in such initiatives, with more than half open to attending HR-led workshops. This provides a positive opportunity for organizations to design interventions that both embrace technology and protect the core of human intelligence.

Limitations and Future Research

This study was limited by its use of convenience sampling, a relatively small sample size, and self-reported data, which may include bias. Additionally, since AI tools are rapidly evolving, the findings reflect only the present stage of technological adoption and may change as new tools emerge.

Future research could expand to include longitudinal studies that track changes in cognitive engagement over time, comparisons with other generations, or industry-specific analyses. Another valuable direction would be to measure not only self-reported attitudes but also behavioral data, such as actual task performance with and without AI assistance.

Concluding Remarks

In conclusion, this research provides empirical evidence that while AI offers remarkable efficiency, its overuse by Gen Z employees fosters a tendency toward cognitive offloading and mental laziness. The challenge for modern organizations is not whether to adopt AI, but how to do so responsibly, ensuring that employees remain engaged thinkers and problem-solvers. The findings highlight the necessity of a balanced approach in which technology complements rather than replaces human intelligence.
Gen Z employees, being open to corrective interventions, present both a challenge and an opportunity. By investing in targeted HR strategies, organizations can prevent mental laziness from becoming an entrenched workforce issue and instead harness AI as a tool for empowerment.

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Annexure/Appendices:

Research Questionnaire

Title of Study:
"A psychological study of cognitive offloading in Gen Z employees leading to mental laziness in the AI age"

Research Instrument:
Structured Questionnaire (Google Form)

Section A: Demographic Information

1. Age:
o 18–25
o 26–30
o 30 above

2. Gender:

o Male
o Female
o Prefer not to say

3. Education Level:
☐ Graduate
☐ Postgraduate
☐ Other

4. Current Employment:
o Student Intern
o Full-time Employee
o Other (please specify)

5. Industry/Work Sector:
o IT/Tech
o Banking/Finance
o Education
o Manufacturing
o Other (please specify)

6. Do you know how to use AI tools?
☐ Yes ☐ No

7. How often do you use AI tools (e.g., ChatGPT, Grammarly, Google, MS Copilot) for
work/studies?
o Never
o Rarely
o Sometimes
o Often
o Always

8. For which tasks do you mostly use AI tools? (Select all that apply)
o Writing/reports
o Research/Information gathering
o Problem-solving/Decision-making
o Communication/Emails
o Other (please specify)

9. I use AI mainly to:
☐ Save time
☐ Avoid hard thinking

☐ Learn faster
☐ Check my work
☐ Other (please specify) _____

10. Before using AI, I usually try on my own for ____minutes.
☐ 0–2
☐ 3–5
☐ 6–10
☐ 10+

11. When faced with a complex task, do you first try to solve it yourself or directly use AI?
o Always solve myself first
o Mostly solve myself, sometimes AI
o Equal balance
o Mostly AI first
o Always AI

12. When AI gives you an answer, how often do you double-check or critically analyze it?
o Always
o Often
o Sometimes
o Rarely
o Never

13. Do you feel less motivated to brainstorm or think creatively because AI provides instant
solutions?
o Strongly Disagree
o Disagree
o Neutral
o Agree
o Strongly Agree

14. How much mental effort do you put in when completing a task with AI compared to
doing it fully yourself?
o Much less effort
o Somewhat less effort
o About the same
o More effort
15. My attention span after using AI during tasks has:

☐ Decreased
☐ Stayed the same
☐ Increased

16. How often do you copy–paste AI output with minimal edits?
☐ Never
☐ Rarely
☐ Sometimes
☐ Often
☐ Always

17. I feel over-reliant on AI for everyday tasks.
☐ Agree
☐ Not Really
☐ Disagree

18. I consciously plan prompts to improve my own thinking (Please rate on a 5-point Likert
scale: 1 = Strongly Disagree 2= Disagree, 3= Neutral, 4= Agree, 5 = Strongly Agree)
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5

19. I feel guilty after using AI for tasks I could do myself. (Please rate on a 5-point Likert
scale: 1 = Strongly Disagree 2= Disagree, 3= Neutral, 4= Agree, 5 = Strongly Agree)
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5

20. I feel that my critical decision-making is affected by AI dependence.
☐ 1
☐ 2
☐ 3

☐ 4
☐ 5

21. Do you agree: “AI has made me mentally lazy at times.”
 Strongly Disagree
 Disagree
 Neutral
 Agree
 Strongly Agree

22. Would you be open to HR workshops on critical thinking and decision-making without
AI?
 Yes
 No
 Maybe

23. If AI tools stopped working tomorrow, how confident are you in completing your tasks
without them?
 Confident
 Not Confident
 Not sure
 Can’t say

“Thank you for taking the time to complete this questionnaire.
Your honest responses will greatly contribute to the success of this research study.”