Chapter 5

Gina Marshall-Johnson

Omega Graduate School

September 5, 2024

Dr. Joshua Reichard, PhD

# Introduction

Recently Generative AI has become widely available to consumers at little to no cost. Early studies have shown that Generative AI helped prepare employment documents, leading to greater success in interview selection rates (ResumeBuilder.com, 2023, p.1-2). There is literature documenting bias in pre-employment screening of marginalized groups in all disciplines, particularly in STEM fields (West et al., 2019, p.7). There is a gap in the literature related to the effect of Generative AI on the preparation of pre-employment documents for marginalized populations in STEM fields. The problem is marginalized groups have been historically excluded from interview selection in STEM fields (Casad et. al., 2021). The purpose of this study was to examine the association in interview selection rates among marginalized groups in STEM fields according to the use of Generative AI for resume creation or enhancement.

The self-determination theory (SDT) is a framework to evaluate the candidate’s behavior evolution to increase the probability of interview pre-selection. SDT is a theory of personality development and self-motivated behavior change. Fundamental to the theory is the principle that people have an innate organizational tendency toward growth, integration of the self, and the resolution of psychological inconsistency (Deci et al., 2002, p. 39). The lack of acceptance of Generative AI use by candidates as viewed by prospective employers in preparing for job application was compared to the theory that a candidate should be allowed to grow and evolve methods used as technology evolves.

The quasi-experimental approach evaluated a sample of STEM job seekers, comparing the impact of using or not using Generative AI to prepare job application materials on interview preselection and the candidate’s perception of accuracy. The sample was sought using Snowball sampling through connected social networks. The resulting networks were centered on those who work within the computer science field and would likely be early adopters of Generative AI.

# Discussion of Findings

There were seven hypotheses in this study. One hypothesis examined whether a statistically significant association existed in interview preselection with the use of Generative AI. Four hypotheses examined whether there were statistically significant differences between interview preselection and the use of Generative AI with particular focus on race and gender of historically marginalized populations. One final hypothesis examined the perceived accuracy of Generative AI to the user, independent of interview preselection.

The hypotheses and research questions are focused on measuring the significant statistical associations and differences in historically marginalized populations who use Generative AI and interview selection because research has shown a gap between the number of women, Black and Hispanic workers, and those working in the AI industry. Specifically, research has shown through US educational statistics that the number of women, Blacks and Hispanic graduates in STEM is greater than those going into the field of mathematics and computer science. These fields are particularly interesting because the AI development skillset is centered in this area. Research has shown that AI-enabled systems create bias in one population over another. Women, and people of color are most likely to be disadvantaged by these systems. Research has shown that companies increasingly use Applicant Tracking Systems (ATS) by companies to pre-screen resumes of employees’ resumes before being selected for an interview. The dependent variable interview selection rates focused on increasing the understanding of the impact ATS are having on historically marginalized populations. Research has also shown that with the emergence of Generative AI, there is increasing success in the use of ChatGPT to help enhance or create resumes and cover letters to contain keywords searched for by ATS. While there has been research in the general population quantifying the benefit of using ChatGPT for resume enhancement and creation, no focus has been specifically on the diverse STEM population. The independent variables measure the impact of using Generative AI, like ChatGPT, for enhancing or creating resumes.

## Summary of Findings

Seven research questions are being explored which are described to support the research. The table below is a cross-walk of the research questions, associated hypotheses findings and summary implications for the Self-determination theoretical theory, the ethical impactions affecting society, and the theological concepts analyzed in this study.

**Table 42**

*Summary of Findings*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Research Question | Hypotheses Finding | SDT Finding | Social/Ethical Finding | Theological Finding |
| RQ1: What associations exist in interview selection rates between those who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM fields? | There was no significant statistical association between those who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM. | Generative AI is a tool that should be allowed to increase self-motivation and autonomy. Candidates ultimately ensure the resume represents their qualifications. There is no significant statistical impact on use of Generative AI and interview pre-selection. | Respect for human autonomy, fairness, justice, non-discrimination, prevention of harm are all maintained as an employee has the choice to use or not to use Generative AI. There is no significant statistical impact on use of Generative AI and interview pre-selection. | All people being made in the image of God means we should not discriminate. Loving God and your neighbor as yourself means fair and equal treatment. There is no significant statistical impact on use of Generative AI and interview pre-selection. |
| RQ2, RQ3: What differences exist in interview selection rates between racial groups among candidates in STEM fields who use or do not use Generative AI for resume creation or enhancement? | There was no significant statistical differences between racial groups who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM. | Generative AI is a tool that should be allowed to increase self-motivation and autonomy. Candidates ultimately ensure the resume represents their qualifications. There is no significant statistical impact on use of Generative AI and interview pre-selection among racial groups. | Respect for human autonomy, fairness, justice, non-discrimination, prevention of harm are all maintained as an employee has the choice to use or not to use Generative AI. There is no significant statistical impact on use of Generative AI and interview pre-selection among racial groups. | All people being made in the image of God means we should not discriminate. Loving God and your neighbor as yourself means fair and equal treatment. There is no significant statistical impact on use of Generative AI and interview pre-selection among racial groups. |
| RQ4, RQ5: What association exists in interview selection rates between genders among candidates in STEM fields who use or do not use Generative AI for resume creation or enhancement? | There was no significant statistical association between gender groups who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM. | Generative AI is a tool that should be allowed to increase self-motivation and autonomy. Candidates ultimately ensure the resume represents their qualifications. There is no significant statistical impact on use of Generative AI and interview pre-selection among gender groups. | Respect for human autonomy, fairness, justice, non-discrimination, prevention of harm are all maintained as an employee has the choice to use or not to use Generative AI. There is no significant statistical impact on use of Generative AI and interview pre-selection among gender groups. | All people being made in the image of God means we should not discriminate. Loving God and your neighbor as yourself means fair and equal treatment. There is no significant statistical impact on use of Generative AI and interview pre-selection among gender groups. |
| RQ6: What differences exist in the perceived accuracy of AI-generated resume content between racial and gender groups among candidates in STEM fields? | There was no significant statistical difference between racial groups and their perception of accuracy of Generative AI. | Generative AI is a tool that should be allowed to increase self-motivation and autonomy. Candidates ultimately ensure the resume accurately represent their qualifications. There is no significant statistical difference in perception of accuracy among racial groups. | Respect for human autonomy, fairness, justice, non-discrimination, prevention of harm are all maintained as an employee has the choice to use or not to use Generative AI. There is no significant statistical difference in perception of accuracy among racial groups. | All people being made in the image of God means we should not discriminate. Loving God and your neighbor as yourself means fair and equal treatment. There is no significant statistical difference in perception of accuracy among racial groups. |
| RQ7: What differences exist in the perceived accuracy of AI-generated resume content between genders among candidates in STEM fields? | The null hypothesis was rejected because there was statistically significant difference between women and men in the perceived accuracy of Gen AI content. Women perceived it as more accurate than men. Men found it less accurate. | Generative AI is a tool that should be allowed to increase self-motivation and autonomy. Candidates ultimately ensure the resume accurately represent their qualifications.  There is a statistically significant difference in the perception of accuracy among gender groups. | Respect for human autonomy, fairness, justice, non-discrimination, prevention of harm are all maintained as candidates ultimately ensure the resume accurately represent their qualifications. There is a statistically significant difference in the perception of accuracy among gender groups. | All people being made in the image of God means we should not discriminate. Loving God and your neighbor as yourself means fair and equal treatment. Candidates ultimately ensure the resume accurately represent their qualifications. There is a statistically significant difference in the perception of accuracy among gender groups. |

### Racial Groups Finding (RQ1, RQ2, RQ3, RQ6)

There were three research questions which specifically examined the differences between and across races for the use of Generative AI in the creation or enhancement of resumes and the pre-selection for interviews. The sample data collected examined included 74% diverse job applicants. The statistical findings examination of use and non-use of generative AI in document preparation did not find statistically significant evidence to reject the null hypotheses. The case study in the literature review highlighting the benefit of using Generative AI in the general population described a subject who was laid off and used ChatGPT to help write cover letters, including one that got him a foot in the door and later hired at a smart-tech company. Being laid off and continually applying for jobs was emotionally draining to the subject. ChatGPT was used to break writer’s block, distilling the long-winded cover letter into four tight paragraphs. It was also used to help prepare for job interviews by suggesting new ways to ask about company culture and expectations for the role. (Alcántara, 2023, p. 1). Innovatively applying ChatGPT to both the cover letter and developing interview questions supported creating a higher-quality cover letter and interview. This case study the cognitive benefit of using Generative AI.

The research findings across racial groups indicate no statistically significant differences by using or not using Generative AI in preparing pre-employment documents as it relates to interview pre-selection.To the contrary, the benefit of reducing stress by using Generative AI to help prepare documents was proven not to create discrimination or unfair treatment.

#### Research Finding Implications for Self-Determination Theory

As a reminder the theoretical framework examined for this study was Self-determination Theory. Self-Determination Theory (SDT) is a psychological framework that explores human motivation and personality development. It proposes that individuals have innate psychological needs for autonomy, competence, and relatedness, and when these needs are satisfied, individuals experience intrinsic motivation and psychological well-being. (Deci et al., 2002, p. 39). The research findings across racial groups from the perspective of Self-Determination Theory show that autonomy, which is a strong motivator for overcoming obstacles (Ryan et. al., 2022, p. 2) like being laid off from work and seeking employment does not create differences in the within or across races using Generative AI in the preparation of resumes. Autonomy can be maintained without creating a discriminatory outcome.

#### Research Finding Implications for AI Ethical Guidelines

The implications in use of Generative AI across racial groups from a social perspective is best framed by Hagerty. As stated by Hagerty (2023), “To understand ethics, we must understand culture, and vice versa. Ethics and culture must be considered together as interlocking strands of social DNA. These twin helices constitute each other. To understand any culture, we must consider its values; to understand values, we must understand their cultural context. Because ethics and culture are joined, we cannot study ethics solely as a philosophical abstraction. Ethics must be studied in everyday cultural contexts to be fully understood. In other words, it is not enough to know the “rules of the game” we must also understand how people play. Up-close and on-the-ground research is vital” (Hagerty, 2023, p. 9). It becomes very important that cultural context be considered in the development and use of AI. The culture in which this study was conducted was STEM job seekers in the United States. The sample was highly educated in technical fields and spoke English. The findings within this sample showed no differences across racial groups in the pre-selection for interviews. This may not be the same if Generative AI is used by employment seekers in other countries where the values and languages are different. Examining the AI ethical principles in more detail shows no violation of the Public Sector AI Ethical considerations or Private sector AI Ethical considerations. When using Generative AI, the job seeker has an autonomous choice to use it or not, and it is the final arbiter of the submitted documents. Generative AI is a tool that makes suggestions for the job seekers consideration. Specifically, there was no violation to the respect for autonomy, prevention of harm, explicability, privacy, fairness, justice or non-discrimination, transparency, safety or cyber security principles either. It was statistically found that using Generative AI or not does not alter outcomes in the pre-selection for interview.

#### Research Finding Implications for Theological Framework

As a reminder, the theological principles examined in this research are Imago Dei and Love God and Love your neighbor as yourself. The theological ideology of Imago Dei espouses that we are all created in the image of God. So, the first theological question examined in the context of the research findings is “does our relationship with machine learning tools like ChatGPT diminish one’s image?” The intentional use of this technology to help enhance one’s resume to find work is consistent with God’s call to pursue work. Exodus 23:12 says, “Six days you are to work, but on the seventh day do not work.” (Biblica, 1984, p. 121).

In research on Faith and Work integration, Buszka (2020) credits Bill Talcott, an organizer, thinking on the nature of work, who said, “History is a lot of people getting together to work deciding they want a better life for themselves and their kids” (Buszka, 2020, p. 9). Work provides deep meaning for those who pursue it, which is why it is important to find that Generative AI can be used in reducing cognitive stress. One way it was found to reduce cognitive stress is as a catalyst to overcome brain fog. Generative AI recommended creative phrases to describe qualifictions that were evaluated for inclusion in resume material (Alcántara, 2023, p. 2). There are many examples in historical texts where tools were used successfully to accomplish a task, and Generative AI is just the latest tool that has been evaluated. Because no statistically significant findings showed differences across or within racial groups that using Generative AI or not biasing interview preselection, there is no need to assert that it diminishes or advantages one person over another if used in seeking employment. The second theological question of loving God and neighbors as yourself is considered. Generative AI suggests descriptions that represent of the job seekers qualifications. The final decision to use or not use the information derived rests with the prospective employee. It does not appear using Generative AI as a tool or not is inconsistent with theology because there is no discrimination as the job seeker interacts with the interview pre-selection system. The job seeker can choose the preferred method of developing materials without discrimination. Therefore, loving God and loving your neighbor as yourself can be maintained while choosing the preferred method to create or enhance resumes.

### Gender Findings (RQ1, RQ4, RQ5, RQ7)

Overall, 64% of degrees in STEM-related fields are awarded to men and 36% to women. This contrasts with the general degree distribution, where 42% of degrees awarded are to men, and 58% are to women. The male-female distribution in STEM is consistently more men than women regardless of the racial group. Interestingly, it appears that the number of women working in Computer Science has reduced from 32% down to 25% between 1990 and 2019. Computer science has exploded in the number of jobs over this period, many of which have been involved in the creation of AI systems. In the field of mathematics, the number of women increased slightly, by 4%, over the same period (Kennedy, 2021, p. 1). One of the most relevant gender-related examples in this study is Amazon’s recruitment tool, which screened out references to women during the AI-enabled resume screening process (Illuminator, 2023, p. 4).

Three research questions examined the use of Generative AI in the pre-employment process and its impact on genders. The first two research questions examined what association exists in interview selection rates between genders among candidates in STEM fields who use and do not use Generative AI for resume creation or enhancement. The third question addressed the differences in perception of Generative AI’s accuracy across genders. The sample data collected was 43% women and 57% men. The research findings showed insufficient evidence to reject the null hypotheses in the cases of Generative AI’s association with interview pre-selection (RQ4 and RQ5). Specifically, the data indicated no statistically significant evidence to associate use of Generative AI in resume creation or enhancement with interview pre-selection for genders. On the third gender related question (RQ7) regarding the perception of Generative AI’s content accuracy showed there was sufficient evidence to reject the null hypothesis. Specifically, there was a statically significant difference in women’s perception of Generative AIs content accuracy than men. The implications of these research findings are examined across the three areas of self-determination theory, social relationship to AI ethics, the theology of Imago Dei, and loving God and your neighbor, as you, in the following sections.

#### Research Finding Implications for Self-Determination Theory

As previously stated, “Self-determination theory (SDT) is a theory of personality development and self-motivated behavior change. Fundamental to the theory is the principle that people have an innate organizational tendency toward growth, integration of the self, and resolving psychological inconsistency (Deci et al., 2002, p. 39). Of particular interest is how people internalize and integrate extrinsic motivations and self-regulate their behaviors to engage autonomously in actions in their daily lives (Ryan et al., p. 2). SDT proposes that all behaviors can be understood as lying along a continuum ranging from heteronomy, external regulation, autonomy, or true self-regulation. Maintaining genders' autonomy when applying for jobs in STEM was of particular concern because STEM is a field disproportionally dominated by men.

The research results (RQ4 and RQ5) show that the choice to use or not to use Generative AI when applying for jobs in STEM does not influence genders being pre-selected for interviews. Given that some employers question whether Generative AI should be allowed (Alcántara, 2023), the data indicate the self-determination continuum the freedom to choose or autonomy in the use of Generative AI in the preparation of resumes should be allowed instead of additional regulation. Generative AI use does not bias the pre-selection for interviews by employers based on the quasi-experimental findings.

#### Research Finding Implications for AI Ethical Guidelines

Similar to the findings with the diversity analysis, the AI Ethical Guidelines developed by the private and public sector are primarily maintained if you allow the use of Generative AI in the creation or enhancement of resumes by job seekers as it relates to pre-selection for interviews. However, there is an improvement in the ethical principle of accuracy as perceived by women using Generative AI over that of men. The quasi-experimental results indicate a statistically significant finding that women perceive AI as more accurate than men in describing their qualifications in a resume. This is significant because many studies have shown gender bias and inaccuracy in results produced by AI-enabled systems. One of the most public descriptions of gender bias is Amazon’s use of an ATS that rejected women for several years for being selected for interviews before being detected by a human observer (West et al., 2019, p. 7). Other gender related biases produced by AI-enabled systems were found in Bulamwini and Gebru’s studies of varied gender shades of color in facial recognition as inaccurate in identifying women of color (Buolamwini et al, 2018, p.11). While these studies focus on third party evaluation of another, not self-perception of the system, it is encouraging to see Generative AI which is broadly used is perceived as more accurate by women when evaluating their qualifications described in resume. The survey found women used Generative AI more than men, perhaps because getting into the field is viewed as tougher for women. It has been documented that women are less confident in their qualifications than men before applying for jobs (Kay, et al., 2014, p7). Perhaps Generative AI use is another method to improve confidence in the representation of their qualifications. All people assessing the Generative AI results' performance know their qualifications best and can use Generative AI systems to create or enhance their resumes and cover letters. This is a unique finding and improvement in published gender related outcomes for AI-enabled systems.

#### Research Finding Implications for Theological Framework

As previously mentioned, the two frameworks around evaluating the impact of Generative AI on the preselection of gender interviews are Imago Dei and Love God and love your neighbor as yourself. Because the theological ideology of Imago Dei espouses that we are all created in the image of God we ask, “does the use of Generative AI on your resume or cover letter diminish your image?”. For genders, this technology was found to be more accurate for women than men. Historically, the baseline in the use of AI-enabled systems showed women were diminished by systems evaluation of them. The findings in this study show statistically significant difference that women perceive the resulting systems descriptions of their qualifications as more accurate than men (RQ7). It does not suggest that men perceived the resulting recommendations as inaccurate but that their perception of accuracy and their use of Generative AI was also lower. On the questions the association of Generative AI’s use with being preselected for interviews, there was no statistically significant finding that use as associated with getting preselected for an interview.

Whether this technology supports the biblical principle to Love God with all your heart, soul mind and strength and Love your neighbor as yourself. As a reminder, “A Common Word” points Muslims and Christians to what is undeniably essential in each faith and common to both – love of God and love of neighbor. Second, it shows how that which is essential in each faith and common to both has the power to bind them together because it encourages – indeed, demands – that their adherents seed the good of others, not just their own good. If it is true that the dual command of love binds the faiths together, the consequences are revolutionary in the best sense of the word. We no longer have to say, “The deeper your faith is, the more at odds with others you will be!” (provided, of course, that “deep faith” means not just emotionally strong faith but also intelligent and informed faith). To the contrary, we must say” “The deeper your faith is, the more in harmony with others you will live!” A deep faith no longer leads to clashes – it fosters peaceful coexistence” (Volf et al., 2010,p. 24). As previously discussed, AI-enabled systems have historically been documented to create bias and division between and among populations. The results of this study show that the use of Generative AI for the creation or enhancement of ones resume in preselection for interviews does not create statistically significant differences in interview selection. On the contrary, it helps enhance cognitive productivity for women and men. There was no statistically significant finding that one’s neighbor would be treated any differently than one’s self. Harmony and not division prevails with the use of this technology in resume creation or enhancement.

## Limitations

The field of AI is accelerating very quickly. This study’s findings were from a sample of college educated, STEM job seekers from the United States and primarily centered in the computer science and mathematics fields. This many limit the applicability of the study in other cultures and languages and broader areas in STEM.

Because Chi-Square in a nonparametric procedure, the results cannot be generalized beyond the sample. The measured results will be a snapshot in time and may not be applicable as AI-enabled systems evolve. For example, the results produced by Generative AI systems may change over time to reflect the corpus of data used to derive results. Subsequent design principles and practices by ATS system developers may change system performance in resume preselection.

There may be sample selection bias using snowball sampling. The sample was based on the researcher’s social networks and those known by professional networks associated with the researcher. The population will predominantly come from the United States. While this is a global problem, cultural differences will influence Generative AI’s value.

At the time of the study, generative AI had only been available to the general population for less than 19 months. Chat GPT was released November 30, 2022. The study began June 20, 2024. As Generative AI becomes more broadly adopted research can be conducted over the broader STEM population. The survey remains open for additional data collection and updates to these findings will be published.

## Implications for Religion

Exodus 23:12 says, “Six days you are to work, but on the seventh day do not work.” (Biblica, 1984, p. 121). God calls all people to work. The subject of this research is in support of enabling people to use the latest technology to gain employment. Much published evidence shows that AI-enabled systems create injustice and discrimination in their use. Particularly as the church evaluates automated methods to vet employees, allowing prospective employees to use Generative AI to prepare their resumes does not cause discrimination or injustice. The study found no difference between using Generative AI and not using Generative AI in resume preparation and preselection for interviews. In research on Faith and Work integration, Buszka (2020) credits Bill Talcott, an organizer, thinking on the nature of work, who said, “History is a lot of people getting together to work deciding they want a better life for themselves and their kids” (Buszka, 2020, p. 9). Work provides deep meaning for those who pursue it particularly in the church.

The theological perspectives on the development and use of AI in the evaluation of candidates in resume pre-screening was evaluated two perspectives. The two perspectives considered were Imago Dei, all people are made in the image of God, and God’s commandment to love Him and love others. These two perspectives were chosen because AI has a reputation for biased across racial and gender populations. This is inconsistent with the Judeo-Christian perspective of Imago Dei. All people, regardless of gender, race, creed, economic status, etc., are made in the image of God and should, therefore, treat one another equally. The research findings show no statistically different treatment in interview selection for those who used Generative AI for resume development and those who did not. This finding aligns with the Judeo-Christian belief that all people should be treated equally. The second theological perspective was Love God and love your neighbor as yourself. This belief is held in the religious texts of Judeo-Christians, Muslims and the Jewish population. This makes up 55% of the global population. Loving your neighbor as yourself is visible when there is no intentional bias in treating one population over another. The Catholic church has also contributed significantly to advocating that AI cause no harm to populations worldwide. This is a significant issue for our time that the church much be aware of and influence.

The findings from the research show that racially and across genders, there was no statistically significant difference in the use of Generative AI in the preparation of resume materials and in the selection of interviews. When all STEM job seekers have autonomy to use Generative AI in preparing their resume, there is no advantage or disadvantage in the use.

STEM jobs in the church that would be considered STEM are IT support specialists responsible for managing the churches computer networks, cyber security, hardware, software and digital communications. These roles require knowledge of information technology, which is part of STEM. Audio-Visual Technicians who operate and maintain sound, video, and lighting equipment for church services and events would be considered STEM. Data analysts who manage membership databases, track engagements, and analyze trends to improve church operations and outreach would be considered STEM. Facilities Engineers or Managers responsible for maintaining and managing the churches physical infrastructure would be considered STEM (DeZarn, 2023, p.81). Each of the employes types are all created in the image of God and use of Generative AI in preparing resume material for job application is permissible without violating this principle. The command for Christians, Muslims and the Jewish population to Love God and love your neighbor as yourself is also honored allowing potential employees to use Generative AI on resumes provided the potential employee ensure the results accurately represent their qualifications.

## Implications for Society

One of the core literature review findings as a basis for conducting this research was that the STEM workforce has limited supply of workers given the tremendous demand (Horbach et al., 2020, p. 5; Nithithanatchinnapat et al., 2019, p. 61). The drive for HR communities to use ATS and other forms of automation was to adjust for the volume associated with high demand for talent (Financial Planning, 2023, p.3). The ATS rejected qualified applicants for consideration for positions (Fuller, 2021, p. 3). One of the most public descriptions driving the need for this research was Amazon’s use of an ATS that rejected women for several years before being detected by a human observer (West et al., 2019, p. 7). The premise of the research was that if job seekers use Generative AI to align the works in their resume with keywords searched for by ATS, they may have a better chance of being preselected for an interview. The finding of this research show that women and minorities use Generative AI at higher rates than men and the majority in the preparation of their resumes and there were equal percentages of women and minorities who were preselected for interviews by passing through ATS and human screeners. While the finding does not support the original hypotheses, it does show that giving job seekers the freedom to use Generative AI in the preparation of their documents does not give them an unfair advantage over those who do not. Human motivation is increased when they have autonomy according to the SDT. There is no harm only benefit in allowing job seekers to use Generative AI in the preparation of their pre-employment documents.

The perceived accuracy in the results of Generative AI were evaluated (RQ6 and RQ7). It was well documented that Generative AI produced incorrect information, often called hallucinations (Elmohande et al., 2023, p. 21). Given that there was a statistically significant finding that women find Generative AI accurate in the description of their qualifications, it suggests that Generative AI in the preparation of resumes is more helpful to women than men. The perceived accuracy may be tied to confidence in its use as 62% of women used Generative AI and only 38% of men used it in the study. Generative AI hallucinations come from inadequate training data in underlying models. It is possible women were giving the Generative AI system more complete data to create their resume. Preparing the sentence structure for a resume or transformer models finding the next token in a sentence is well suited for this application.

Socially, the SDT framework which states people should have autonomy over their choices to maintain high-levels of motivation and achievement was analyzed to determine if Generative AI should be allowable in the job application process by employment seekers. The findings of this research show that when STEM job seekers have the autonomy to use Generative AI in preparing their resumes, there is no advantage or disadvantage in being preselected for an interview.

The ethical frameworks that have been developed world-wide support similar tenets to those outlined in the theological and social framework analysis. Ethics is a normative, practical philosophical discipline of how one should act towards others. Virtue ethics: an agent is ethical if and only if it acts and thinks according to some moral values (Yu et al. 2018, p. 5527). As an exemplar, the European Commission’s call for trustworthy AI is centrally focused on AI ethics guidelines that aid in the good life of individuals, whether in terms of quality of life or human autonomy and freedom necessary for a democratic society. As previously stated with the SDT analysis, the ethical principles of allowing for individual autonomy in the use of Generative AI does not create racial or gender disadvantage to the contrary it aids in motivation fueled by self-determination.

In summary, the societal implications for using Generative AI in preparing resume material was not found to harm or bias individuals in being preselected for interviews. It is a new tool available to aid in preparing pre-employment materials similar to the use of Microsoft Word products early in their release. Generative AI can be viewed as new but not harmful in the preparation of resumes for employment in STEM. Therefore, there is no reason to restrict or regulate the use of Generative AI by applicants for preparing materials for pre-employment.

## Opportunities for Integration of Religion and Society

AI-enabled systems are becoming an integral part of everyday society. Rejecting the transition analytic decision-making is not an option. Understanding the implications of using these systems on society is crucial. This quasi-experimental study clarifies the use of Generative AI and the impact on candidates of multiple races and gender being pre-selected for interviews. Since approximately 80% of large companies initially use AI-enabled systems to screen resumes, candidates have become more creative in the use of AI to generate their resumes in an attempt to successfully pass through the AI-enabled pre-screening, ATS. The application of these findings are for any institution that hires STEM candidates. This certainly includes churches with information technology-focused employees, audio-visual content delivery, facility engineers using electronic alarm and camera systems, or data analysts examining operational effectiveness by measuring the congregations’ experiences. As churches grow in size and diversity, understanding the technology candidates are using to apply for jobs is important. Large private and public sector institutions uniformly use ATS to handle the large volume of applicants. The Catholic church has embraced understanding the societal implications of AI’s use. As a larger employer, they likely also use ATS for prescreening candidates. Other large churches should also consider gaining a greater understanding of this technologies impact on their hiring processes. It is also important to recognize that because a technology is new, does not mean it is inappropriate for use.

The value of increasing the intrinsic motivation of employees through allowing them autonomy in the use of Generative AI as espoused by the self-determination theory has little to no risk based on the research findings. Adherence to AI ethical principles which also promote fairness, justice, non-discrimination, democratic values, prevention of harm and autonomy are also upheld by the findings of this research. Finally, the theoretical values of Imago Dei and loving God and loving your neighbor as yourself all are supported by the findings showing that the narrow use case of using Generative AI to create or enhance resumes does not affect pre-selection for interviews. On the contrary, it gives applicants, who may be cognitively stressed and looking for employment, a new tool to stimulate their thinking. Given that there is a shortage of STEM workers and a particular shortage of women and minorities in the fields, giving prospective employees a broader array of tools like Generative AI may help reduce the stress of going into the field.

## Recommendations for Social Change

AI-enabled systems have dominated the news and much of it has been negative. Legitimate concerns about AI-enabled systems like facial recognition, judicial recommendations, and other applications exist. While there is still much to be learned about these systems and their particular impact on women and minorities in making autonomous decisions, the findings from this study show no need to restrict the use of Generative AI by prospective employees in preparing their resumes for employment. The prospective employee has to be the final reviewer to ensure it accurately represents their qualifications. Therefore, it is the recommendation of the author there be no restriction or regulation on the use of Generative AI by STEM applicants in the creation of their resumes.

The recommendation may apply to policy makers evaluating Generative AI regulation, corporate executives establishing policy to govern the evaluation of candidates or large businesses, including churches that employ STEM workers. This technology is new; it was only 19 months old when the experiment was conducted, so there is still much to be learned. However, restricting the use of Generative AI while collecting information on its impact in this area may serve to limit the possibility of gaining a greater understanding of the value it offers.

Embracing the use of this technology is analogous to moving the transportation industry from horses as the primary method for transport to automobiles. There were many more deaths caused by cars initially than horses, but continuing to use cars created the environment to understand how to make them safer. Decades later, seatbelts were made mandatory, speed limits were imposed, and a host of other conditions were implemented to make vehicles safer. Society would not dream today of limiting the use of automobiles. Ironically, AI-enabled autonomous vehicles are now the next wave of innovation in the automotive industry. This requires creating an environment that continually measures the results produced by automotive systems and adjusts the systems to optimize performance. The same is true of the use of Generative AI to create or enhance resumes.

It is also the recommendation of the author that AI Assurance, also called Responsible AI, be adopted by companies that develop and use AI-enabled systems. This will create the continuous evaluation required to ensure that these systems that learn over time produce results consistent with the outcomes the developer and user intend over their period of operation. AI-enabled systems are unique from other systems because they are trained and continue to learn over time. Traditional systems are deterministic. The performance degradation may be due to aging but not intentional artifiicial intelligence, which may cause a shift in performance outcomes over time. AI Assurance is a new discipline that needs to be taught to those who develop and use AI-enabled systems. It is important that universities and professional training organizations develop AI Assurance tracks.

In summary, the recommendations of the author are:

1. No restriction or regulation be imposed on the use of Generative AI by prospective employees to prepare their resumes.
2. AI Assurance or Responsible AI training be developed and offered to expose the unique performance evolution of AI and provide guidance for developers and users of AI-enabled systems.
3. Continued research on the impact AI-enabled systems are having on society with particular focus on the impact on women and minorities.

These recommendations are applicable to policy makers, senior corporate executives, HR managers, university and professional training senior leaders who influence AI development or system acquisition practices.

## Recommendations for Future Research

The use of Generative AI for the general population is very new. The findings for this research indicate that the use of Generative AI for creating or enhancing resumes does not influence whether you are pre-selected for interviews in STEM. The lack of influence in interview preselection is consistent regardless of gender or race. Due to the lack of research in this field, there has been a lot of fear and desire to restrict AI use. This research, while preliminary, suggests that there is no need to restrict or regulate the use of Generative AI in resume creation or enhancement. Further research is needed on a larger sample and broader employment areas to increase the repeatability of these findings.

There also needs to be further research by users of ATS on the candidates ATS systems recommend, ensuring recommendations are not biased for or against one population over another.

Finally, there needs to be research on rigorous testing methods for AI-enabled systems to ensure that the resulting recommendations are consistent with the expectations of those who procure the systems during and after deployment. AI-enabled systems are unique as they drift over time. New testing methods can help improve the likelihood of broad-based acceptance over time.

# Personal Reflection

I have learned so much over the four and a half years of conducting this research. Predominantly, how much I still need to learn. This field is changing very rapidly. As an electrical engineer, I approach problems systematically. This field is fraught with scientific challenges and fear-based emotion due to the serious impact these systems can have on society. The fear is real, but so is the possibility. I began expecting to influence a greater understanding of ATS recommendations for STEM applicants. The proliferation of these systems grew so fast, my research shifted to helping the STEM employment candidates understand the impact of interfacing with these ATS systems by using Generative AI for the enhancement or creation of their resumes. I fully expected Generative AI content interfacing with an AI-enabled ATS to produce higher likelihood of resume pre-selection than the data collected found. While initially disappointed, I am grateful for the rigor in experimentation, which showed no influence on pre-selection, so we can continue to use these technologies while we learn more about them. This field is still in its infancy. There is much more to learn.

I also am grateful for seeing the intersection between the SDT theoretical framework, AI Ethics guidelines and the theology of Imago Dei and Loving God and your neighbor intersect with so many common elements. Treating one another as we would want to be treated with love, kindness and respect is ultimately our highest aim.

# Conclusion

Recently Generative AI has become widely available to consumers at little to no cost. Early studies have shown that Generative AI helped prepare employment documents, leading to greater success in interview selection rates (ResumeBuilder.com, 2023, p.1-2). There is literature documenting bias in pre-employment screening of marginalized groups in all disciplines, particularly in STEM fields (West et al., 2019, p.7). There was a gap in the literature related to the effect of Generative AI on preparing pre-employment documents for marginalized populations in STEM fields. The problem is marginalized groups have been historically excluded from interview selection in STEM fields (Casad et. al., 2021). This study filled this gap.

An on-line survey was conducted using Survey Monkey during June and July of 2024. 35 respondents seeking employment responded. 76% of the respondents were from minorities and 43% were women. This study examined the association and differences in interview selection rates among marginalized groups in STEM fields according to the use of Generative AI for resume creation or enhancement. Consistently, minorities used Generative AI in larger percentages than the majority sample, comprising white and male applicants. More women also used Generative AI, but the interview selection was equal for those who used Generative AI and those who did not. The accuracy of Generative AI describing their qualifications was perceived to be greater by the women than by men.

The results of this study on the impact of Generative AI on historically marginalized populations in STEM suggests that Generative AI can provide greater perceived value for females developing resume material than men. Even with differences in perception, it was found that a p-Value greater than the alpha level (0.05) which indicated insufficient evidence to reject the null hypotheses was found for six of seven of the research hypotheses. The conclusion across all racial groups using Generative AI or not was it did not provide statistically significant evidence to show a difference between its use and interview pre-selection. The conclusion across all gender groups using Generative AI or not was it did not provide statistically significant evidence to show an association between its use and interview pre-selection. The perception of accuracy when using Generative AI was statistically significant between men and women, and the null hypothesis was rejected. This indicates that women perceived Generative AIs to be more accurate than men in the description of their qualifications.

Assessing the impact of allowing Generative AI to be used by prospective employees in STEM shows no harm or bias toward preselection if used or not. This means this new technology will not cause harm to either the employee or bias the employer. To the contrary, the self-determination theory which espouses greater autonomy leads to greater intrinsic motivation of employees would encourage its continued use as desired by the employee. Likewise, AI ethics principles defining the importance of fairness, non-discrimination, autonomy, justice, and harm prevention are also maintained if job seekers in STEM are allowed to use Generative AI in developing their resumes. Finally, theologically the lens of Imago Dei, we are all created in the image of God is upheld as the use of Generative AI does not treat any gender of racial group differently if Generative AI is used in the creation of resumes. Loving God and loving your neighbor as yourself is a common principle with Islam, Judeo-Christians and the Jewish faiths. This means our love for God and living according to his character should cause all we do to treat everyone in a way you would want to be treated. The use of Generative AI in the enhancement and creation of resumes or allows equal treatment of all when being pre-selected for interviews. This is especially important because there is a shortage in talent in STEM fields. It is important that all who are qualified, regardless of gender or race be equally considered for STEM positions. The research applies to all companies, and churches that hire STEM workers.

Therefore, the recommendation from this research for AI policy regulators is that no restriction or regulation be applied as it relates to jobseekers in STEM using Generative AI in the creation or enhancement of their resumes, provided it accurately represents their qualifications. The job seeker is ultimately responsible for ensuring the documents submitted to potential employers accurately represent their qualifications. Since Generative AI for public use is so new, it is also recommended that we allow research to continue, and data be collected on the performance of these systems to optimize them for the benefit of all users. Finally, because AI-enabled systems are dynamic, learn over time, they are subject to make recommendations outside of the designer or users’ original intent. It is recommended for higher learning institution leaders and professional development leaders that educational institutions develop training for this technology's developers and users toensure its ongoing performance meets the expected outcome. This field of study is called AI Assurance or Responsible AI.

# WORKS CITED

DeZarn, N. Ilic-Godfrey, S. Krutsch, E.(2023). Occupational Projections 2021-2031. Bureau of Labor Statistics.

Kay, K., Shipman, c. (2014). The confidence gap. The Atlantic. https://www.theatlantic.com/magazine/archive/2014/05/the-confidence-gap/359815/