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Examining the Retention and Exodus of Women in Technology

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ABSTRACT
When looking at workplace dynamics, especially given the pandemic, we must identify why individuals choose to leave specific fields, such as STEM, specifically computer science. The purpose of this study was to identify the unique belonging experiences of women who specifically work in the technology field. Issues such as the need for belonging, marginalization, workplace culture, imposter syndrome, and allyship affect how women feel connected to their work. Using a qualitative narrative inquiry approach, nine women were interviewed for their unique perspective of belonging in the technological workspace. Within the transcriptions, certain themes were derived from the data, which included (1) lack of belonging in the workspace, (2) lack of trust, and (3) lack of support. However, we also discovered that women can be successful leaders in the technology sector if they receive support from a mentor at work. For the computer science industry to attract and retain female talent, addressing these obstacles and fostering a more inclusive environment is imperative to counter underrepresentation.

KEYWORDS: Belonging, diversity, STEM fields, technology, women, workspace

When looking at workplace dynamics, especially given the pandemic, we must identify why individuals leave specific fields, such as technology. Given the education needed to obtain a job in technology, one would assume that obtaining that job would equate to success, especially for underrepresented groups such as women. However, just obtaining the job does not mean women feel like they belong in those work environments. In addition, issues like the need for belonging, marginalization, workplace culture, imposter syndrome, and allyship affect how women feel connected to their work.

In a space historically dominated by males, it is important to recognize the state of underrepresented groups, such as women, in technology (Davidson, 2017). According to Williams, Korn, and Ghani (2022), over the past three decades, there has been a decrease in the proportion of women in the computing industry. Kurtz (2023) highlighted an increase in the number of women engineers, health technicians, and overall technologists by approximately "44,000 between 2001-2002" (para. 7). When narrowing down the number of women in engineering, the number increased by only 2,000. Recent data revealed that women made up approximately 26% of the technological workforce in the United States, a number reduced to only 11% for technical leadership roles (Global Diplomatic Forum, 2023). Extensive research has been conducted on the necessity for more diversity in technological domains, although minimal efforts have been made to address or comprehend the reasons behind the departure of women from this profession. This research study

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investigated the factors influencing women's choices regarding employment retention, job departure, or job transition in technology-related industries.

Literature Review

Women's experiences in technology-related industries are diverse and cannot be generalized because they vary based on geography, company culture, role, ethnicity, and other factors. However, numerous studies, surveys, and interviews conducted with women in technology have provided insight into the perceptions and experiences of these women (Freedman et al., 2023; Lemons et al., 2001; Lewis et al., 2017). Issues such as belonging, marginalization, imposter syndrome, and allyship all contribute to the integration or separation of women in the workspace. In certain cases, women are not adequately represented in computer science companies in comparison to men. This lack of representation can result in feelings of isolation, which in turn contribute to a negative feedback loop, a sense of disconnection from interpersonal relationships, and a sense of belonging. These factors can influence women's decisions to seek out more inclusive environments, which could result in leaving the technology field. In order to overcome the lack of female representation in this profession, it is crucial to address the impediments and create a more inclusive and welcoming workplace to recruit and retain female talent (Langford et al., 2023; Rainey et al., 2018; Williams, Korn, & Ghani, 2022; Wilson & VanAntwerp, 2021; Xu & Lastrapes, 2022).

Belonging

Belonging has been identified as an inherent human need that allows people to feel connected, appreciated, supported, and motivated in their work, social, and personal lives, resulting in positive psychological and performance outcomes. Being a part of a community is particularly important in the workplace because it fosters a caring, stable, mutual, and lasting relational bond that makes people feel more engaged and productive (Allen et al., 2021; Baumeister & Leary, 1995; Canlas & Williams, 2022; Wilson & VanAntwerp, 2021). In contrast, individuals who do not feel a sense of belonging in the workplace display negative behaviors and attitudes, which can negatively impact future opportunities for belonging and negatively impact productivity (Canlas & Williams, 2022; Wilson & VanAntwerp, 2021).

Female professionals in the technology industry desire a sense of inclusion and recognition for their valuable contributions to the organization. When these individuals lack a sense of belonging, it can gradually erode their well-being, intensify unpleasant emotions, and diminish their motivation to continue in the area (Wilson & VanAntwerp, 2021; Xu & Lastrapes, 2022). Historically, women have been socialized to perceive certain fields in STEM (i.e., science, technology, engineering, and math) as predominantly male and have been discouraged from pursuing them due to a perception that they are not suitable for women (Lewis et al., 2017). Consequently, when women do enter the technology industry, they may choose to depart more easily than men (Lemmons & Parzinger, 2001; Williams, Korn, & Ghani, 2022).

Marginalization

Marginalization is the process of relegating an individual or object to a position of reduced significance, authority, or control. It entails inducing feelings of insignificance or marginalization in someone, typically leading to diminished self-esteem and a restricted capacity for decision-making (Hall et al., 1994). Marginalized individuals or groups often experience systemic barriers

and discrimination, which perpetuate their disadvantaged status and hinder their ability to achieve well-being and full societal integration. Marginalization is a prevalent phenomenon that women face when working in technology areas that are predominantly occupied by men. It includes subtle actions such as being interrupted when speaking, disregarded at professional gatherings, encountering preconceived notions based on gender, having to work harder to prove their value to the organization, making their errors more noticeable and remembered longer than their male counterparts, or experiencing explicit gender-based discrimination such as mansplaining (Baumeister et al., 2007; Connor et al., 2018; Hughes et al., 2017; Williams, Phillips, & Hall, 2014; Williams, Korn, & Ghani, 2022).

Mansplaining is a condescending and disparaging form of gender bias that women experience from their male peers when men in the workplace assume they are more knowledgeable than their female coworkers. Its construct consists of four factors: male dominance during the interaction with women, providing women with incorrect information when women ask them questions, men providing information unsolicited by the women, and female expertise about a specific topic (Freedman et al., 2023). The use of mansplaining and other subtle forms of gender discrimination creates an atmosphere where women's value and worth to the organization are questioned even if they know more, have more experience, or are more educated than their male counterparts (Connor et al., 2018). These behaviors and attitudes often create a toxic work environment, making women feel less accepted, appreciated, and included, and that the value of their work in technology fields is somehow less valued than a man's (Chamberlain & Hodson, 2010; Hughes et al., 2017; Williams, Korn, & Ghani, 2022).

Many women in the IT industry demonstrate a great passion for their careers and actively work to overcome the challenges they face by taking aggressive steps to bring about change inside their organizations (Canlas & Williams, 2022; Williams, Korn, & Ghani, 2022). These women may perceive the challenges they encounter as opportunities to demonstrate their capabilities and establish their worth. However, when the workplace culture proves toxic, female employees may choose to depart from the organization because a toxic work environment hinders personal growth and has a negative impact on an individual's self-esteem and self-worth (Chamberlain & Hodson, 2010; Taparia & Lenka, 2022).

Overall, work environments characterized by elevated levels of interpersonal conflict and limited worker autonomy pose significant challenges for both employees and the company, particularly when the workplace culture is predominantly masculine. In such settings, routine activities can often devolve into competitions of endurance and power. The prevalence of this particular culture of masculinity contests can result in detrimental effects such as toxic leadership, exacerbated work-life balance, diminished well-being, and feelings of alienation (Chamberlain & Hodson, 2010; Williams, Korn, & Ghani, 2022). Conversely, a company culture that is supportive and inclusive has played a substantial role in retaining employees and promoting the general vitality and welfare of the organization as a whole (Taparia & Lenka, 2022).

Imposter Syndrome

The absence of a feeling of belonging within the work environment might also be linked to the problem of impostor syndrome, which is a psychological phenomenon characterized by people experiencing doubt over their accomplishments, skills, or talents, coupled with an enduring internalized fear of being exposed as fraudulent (Kolontari et al., 2023; Kumar & Jagacinski, 2006; Wang et al., 2019). Individuals experience this despite compelling evidence substantiating their ability; they persistently maintain a conviction that they are undeserving of the accomplishments they have attained. When applied to women in the technology workspace, it is evident how the

imposter syndrome might contribute to work dissatisfaction (Kolontari et al., 2023; Kumar & Jagacinski, 2006).

According to Kolontari et al. (2023), there are specific types of behaviors that women exhibit when feeling this phenomenon, and these would include:

> ...working hard to prevent others from discovering their status as an imposter, choosing to conceal their true ideas and opinions, only voicing the ideas and opinions they believe will be well received by their audience, seeking to gain the approval of their superiors by being well-liked and perceived as intellectually special, being cognizant of society's rejection of successful women and consciously exhibiting themselves as timid. (p. 35)

In addition, individuals may experience a pervasive sense of inadequacy, harboring the belief that their accomplishments are attributable solely to fortuitous circumstances, favorable timing, or the artifice of projecting a false image of intelligence or competence beyond their self-perception (Kolontariu et al., 2023; Kumar & Jagacinski, 2006). Women within technology-related organizational cultures may display these traits that negatively affect their self-perception, confidence, and ability to assert themselves.

Allyship

When examining women's involvement in a technological work environment, it is essential to additionally explore the concept of allyship and its correlation with favorable results. Allyship is a professional relationship in which someone in a position of authority uses their power and privilege to support marginalized individuals. They do this by advocating for them, challenging the existing systems that hold them back, and respecting their personal experiences on a daily basis (Babla et al., 2022; Dickerson, 2021).

Organizational leaders establish fair and inclusive environments for all individuals, irrespective of their gender, race, cultural background, sexual orientation, age, or ability, when allyships are formed. Allyship ties should be established voluntarily rather than imposed in order to maximize effectiveness and provide a practical approach to advancing equality without generating a hostile prejudice toward the majority. These interactions foster genuine support and promotion through opportunities for professional growth and individual choice, which could be advantageous for women in the field of technology (Babla et al., 2022; Moser & Branscombe, 2022).

Certain individuals in a workplace proactively seek or form groups, networks, or mentorship programs focused on women within their enterprises to foster allyship. These efforts seek to promote mutual support, share personal stories, build a sense of unity among participants, and address the constraints of social hierarchy, seclusion, and feelings of not fitting in (Gates et al., 2021). The absence of female role models and sponsors can pose significant challenges for women in terms of career advancement and finding fulfillment in the workplace. Recognizing the importance of allies in the technology business, some women deliberately seek and foster relationships with colleagues who provide support and promote professional development.

Diversity and Inclusion

As these issues directly impact the viability of women in the technology field, there should be better efforts to retain women in these fields. Diversity and inclusion create a better workforce and contribute to the overall quality of life. According to van Bommel et al. (2024), diversity contributes to enhanced team performance, quality of work, innovation, and creativity, as well as

better work productivity. People want to see representations of themselves within their work environment and feel like they belong. However, according to Sabat et al. (2023), "Despite pipeline programs and other efforts to recruit women, racial minorities, and others from underrepresented groups, the pipeline 'leaks' when there is attrition related to environments that are inhospitable or even hostile" (p. 55). If we know this, and we understand that people are searching for a space to contribute to their work, then we have to find better ways to retain them and encourage them to join fields that need better integration.

It is not enough to simply provide training and education on the importance of diversity and inclusion if we still continue to separate people out based upon differences. Historically, women have always had spaces in work environments where they felt more segregated or lacked equal representation (Chen, 2023; van Bommel et al., 2024). However, one would assume that, in 2024, real equality can be found in most workspaces. This is not the case in male-dominated fields, including technology and STEM. However, if we do not understand the subjective experiences of women in these spaces, then we cannot seek to make changes or address the real issues in the workspace.

Methodology

Within the scope of this research, a qualitative narrative inquiry was used to identify the unique experiences of each participant. Only through a narrative inquiry can we identify how each individual sees their experiences and how those experiences translate into valuable information for the broader audience (Chambliss & Schutt, 2019). According to Chambliss and Schutt (2019), in narrative analysis, each participant makes sense of their world, and it "seeks to preserve the integrity of personal biographies or a series of events that cannot adequately be understood in terms of their discrete elements" (p. 264). In addition, narrative inquiry allows for a natural flow of information and decreases the need for control that we often see in other types of research designs. This is why using a qualitative narrative inquiry is crucial, as it leads to a depth of understanding**.** As a narrative, participants can tell a story that is specific to them and the research is guided by the stories of the participants (Bruce et al., 2016; Channa, 2016; Pino Gavidia & Adu, 2022). "Stories in narrative inquiry help lead the researcher toward a better understanding of phenomena"" (Pino Gavidia & Adu, 2022, p. 1).

A narrative inquiry was completed in this research using an interpretive paradigm (Pino Gavidia & Adu, 2022). This paradigm assumes that there is an "individual perspective on how people see the world (ontology). Knowledge is obtained by participating subjectively in meaning-making" (Pino Gavidia & Abus, 2022, p. 1). We apply this interpretation to the narratives about life events over time. However, it should also be acknowledged that the interpretative paradigm assumes that subjective experience is found in social contexts; in this case, it is within the social context of the work environment (Gichuru, 2017).

According to Channa (2016), "we humans are inevitably surrounded by various narratives of our societies…we are guided by them directly and indirectly to cognitively think and function" (p. 3). The researchers in this study developed their interview questions specifically to target the phenomenon of investigation. The questions were created to be open-ended, allowing for further extrapolation of the experience (Savin-Baden & Van Niekerk, 2007). The researchers agreed upon the questions as a group to effectively allow for the story of each experience to be told in such a way as to obtain meaningful and robust data.

Participants

A list of graduating students from a university in the midwestern part of the United States was obtained, and emails were sent to individuals who met the qualifying criteria for volunteers to participate in this research. Nine individuals responded and volunteered to be included in this research. Eight participants were recruited from this university; however, one was not from this specific university. This was done because a snowball sample was needed to gain enough participants to extrapolate themes and specific experiences. Participants were required to meet the following criteria for selection: at least 21 years of age, employed in a technology-related position within an organization for at least one year, earned at least a bachelor's degree in a technology-focused program during the January 2017–December 2021 period, willing to answer demographic questions related to age, gender identity, race/ethnicity, current industry, years in current position, level in organization, size of organization/team, and program completed. All participants had experiences working in a technology related workspace and had the personal narratives to be able to contribute to this research and to better understand the research questions.

Nine individuals who identified as female were interviewed for this research study. The demographic information included participants between the ages 20-30 (22%), 31-40 (33%), 41-50 (11%), and 51+ (33%). The ethnicity of the participants included Caucasian (33%), African American (33%), and multi-racial (33%). The participants' highest degrees completed consisted of Bachelor (66%), Master (11%), Doctorate (11%), and unknown (11%), all participants graduated between the years of 2018-2022. Participants worked in the following technology-related career fields: Technology Support (11%), Information Technology Consultant (11%), Health Administration/Information Technology (22%), Information Technology (33%), Data (11%), and Sales (11%). According to the demographic information, participants worked in the technology field for a considerable amount of time, 1-10 years (55%), 11-20 years (11%), and 21-30 years (33%); all participants were well experienced in this field. The size of the organizations in which the participants worked varied from 1-2000 employees (11%), 2001-5000 employees (22%), 5001-15,000 employees (22%), 15,001+ (11%), and unknown (33%). Finally, the technology-related work positions included the following: unemployed, Salesforce Analyst, Cardiology PAC-Healthcare, Senior Management Data Analytics, Client Operations Manager, Leader of Engineers in technology, and Senior Information Technology GRG Analyst (see Table 1).

Table 1
Demographics of Participants

Current Work Positions
Unemployed
Sales Force Analyst
Cardiology PAC (Healthcare)
Sr. Mgt. Data Analytics
Client Operations Manager
Leader of Engineer in Technology
Senior Information Technology GRG Analyst

Age	Percentage
20-30	22%
31-40	33%
41-50	11%
51-60	22%
61+	11%

Ethnicity	Percentage
Caucasian	33.33%
African-American	33.33%
Multi-Racial	33.33%

Highest Degree	Percentage
Bachelors	66%
Master	11%
Doctorate	11%
Unknown	11%

Year of Graduation	Percentage
2018	11%
2019	33%
2020	22%
2021	22%
2022	11%

Type of Work	Percentage
Technology Support	11%
IT Consultant	11%
Health Administration/IT	22%
IT	33%
Data	11%
Sales	11%

Years in Technology Field	Percentage
1-10 yrs	55%
11-20 yrs	11%
21-30 yrs	33%

Size of Work Organization	Percentage
1-2000 employees	11%
2001-5000 employees	22%
5001-15,000 employees	22%
15,000+ employees	11%
Unknown	33%

Data Collection

Before beginning data collection, approval was granted by the Institutional Review Board (IRB) to protect the interests of the participants and address any ethical concerns found within the data. A recruitment email was sent to a university list of graduates from technology-related programs who could be possible participants. Additionally, participants were asked to recommend someone else who could participate and met the same criteria using a snowball sampling method. All individuals met the criteria established in the research design.

Following this process, nine participants self-identified and volunteered to participate in the research. Researchers determined eligibility through email contacts and scheduled interviews for each participant. Before the interviews, written consent was received by each participant. Each participant was then interviewed using Zoom conferencing software in 30–45-minute interviews by one of the researchers. The interviews followed a semi-structured list of open-ended questions, followed by the ability for participants to elaborate on any areas they felt needed further explanation. The interviews began with a brief explanation of the research as well as a collection of demographic information.

Interview Questions:

- As a woman, what has been your experience in your most recent workplace? What are some examples?
- As a woman, how have you experienced the technology industry as a whole? What are some examples?
- A sense of belonging for employees has recently emerged as a key factor in the areas of employee retention and job satisfaction. As a woman in a technology-focused position, how do you feel you do (did) or do not (did not) belong within your organization? What about within the technology industry?
- Thinking of the experiences you have discussed, how do/did you navigate those experiences?
- Did you experience support from others to assist you in navigating those types of experiences? If so, how?
- Were you in a technology-related position before your most recent position? If so, why did you leave?
- (If currently employed) Have you ever considered leaving your current position? Why or why not? If so, are you still considering leaving? Why? (If not employed) Why did you leave your last position?
- Have you ever thought about leaving the entire technology industry and doing something else? Why or why not?
- If you could make recommendations related to women, to those leading within the technology industry, what would they be? What advice would you give women in the technology field?

Each interview was audio-taped and transcribed using Zoom software. The transcripts were analyzed, and any identifying information was removed. Each transcript was given a random code to protect the participants' identities. Each transcript was also edited to ensure the audio and the transcripts matched the content and wording. Then, each transcript was emailed to each participant so they could review their own transcript for final approval. Participants were given seven calendar days to respond, and if no response was given after that time, the researchers assumed passive consent. Once all the transcripts were finalized for each participant, they were individually

reviewed to pull out narratives, expressions, and experiences, which were further classified into foundational themes.

Data Analysis

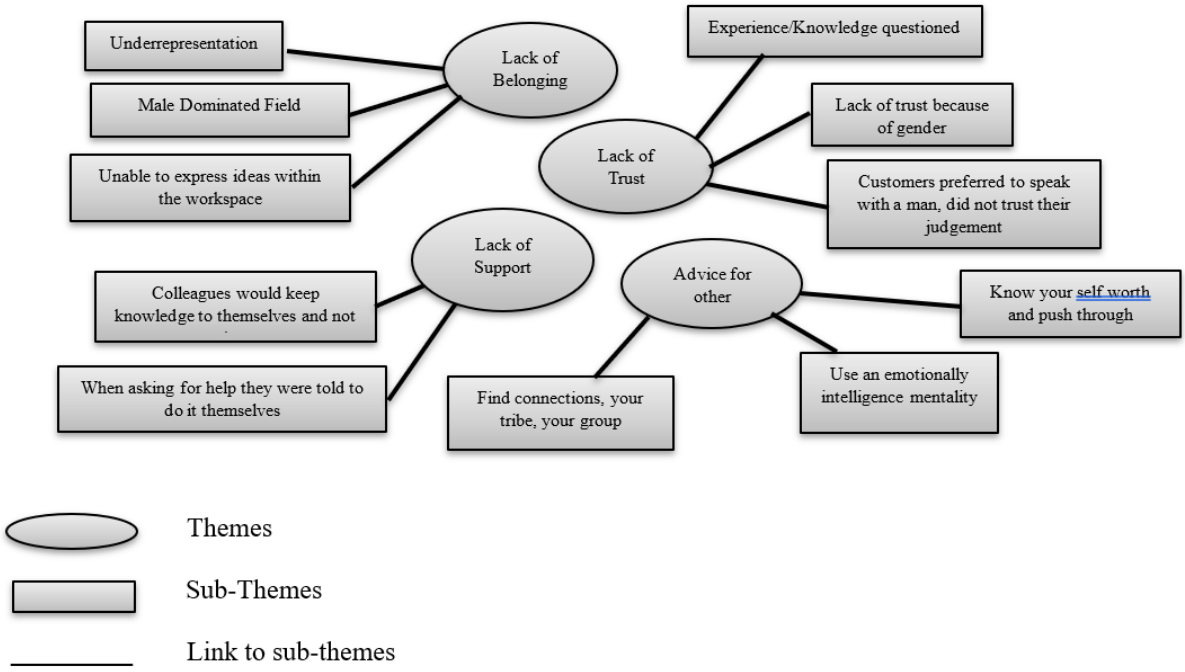
The first step in data analysis involved creating a code book using an Excel spreadsheet to pull out quoted material for each transcript. The researchers then reviewed each quote for possible themes that might be identified in the material. The researchers then met and reviewed each quote to ensure that all themes were identified and categorized into specific areas of information. The themes identified were (1) lack of belonging in the workspace, (2) lack of trust, and (3) lack of support. An additional area of advice for other women was added to the data set as each participant provided some guidance and recommendations for other women going into the technology field.

Data analysis consisted of manually coding the transcriptions to develop concept mappings to derive themes and analyze the results. Themes were pulled from the data set once saturation was achieved (Hennink & Kaiser, 2022; Savin-Baden & Van Niekerk, 2007). According to Hennink and Kaiser (2022), saturation is defined as "the point in data collection when all important issues or insights are exhausted from data" (p. 1). In this case, saturation was achieved with nine participants, and although they had shared experiences, their unique experiences were subjective in detail and meaning.

Results

The study focused on the unique experiences of women in a technology workspace using an interpretive paradigm. The focus was on women in a technology workspace who earned at least a bachelor's degree in a technology-focused field from January 2017 to December 2021. The themes below were identified using a qualitative narrative inquiry approach. The recruitment of participants continued until data saturation occurred with nine participants. Four major themes were identified: (1) lack of belonging in the workspace, (2) lack of trust, (3) lack of support, and (4) advice for other women in technology, see Figure 1.

Figure 1
Themes and Sub-Themes



Note. Designed by the authors.

Lack of Belonging in the Workspace

During the synthesis of the literature review, it was evident that a sense of belonging had an impact on women in the technology industry. It became apparent that the technology industry is male-dominated, making women the minority. A sense of belonging can be impacted by being underrepresented within the workspace. This can diminish the interpersonal connections the male counterparts have with other employee groups, including women (Wilson & VanAntwerp, 2021; Xu & Lastrapes, 2022). All nine participants shared experiences of a time when they felt underrepresented or did not belong: Participant 9 stated "Usually, technology is male-dominated. You get pushed down to the bottom, you get met with so much adversity, you're like, okay, well, I'm just not going to say anything because they're not going to listen to what I say anyway."

Experiencing intimidation was another topic that research participants associated with a sense of not belonging. At times, the participants felt like they could express their ideas or were given menial tasks as opposed to their male counterparts who held similar degrees: Participant 1 stated "I think what made me not feel like I didn't belong was the sort of examples I just gave you was intimidation."

> He would take me into a classroom and there was a certain beep coming from an HP desktop computer, for instance, that I knew what was going on with it. Say it was memory because it had a red flashing LED on it. So I would look, and listening to the beeps, I knew it was [a] memory [issue]. So he asked me, 'Do you know what that means?' I said, yeah, it's a memory issue. So I pulled a good memory out of another one, popped open the case, pulled out the old one, and put in the new one from the other

> computer. And then, after I did that, which is what I was supposed to do, I fired up the machine, and it was good. So basically, he tested me on things like that.

Lack of Trust

Participants voiced their experiences regarding the need for more trust from their male counterparts and, at times, from their customers. They described the connection between being a woman and the lack of trust from their colleagues even though both had the same experience and educational background: "I got second-guessed about everything," in the midst of conversations about work tasks with her male colleagues (Participant 5). There was also an expression of the lack of trust from male counterparts due to gender. Participant 6 stated, "Well, as a whole, people tend to treat you, I guess, like you don't know what you're talking about. And that sometimes is attached to your gender."

Participants described experiences where customers preferred to speak to a male rather than a female because they did not trust their judgment.

> So, I don't get the respect that I think I should get if I was a man. For example, I'm on the phone [with a customer] troubleshooting an issue with them and they will be really rude to me, and so I put my coworker that is a male on the phone and they don't give him a hard time (Participant 5).

One participant voiced a negative experience when doing interviews with her male colleagues. During an interview with a female candidate, the male colleagues stated their need to test her ability and knowledge. The participant expressed that the lack of trust was invalid since her resume detailed more experience than that of previous candidates who did not get tested. She quickly realized the test was due to the candidate's gender because they did not trust her skillset: "We are going to give her a test" (Participant 3).

Lack of Support

All nine participants mentioned support during the interview process. Participants referred to a lack of support from their colleagues, while others felt colleagues would keep their knowledge to themselves and allow them to figure it out on their own. An example of this was noted when one participant asked for help, and their colleague's response was, "Didn't you read the email about it?" (Participant 1). Another one said, "I kind of just had to figure it out on my own; how to, like, navigate through all, like, the difficulties with, like, dealing with other people and trying to get the job done" (Participant 5). Participant 1 described her experience as challenging due to "male trainers" during her orientation phase: "The male techs and, not all male techs, but some would bottle up their knowledge, and they don't like to share."

Advice for Other Women in Technology

Participants described the importance of finding connections when making recommendations to other women in technology: "You find people that understand your struggle. You find your tribe, you find your group, and you work through it;" "I feel that the connections that I've had with other individuals have been my saving grace" (Participant 9). Others expressed that adopting an emotional intelligence mentality and being the catalyst to drive change: Participant 7 stated "Women should be courageous and move forward." Other participants expressed the importance of knowing your self-worth and pushing through challenges: "I would say whatever

fears you have, or whatever failures you face, walk in those fears and see those failures as challenges and lessons that you're learning until you get to your destination" (Participant 8).

Discussion

We know that men heavily dominate the technology workspace and that women have only recently been encouraged to join this workspace (Lewis et al., 2017). The findings of this research study highlighted the challenges and experiences of nine women in the technology industry. The emerging themes centered around a sense of belonging, support, trust, and recommendations for women currently working in the technology field, and each theme revealed various struggles women face in the technical industry.

Many of these themes are present in the behaviors of individuals within this type of workspace. Individuals often do not feel a sense of belonging when their opinions, ideas, and skills are not recognized or trusted. Certainly, we know that the lack of trust in individuals we work with can create a sense of disconnection from unity within the work environment. Most women are seeking a more profound connection; they are seeking to be acknowledged and appreciated. However, it is difficult to find this when others appear to question your abilities or fail to involve you in the process of decision-making. On the other hand, women felt a higher level of belonging when someone within the workspace believed in them and provided the support and trust they needed to excel in this field.

Using a qualitative narrative inquiry study helped the researchers explore the specific experiences of each participant. The interview process aimed to understand how these experiences impact the broader understanding of the retention and exodus in the technology industry. This approach aligns with the intention to break events down into smaller elements to capture the root of events that are difficult to understand. Applying the narrative inquiry method, the researchers enabled participants to share their stories in a personal, specific, and meaningful way. This approach allowed for a natural flow of information and encouraged a depth of understanding by centering the research around the stories shared by the participants. These stories allowed the researchers to develop further an overall understanding of what might be truly needed to enhance and retain women in a STEM field.

Findings

Lack of belonging in the workspace. The interview responses revealed that feelings of inadequate representation and isolation led to a limited sense of connection in the workplace. Many research participants attributed this disconnection to the perception that their male colleagues lacked interest in their viewpoints. This often led the women to refrain from sharing opinions or taking on challenging tasks, regardless of the similarities in qualifications, skills, and abilities. It should be noted that within the research, the participants enjoyed the field of technology but not the space or the work environment. With this in mind, if we supported changes in the space, we could change the culture so that retention and expansion of women within a STEM field would certainly increase. When we see people who see us, we are more likely to develop a social and emotional connection, but when people work against us, we develop feelings of self-doubt and isolation.

Lack of trust. Participants shared that their male counterparts and some customers appeared to extend limited trust, expressed through second-guessing their female counterparts' expertise. This occurred despite sharing or exceeding their experiential and educational history. This mistrust seemed to create a gap in women being recognized for their value-add, opinions, and

contributions. This was also shown in situations where a customer preferred to work with male representatives, reflecting poorly on their perceived capability of the woman representative. This lack of trust in ability was seen even if the women held seniority. When we see others outside of our workspace treat individuals in a way that shows a lack of trust in their skills and abilities, this reflects a higher order of social issues in terms of gender bias and gender preferences. The social perspectives tend to seep into the work environment if the work environment does not challenge these social views about ability.

Lack of support. Participants expressed a lack of support from their peers. There were instances where male counterparts withheld knowledge and left the women to navigate issues in unsupported solitude. Additional examples include offhand comments and challenging orientation experiences due to a refusal to share knowledge with male engineers and technologists. This was a clear representation of the social and cultural dynamics within the workspace. If the workspace does not value the need to teach, support, and grow workers' skills, then workers are faced with trying to learn without support. It was interesting to see that although this was a part of the work environment, women could still navigate their own training needs despite the lack of colleague support. We can develop and grow together if we share our knowledge within our workspace. However, in this environment, we see a separation of individuals, and this separation is the behavior that contributes to the lack of support for women in the workplace.

Advice for other women in technology. Each participant ended the interview with helpful advice for their female counterparts in technology. They discussed the necessity of community and connection to foster resilience and longevity in the field. The participants also recommended emotional intelligence education to support being proactive in women's technical career development. In addition, most participants agreed that if we see more women in the technology workspace, then more women will move into this field; however, we cannot encourage women to join a workspace if a supportive environment does not define that workspace culture.

Overall, the research findings highlight the importance of discussing the many challenges women in technology face. The interviews detailed the concerns, experiences, wins, and recommendations of a small group of women who want to forge a new path for women who choose a career in technology. With self-confidence and emotional intelligence, plus the support of peers, women in technology can remove the roadblocks and create a new future for those who will follow in their footsteps.

Recommendations

Creating an inclusive workplace where all employees feel they belong requires intentional efforts. This includes implementing inclusive policies, fostering supportive leadership, and creating meaningful interactions and feedback opportunities. It is about building a culture where every employee feels valued and connected to the team. According to McCoy (2021), many professions have promoted robust diversity, equity, and inclusion (DEI) efforts without substantive changes. This is partly due to employers implementing DEI programs to reduce legal liability and tokenism without affirmative change after hiring (Hays-Thomas, 2022; McCoy, 2021).

Successful initiatives are fostered through multidimensional facets to cultivate change within an organization. Organizations implementing DEI initiatives should include (1) recruitment and hiring practices that promote strategies to attract a diverse talent pool; (2) training and education programs tailored to increasing awareness and understanding of DEI issues among employees; (3) policy adjustments to ensure fair practices and equal opportunities; And (4) support systems such as employee resource groups and mentorship programs (Baum, 2021; Hays-Thomas,

2022; McCoy, 2021). The key to successful initiatives is to go beyond meeting legal liability and embracing a multi-faceted approach.

Implications

A sincere passion for technology drives a cadre of professionals, regardless of gender. This passion can potentially motivate women to navigate and succeed in a historically male-dominated industry. According to the interviews with women in technology, some women may have a deep-seated passion for technology, which may impact their career paths in the field. A fervent interest in technology can assist women in overcoming biases and obstacles in the field. However, a strong desire to work in this field does not guarantee that women will face fewer obstacles.

The findings of this qualitative narrative inquiry resulted in multiple implications and considerations for future research. In addition, the need to take the information provided and apply it to women in the workplace is inherent in the data. The following implications can help direct future research and inform the decisions made by organizational leadership to consider and work to solve similar challenges for women in technology-related roles. It is thought that if some of these areas of concern can be identified and resolved, women will be more likely to want to enter and remain in technology-related careers.

The first major theme was the lack of belonging, and from a systemic view there are ways in which to address this area in the workspace. One way to build belonging between individuals is to connect them with common interests (Guevara-Ramírez et al., 2022). This allows individuals to see that the differences between them are not as important as the common connections. In a workspace, this can be done by using work groups and teaming efforts (Jiang, 2010; Locke & Latham, 2002; Matsuo, 2022). In addition, if individuals feel they can be authentic within a work team, they are more likely to experience a shared vision (Matsuo, 2022). Another method to enhance belonging within a workspace is to have more representation throughout the levels of management and within the workforce. This ultimately means that more women must be hired throughout the company structure (Guevara-Ramírez et al., 2022).

It is difficult to build trust within organizations, and this was seen in our research in that the lack of trust was a dominant theme. Some of this had to do with individuals trusting women to believe they know what they are doing and are well retained, whereas other examples of lack of trust centered on how customers and other employees treated women. A practical solution to this area of concern would be to enhance training programs that center around diversity and equity and how to communicate between and among groups within a workspace (Holt, 2024; Tagliaro et al., 2024). However, some of the ways in which people communicate have more to do with their personal style and personal beliefs as opposed to organizational culture. With this in mind, any training program should center around disrupting unconscious bias and preconceived prejudices and should be required training during the organizational onboarding process (Guevara-Ramírez et al., 2022).

Additionally, in the work environment, we need to counter the feelings of women's lack of support. We can do this in many ways, but the primary way to build support is to be open to listening to ideas and to include women in the conversation around organizational changes. There must be some adjustment within the workspace to give space for women to be heard, respected, and trusted. The feeling of a supportive environment can be built by providing a management style that is more authoritative, transformative, or based on service leadership (Choudhary et al.2013; Dharejo et al., 2021; Greenleaf, 1977). If women feel they can talk to their management about issues that arise, then they will feel more supported. However, this also means that management must assess their own management style, communication skills, and effectiveness.

If we want to see an increase in the number of women in STEM and technology, leaders need to learn to cultivate women's careers; when we see others who see us, we are more likely to thrive in the workplace. In addition, the inclusion of women enhances the field and has a positive impact on organizational culture. How this need is translated into practice within a workspace must also consider the dynamics of the relationships between and among the employees. However, this also means that we need to learn to appreciate and acknowledge the contributions of women in technology. Arif et al. (2022) stated, "Either way, we are responsible for the inequity if we do nothing to change it" (p. 377).

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