A Study on Employee Intention Towards Information Technology Adoption in the Manufacturing Sectors

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ABSTRACT

The manufacturing sector is integrating advanced IT systems to improve efficiency, productivity, and innovation. However, the success of these projects frequently depends on employees' desire and preparedness to accept new technologies. This study looks at the elements that influence employees' intentions to use IT in manufacturing. Using recognized theoretical frameworks such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), the study investigates individual, organizational, and technological factors. The findings seek to provide managers with actionable insights into increasing IT adoption rates, ultimately promoting operational excellence and competitive advantage.

Keywords: Technology Adoption, Employee Intention, Technology Acceptance Model (TAM),

Organizational Culture, Training and Development, Digital Transformation, Change Management

CHAPTER-1

INTRODUCTION

Global industry operational dynamics have been profoundly altered by the quick development of information technology (IT). The adoption of IT is a key component that propels productivity, creativity, and competitiveness in the manufacturing industry. However, the willingness and intention of the workforce to adopt the technology is just as important to the success of IT implementation in manufacturing as the technology itself. The intention of employees to adopt IT reflects their willingness to incorporate new technological solutions into their work processes, which has a direct impact on how well the technology performs in accomplishing organizational objectives.

Perceived usefulness and ease of use are two important factors that influence the adoption of technology, according to Davis's (1989) Technology Acceptance Model (TAM). These elements have been shown to be crucial in determining user intention and behavior in a variety of industries (Gefen & Straub, 2000). Other factors that affect workers' preparedness for IT adoption in manufacturing include job relevance, organizational culture, and technology infrastructure (Chwelos et al., 2001). IT integration into manufacturing processes, such as Internet of Things (IoT) solutions and enterprise resource planning (ERP) systems, necessitates a workforce that is both capable and driven to use these technologies efficiently.

Fear of losing one's job, inadequate training, and perceived complexity are common reasons for resistance to IT adoption (Aboelmaged, 2010). Organizations must create a positive atmosphere by offering opportunities for ongoing learning and open communication regarding the advantages of IT deployment in order to overcome these obstacles. Research also emphasizes how management and leadership shape employee attitudes and propel effective IT adoption plans (Ifinedo, 2011).

The purpose of this study is to investigate the variables affecting workers' intentions to adopt IT in the manufacturing industry. By looking at these components, the study hopes to shed light on how to get past opposition, promote acceptance, and improve manufacturing organizations' overall technological transformation. This study aims to explore the factors influencing workers' intentions to adopt IT in the manufacturing industry. The specific objectives include:

- To examine the role of organizational factors, such as leadership support and training, in shaping adoption behaviour.
- To analyse the impact of individual differences, including demographic and psychological attributes, on IT adoption.
- To assess barriers to IT adoption and propose strategies for overcoming resistance.

Gap Identified

While existing research extensively analyses technology adoption in general, little research has been conducted on the unique dynamics of employee intention in the manufacturing business. Most studies concentrate on technological or managerial perspectives, occasionally overlooking the critical role of employees as end users. Furthermore, there is a lack of comprehensive frameworks that address the psychological, organisational, and technological concerns particular to manufacturing. This study addresses these gaps by performing a sector-specific investigation of employee ambitions for IT adoption.

Expected Outcomes

- Identification of critical enablers and barriers to IT adoption in the manufacturing sector.
- A deeper understanding of the psychological and demographic factors affecting adoption intentions.
- Practical recommendations for managers to design interventions that address resistance and foster a positive adoption environment.
- Provide actionable insights for managers to design effective training and support systems.
- Develop a strategic framework to foster a positive organizational culture conducive to IT adoption.
- Contribute to academic knowledge by advancing the understanding of employee intention in technology adoption within industrial contexts.

CHAPTER-2

REVIEW OF LITERATURE

The following literature reviews are drawn from empirical and theoretical studies on the roles of Employee Intention Towards Information Technology Adoption in The Manufacturing Sectors. The aim is to establish a comprehensive understanding of Intention Towards Information Technology Adoption in The Manufacturing Sectors by Employees influences in workplace culture, employee well-being, and organizational outcomes

Zhang et al., (2023) studied that the adoption of new technologies has been widely studied through models such as the Technology Acceptance Model (TAM), Technology–Organization– Environment (TOE) framework, and Innovation Diffusion Theory (IDT). TAM emphasizes that perceived usefulness (PU) and perceived ease of use (PEOU) are critical determinants of user acceptance, suggesting that user-centric design can enhance these perceptions and ultimately increase behavioral intention (BI) to adopt the technology (Davis, 1989). The TOE framework highlights the combined influence of technological, organizational, and environmental contexts on adoption decisions, stressing the importance of robust support systems and organizational infrastructure in shaping user perceptions (Tornatzky & Fleischer, 1990). Meanwhile, IDT focuses on innovation characteristics such as relative advantage, complexity, and compatibility, illustrating the role of individual innovativeness in fostering early adoption and overcoming resistance to new technologies (Rogers, 2003).

These foundational models provide a robust framework for examining factors influencing the adoption of Internet of Things (IoT) technologies in the logistics industry.

Nikou et al., (2022) pointed the role of information literacy (IL) and digital literacy (DL) has been extensively explored in the context of digital transformation, highlighting their importance in shaping workforce behavior and technology adoption. While traditional models like the Technology Acceptance Model (TAM) focus on perceived usefulness (PU) and perceived ease of use (PEOU) as predictors of technology adoption (Davis, 1989), recent studies suggest that IL and DL are critical antecedents influencing these perceptions. Information literacy pertains to the ability to locate, evaluate, and effectively use information, while digital literacy involves the ability to navigate, understand, and utilize digital tools (Forster, 2019). Research shows that both literacies enhance PEOU by reducing the cognitive effort required to engage with digital technologies, though their impact on PU remains indirect (Ali & Richardson, 2018). Additionally, workforce demographics, such as age and generational cohorts, have been linked to differing levels of IL and DL, but emerging evidence suggests that literacy skills, rather than generational characteristics, may better predict technology adoption behaviors (Paganin & Simbula, 2021). As digital literacy and information literacy become indispensable in the workplace, managers are increasingly focused on identifying skill gaps and providing targeted training to enhance employees' confidence and reduce anxiety in using new technologies (Tufts, 2010; Vodanovich et al., 2010). This evolving body of literature underscores the necessity of integrating literacy dimensions into TAM to better understand and predict employees' intentions to adopt and effectively utilize digital technologies in modern workplaces.

Chew et al., (2024) founded the relationship between information technology (IT), organizational structure, and organizational communication has been a focus of extensive research, particularly in the context of service companies. IT has significantly transformed traditional service delivery processes, reshaping organizational communication and coordination mechanisms (Davenport & Short, 1990). Studies suggest that IT plays a pivotal role in enhancing organizational efficiency by streamlining communication channels and enabling more effective information flow (Daft & Lengel, 1986). However, the relationship between IT and organizational communication is often mediated by organizational structure, which serves as a critical intermediary. Organizational structure influences how IT resources are deployed and integrated, thereby shaping their impact on communication processes (Galbraith, 1977). While IT provides the tools for communication, the structure determines how these tools are utilized within the organization (Mintzberg, 1983). Research also highlights potential risks associated with IT adoption, including data security threats, which can disrupt communication processes and necessitate robust security measures and training (Von Solms & Van Niekerk, 2013). Furthermore, the effectiveness of IT in fostering organizational communication is contingent on aligning technological capabilities with organizational needs through well-defined roles, responsibilities, and standards (Tushman & Nadler, 1978). This body of literature underscores the importance of a structured approach to integrating IT within service organizations to enhance communication while addressing associated challenges.

Rogala et al., (2024) pointed the adoption of Quality 4.0 technologies by quality professionals has garnered significant academic and industrial attention, emphasizing factors influencing acceptance and utilization within high-tech industries. Grounded in the Technology Acceptance Model (TAM), research highlights the importance of perceived usefulness (PU) and perceived ease of use (PEOU) as key determinants shaping attitudes and behavioral intentions toward technology adoption (Davis, 1989). Several studies have emphasized that PEOU exerts a more pronounced effect, suggesting that fostering confidence in navigating new technologies is critical for successful implementation (Venkatesh & Davis, 2000). Additionally, tailored training programs and ongoing support mechanisms, such as consulting services, are deemed essential to address the skills gap and enhance professionals' engagement with Quality 4.0 technologies (Santos et al., 2021). Scholars also point to the readiness of quality professionals to adopt new technologies even prior to formal organizational rollout, reflecting their openness to innovation when adequately supported (Kannan & Garad, 2020). Despite extensive research on the TAM model's variables, limited studies directly link capacity-building initiatives to the willingness of quality professionals to adopt Quality 4.0 technologies, underscoring the need for further exploration of

targeted interventions. This literature underscores the necessity of comprehensive education, practical skill development, and confidence-building initiatives to promote seamless integration of Quality 4.0 technologies within high-tech organizations

Toni et al., (2021) studied that the advent of Automotive 4.0, encompassing automated vehicles (AVs) and car-sharing technologies, represents a transformative shift in the transportation landscape. Studies have increasingly focused on understanding consumer adoption of these innovations, applying models like the Theory of Planned Behavior (TPB) to assess determinants such as perceived behavioral control, subjective norms, and environmental considerations. Unlike traditional models, recent research incorporates additional constructs such as environmental benefits and inhibitors like privacy concerns and perceived danger (König & Neumayr, 2017). Findings suggest that while perceived feasibility and social pressures strongly influence the intention to adopt AVs, attitudes toward these technologies often play a less significant role, likely due to limited consumer awareness and firsthand experience with automated driving (Bagozzi, 1992).Environmental benefits, such as reduced pollution, fuel efficiency, and traffic decongestion, emerge as key drivers of consumer interest, highlighting the importance of sustainable mobility in influencing adoption. However, concerns regarding privacy, safety, and loss of control remain significant inhibitors. Studies also underline the role of technological readiness and the cultural and urban-rural divide in shaping user acceptance, with driving enthusiasts and suburban residents exhibiting varied adoption tendencies (Böhm et al., 2006; Glancy, 2012). Moreover, the interplay between AVs and car-sharing adoption offers an intriguing avenue for further exploration, particularly regarding the shift from ownership to shared mobility models.Managerially, clear communication about the societal and environmental advantages of AVs, coupled with assurances regarding risk management, is pivotal for fostering positive consumer perceptions and wider acceptance. Additionally, understanding changes in urban transportation patterns and aligning them with users' preferences is essential for achieving the sustainable development goals of Agenda 2030. The literature thus emphasizes the need for further research into consumer behavior, urban implications, and policy frameworks to support the successful diffusion of Automotive 4.0 innovations.

Gatzioufa et.al.,(2022) pointed that the adoption and use of chatbots have garnered increasing attention in recent years, with a growing body of empirical research focused on understanding users' behavioral intentions. Key theoretical models, including the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT and UTAUT2), are commonly employed to analyze factors influencing chatbot adoption. Critical determinants such as performance expectancy, effort expectancy, social influence, trust, and user attitude frequently emerge as significant predictors of behavioral intention. Notably, customer service has been the primary area of application, reflecting companies' efforts to leverage chatbots for rapid, efficient, and cost-effective interactions with users, particularly in the context of increased online activity during the pandemic. Quantitative research methodologies, particularly e-questionnaires and Partial Least Squares Structural Equation Modeling (PLS-SEM), dominate the field, with studies concentrated mainly in Europe and Asia. However, significant geographic and sectoral gaps exist, such as the absence of studies in regions like Oceania and industries such as telecommunications, despite the prevalent use of chatbots in these areas. This highlights the need for broader research to generalize findings across diverse socio-economic and cultural contexts. Future research directions emphasize addressing gaps in understanding the role of factors such as response time, user experience efficiency, pre- and post-use behaviors, and mobile app convenience. Additionally, the interplay between user personality traits and innovation readiness requires further exploration, as individuals' willingness to adopt new technologies can vary widely. Trust-building and service quality assurance are critical areas for companies to focus on, as these significantly influence user satisfaction and loyalty. The literature underscores the importance of examining chatbot adoption from a multi-dimensional perspective, incorporating socio-economic, cultural, and technological readiness factors to uncover insights that can guide both academia and industry in optimizing chatbot implementation strategies.

Kulkarni et.al., (2021) pointed that the adoption of additive manufacturing (AM) in small- and medium-sized enterprises (SMEs) has been extensively studied, revealing significant benefits, challenges, and business factors influencing this process. Among the key advantages are reductions in inventory costs and production waste, alongside enhanced product customization capabilities. However, SMEs face notable challenges, including the high cost of machinery, the integration of metal components, and the need for skilled labor. Additionally, limitations in the dimensions of components that can be produced remain a barrier. While prior research has emphasized these challenges, this study uniquely highlights their impact from the perspective of SMEs.Business factors such as supply chain management, production output, and cost-benefit analysis also play a critical role, with a moderate positive influence on AM adoption. Interestingly, factors like firm size, production capacity, government regulations, and customer expectations appear to have minimal impact. For production managers, the findings underscore the importance of aligning AM implementation with supply chain processes and exploring opportunities to expand into diverse market segments, such as medical or dental components, to offset high initial investments. Furthermore, SMEs are encouraged to evaluate AM technology based on their manufacturing strategies, focusing on long-term benefits through cost reduction and enhanced production capabilities. This study also identifies a gap in research concerning the adoption of AM in industries beyond engineering, such as healthcare, textiles, and aerospace. Future studies are recommended to explore these areas and consider additional factors influencing adoption. By extending the understanding of AM implementation, this research contributes valuable insights for SMEs aiming to integrate innovative technologies while addressing associated challenges effectively.

Kruger et.al., (2024) studied that the fourth industrial revolution (4IR) has introduced transformative technologies that drive automation and digitalization across various domains, reshaping socio-economic landscapes. To understand the adoption of these smart technologies, numerous studies have employed technology adoption theories and models. A systematic literature review of 125 relevant studies from 2015 to 2021 revealed that the Technology Acceptance Model (TAM) remains the most widely used framework. However, a significant number of studies extended TAM's theoretical underpinnings, indicating the evolving nature of these models to accommodate the complexities of 4IR technologies.The studies spanned 16 subject areas, reflecting the expansion of 4IR research beyond its initial focus on manufacturing. Despite this diversification, research efforts remain predominantly concentrated in European and Asian regions. These findings underscore the need for a generalizable 4IR-specific adoption model that builds on existing frameworks while integrating additional impactful constructs. This study provides valuable insights for strategists, policymakers, and researchers to guide technology adoption, promote innovation, and adapt to the demands of the digital age. It also establishes a foundation for future research to refine adoption models and address gaps in understanding human behavior dynamics within the 4IR context

Luomaranta et al., (2022) founded that the adoption of additive manufacturing (AM) in value chains is a complex process that involves both technological and organizational changes. Previous research has emphasized the importance of product and process innovations in AM adoption, particularly within collaborative project settings. This study adds to the literature by introducing the concept of AM value chain adoption, which extends the understanding of AM adoption beyond individual firms to encompass interorganizational cooperation. The study highlights how firms can leverage external knowledge from other companies with expertise in AM, enhancing their ability to innovate and adopt new technologies without the need for direct investment in AM machines. This collaborative approach allows companies to recognize the value-adding potential of AM and optimize their manufacturing processes.The theoretical contributions of this study merge technology adoption theories with the information processing view, emphasizing the importance of interorganizational integration in managing the uncertainties of product and process innovation. By cooperating with other firms, companies can enhance their information processing capacity and better navigate the complexities of AM adoption. The study also identifies the technical and business value of AM, showing how it can outperform traditional manufacturing methods in terms of cost, functionality, and quality. These findings contribute to the existing body of research on AM application selection and value-driven innovation.Practically, the study encourages companies to educate themselves on AM's capabilities, enabling them to recognize potential applications and collaborate with knowledgeable partners. The

cases presented demonstrate how successful AM adoption can be achieved through collaborative innovation projects, where firms' combined expertise contributes to designing and manufacturing AM products optimized for the value chain. Despite the limitations of the case study approach, this research provides valuable insights into how companies can successfully adopt AM technologies through inter-organizational collaboration and knowledge-sharing. Future research could expand on these findings by exploring different business environments and the specific capabilities required for AM adoption.

Van Dun et al., (2023) studied that the adoption of Industry 4.0 technologies in manufacturing operations is a complex process that requires not only technological investments but also significant attention to the human factors influencing technology acceptance. Existing literature on Industry 4.0 adoption predominantly focuses on technological and organizational factors, with limited emphasis on the role of employees in the adoption process. This study contributes to bridging this gap by exploring the determinants of employee acceptance, with a focus on managerial influence. Drawing from the Unified Theory of Acceptance and Use of Technology (UTAUT) and Social Exchange Theory, the study proposes that managers' transformational leadership style is crucial in fostering employee acceptance of Industry 4.0 technologies. It also suggests that emotional intelligence, both at the managerial and employee levels, plays a significant role in the adoption process, particularly in terms of recognizing and addressing emotions during the transition to new technologies. These insights extend existing theoretical frameworks on technology adoption by incorporating social and emotional aspects that influence how employees accept and engage with Industry 4.0 innovations. The findings highlight the importance of emotional and leadership dynamics in ensuring successful technology integration in manufacturing contexts, thereby offering new perspectives for both researchers and practitioners seeking to enhance Industry 4.0 adoption.

Ishengoma et al., (2024) founded that the adoption of mobile-based artificial intelligence (AI) services in small and medium-sized enterprises (SMEs), particularly in developing countries like Tanzania, is a subject of growing interest due to its potential to enhance productivity and innovation. Prior research on technology adoption, especially in developing economies, highlights several factors that influence the successful integration of new technologies. Theoretical frameworks such as the Mobile Services Acceptance Model (MSAM) and Innovation Diffusion Theory (IDT) have been extensively applied to understand the complexities of technology adoption. Studies have emphasized key factors such as perceived usefulness, ease of use, and the contextual characteristics of the adopting organization. These factors are critical in shaping how SMEs in Tanzania perceive and implement mobile-based AI services. Furthermore, factors such as trust, infrastructure availability, cost, and cultural aspects like power distance play significant roles in determining the pace and success of adoption. While much research has focused on technological and organizational dynamics, the socio-cultural context, especially in hierarchical settings, requires careful consideration to ensure effective adoption. The literature also points to the need for government policies that support infrastructure development, such as improving access to high-speed internet, which is essential for the widespread implementation of mobilebased AI technologies. Additionally, the potential for AI to boost productivity and promote economic sustainability within SMEs further underscores the importance of understanding and addressing the unique challenges of technology adoption in such contexts. This study contributes to the existing body of knowledge by providing a comprehensive framework tailored to Tanzanian SMEs, offering valuable insights for both researchers and practitioners involved in technology adoption in similar contexts.

Ukobitz et al., (2021) studied that the organizational adoption of three-dimensional (3D) printing (3DP) technology has been widely researched, yet its adoption remains limited despite the significant advantages it offers across multiple manufacturing industries. A comprehensive review of the existing literature reveals various insights into the adoption process, the theoretical frameworks guiding adoption decisions, and the factors influencing adoption rates. The diffusion of innovation (DOI) theory emerges as the dominant model in adoption studies, often used in combination with user-centered decision frameworks to provide more precise insights. The literature review identifies key drivers of adoption, such as perceived benefits, cost, technical feasibility, and organizational readiness, which are frequently cited as essential

for successful implementation. However, there is a notable gap in understanding the role of environmental variables and contingency factors in organizational 3DP adoption. Furthermore, while existing studies provide valuable guidance for managers, there is a lack of empirical data on the actual impact of 3DP adoption across different organizational domains. The findings from this literature review underscore the need for more targeted research in these underexplored areas, offering potential pathways for future studies. These insights are valuable not only for researchers aiming to advance the theoretical understanding of 3DP adoption but also for practitioners and managers who seek to make informed decisions regarding the integration of 3DP technologies into their organizations. The review concludes by emphasizing the importance of a holistic evaluation of 3DP adoption's impact and provides a research agenda to address the gaps identified in current literature.

Ronchini et al., (2023) founded that adoption of additive manufacturing (AM) has significant implications for upstream supply chain (SC) design, yet its impact remains underexplored in existing literature. Several studies have conceptualized potential SC configurations, such as centralized and distributed manufacturing approaches, where AM is deployed either in a central hub or in local hubs close to the end customer. Recent research has also explored the make-or-buy decision regarding AM adoption, revealing that companies face key drivers and barriers when deciding whether to integrate AM in-house or rely on external suppliers. Theoretical frameworks, such as transaction cost economics (TCE), have been used to understand these decisions, highlighting the influence of factors like technology experience, production control needs, and the high initial investments required. Case studies in this field show that AM adoption can lead to four distinct SC design patterns: make, buy, make and buy, and vertical integration. However, the research also identifies barriers, such as a lack of skills and knowledge, which can hinder the adoption process. Despite the growing interest in AM's potential to transform supply chains, the existing body of research primarily relies on qualitative case studies, and there remains a need for quantitative studies to better understand the actual benefits and contingencies affecting AM adoption. Future research should explore the impact of AM on the supply base, considering the contingency factors that vary by industry and company size, and further investigate how AM adoption influences SC design and performance.

Adade et al., (2024) studied that the adoption of digital technologies by local governments for citizen collaboration has garnered increasing interest, especially with the rise of city digital twins. Several frameworks, including the Technology-Organization-Environment (TOE) model, have been employed to explore the factors influencing technology adoption in the public sector. Research has identified key factors within the TOE dimensions that shape local government decisions to adopt digital collaboration tools. Within the technology dimension, concerns around security and privacy play a crucial role, while the organization dimension emphasizes the importance of top management support for successful adoption. The environment dimension highlights political influence as a significant determinant, reflecting how governmental policies and the broader political climate affect digital tool integration. Moreover, recent studies extend the TOE framework by adding a stakeholders' dimension, recognizing the influence of citizens' technological experience on the adoption process. This extension underscores the complexity of technology adoption for government-citizen collaboration, as stakeholders' needs and perspectives can significantly impact decision-making. While previous studies have contributed valuable insights, they often focus on specific technologies or geographical contexts. Future research should further explore the role of stakeholders in the adoption process and empirically investigate local governments' motivations and barriers to adopting city digital twins for collaborative planning.

Asokan et al., (2022) founded the integration of Industry 4.0 technologies into supply chain operations has the potential to significantly enhance socially responsible operations performance (SROP). Recent research has highlighted the role of digital technologies in transforming business practices, particularly in the wake of disruptions such as the COVID-19 pandemic. Technologies such as big data analytics, digital twins, augmented reality, block chain, 3D printing, artificial intelligence, and the Internet of Things (IoT) are recognized for their ability to improve both organizational and community social performance. These advancements offer a dual benefit: enhancing internal operations, such as employment

practices, health and safety, and business practices, while also contributing to broader social goals, including quality of life, social welfare, governance, and economic growth. Existing literature has explored the intersections of digital technology and sustainability, often focusing on efficiency and cost-effectiveness, but fewer studies have connected these technologies with the specific goal of fostering social responsibility.

This gap is addressed by the novel framework presented in this research, which emphasizes three overarching research agendas— "Trust through Technology," "Responsible Relationships," and "Freedom through Flexibility"—that link technological advancements with sustainable and responsible business practices. This research provides valuable insights for organizations seeking to align their digital transformation strategies with long-term social responsibility goals, offering a competitive advantage in the post-COVID-19 recovery period. Further studies are needed to explore how these technologies can be implemented effectively across various industries to ensure both operational efficiency and social impact.

Skelton et al., (2020) Pointed that the Employee turnover presents significant costs to organizations, impacting both financial performance and broader societal well-being. Prior research has emphasized the high expenses associated with turnover, often exceeding the cost of an employee's annual wages, and its potential negative effects on productivity, morale, and even community services. Job satisfaction and job embeddedness have been identified as critical factors influencing employee retention. Job satisfaction reflects employees' contentment with their roles and work environment, while job embeddedness refers to the extent to which employees are connected to their organization, including their links to coworkers, the fit with the company culture, and their perceived sacrifices if they were to leave. Studies have shown that employees who are satisfied with their jobs and strongly embedded in the organization are less likely to intend to leave. In the context of Southeastern U.S. manufacturing, where employee turnover is particularly costly, this study adds valuable insights into how these factors influence turnover intentions. The results from the multiple regression analysis underscore the importance of fostering job satisfaction and embedding employees within the organization as key strategies for retention. Given the crucial role of employee retention in sustaining productivity and contributing positively to social and economic stability, organizations are encouraged to consider these factors in their retention strategies. This research fills a gap in understanding how job satisfaction and job embeddedness specifically relate to turnover intentions in the manufacturing sector of the Southeastern U.S., offering practical implications for managers aiming to reduce turnover and its associated costs.

Buba et al., (2022) studied that The adoption of Green Information Technology (Green-IT) is increasingly important for organizations seeking to reduce their carbon footprint and operating costs, especially in the context of manufacturing industries in developing economies like Nigeria. Previous studies have explored various factors that influence the intention to adopt Green-IT, including organizational attitudes, environmental concerns, and decision-makers' perceptions of the technology's benefits. Theories such as the Norm Activation Model (NAM) and the Theory of Planned Behavior (TPB) have been widely applied to understand the behavioral intentions behind technology adoption, providing a framework to identify key drivers such as subjective norms, perceived behavior control, and personal norms. Research has consistently shown that decisionmakers' attitudes, awareness of environmental consequences, and responsibility attribution significantly influence their intention to adopt Green-IT. Furthermore, the importance of top management support in facilitating Green-IT adoption has been emphasized, as their attitudes play a critical role in shaping the organizational culture and policies that promote sustainability. This study contributes to the existing literature by applying the NAM and TPB frameworks to understand the specific factors influencing Green-IT adoption in Nigerian manufacturing industries, highlighting that a positive attitude toward Green-IT among decision-makers is essential for successful implementation. Additionally, the study underscores the role of awareness campaigns and social sector involvement in enhancing the adoption of Green-IT for environmental sustainability.

Kumar et al., (2018) pointed that the implementation of Advanced Manufacturing Technology (AMT) has become a critical factor in the evolution of manufacturing systems, driving innovation and improving production efficiency. Research has highlighted various success factors that influence the effective integration of AMT into manufacturing operations, including organizational structure, manufacturing strategy, and human resource capabilities. Studies have shown that AMT implementation typically leads to significant changes in both production systems and organizational strategies. These changes, however, are not always directly linked to human resource redesign, but often occur indirectly through adjustments in the production system. The use of Structural Equation Modeling (SEM) has become a common approach to testing hypotheses in this domain, with several studies validating the positive relationships between key success factors and AMT implementation. These findings suggest that manufacturing firms must focus on aligning their organizational structure and manufacturing strategy with AMT adoption to achieve successful outcomes. Furthermore, research has identified that unnecessary investments in improving worker skills without assessing their alignment with production system changes can hinder the effective implementation of AMT. Future research in this area could expand on the financial dimensions of AMT adoption, such as investment costs and return on investment, as these factors were not considered in the present study. Additionally, applying these models to different sectors, such as the process industry or hand tool industry, could further validate the findings and enhance understanding of AMT implementation across diverse manufacturing contexts.

Shankar et al., (2022) founded the adoption of mobile human resource management applications (mHRM apps) has emerged as an innovative solution for organizations looking to streamline HRM processes. However, despite their potential, resistance to their adoption remains a significant challenge for many organizations. Research has shown that this resistance can be attributed to several psychological factors, including status quo bias (SQB), which causes individuals to prefer the current state over change, even when the new solution may offer improved efficiency. Factors such as regret avoidance, inertia, perceived switching costs, and perceived threat are key drivers of this resistance, as they create psychological barriers to the adoption of new technologies. Additionally, personal innovativeness, which refers to an individual's willingness to embrace new technologies, has been identified as a moderating factor. High personal innovativeness has been found to reduce the negative impact of these resistance factors, facilitating the adoption of mHRM apps. This highlights the importance of addressing both organizational and individual factors in overcoming resistance to technological change. The use of structural equation modeling (SEM) and PROCESS macro in examining these relationships offers valuable insights for HR professionals and organizations seeking to implement mHRM solutions more effectively, suggesting that fostering personal innovativeness could be a key strategy in reducing resistance to mHRM adoption.

Gupta et al., (2017) pointed that the adoption of e-government by government employees has been a critical area of study, particularly in the context of developing countries like India. While much of the literature on e-government focuses on citizen adoption, research on employee adoption remains relatively limited. Previous studies have highlighted a variety of factors that influence government employees' willingness to embrace e-government, including technological challenges, administrative issues, infrastructure problems, and security concerns. The adoption process is also hindered by a lack of trust in technology and the digital divide. To better understand these factors, a recent study used the Analytic Hierarchy Process (AHP), a multi-criteria decision-making tool, to prioritize the most significant factors influencing employee adoption of e-government in India. The study identified four main categories of influencing factors: personal characteristics, technical factors, organizational factors, and trust. Among these, organizational and technical factors were found to be the most critical. The study emphasized the importance of training, technical infrastructure, access speed, technical support, and trust in infrastructure. These factors are essential for ensuring that government employees can effectively adopt and use e-government applications. However, the study acknowledges certain limitations, such as potential biases in the AHP pair-wise comparisons and the exclusion of interrelationships between factors. Future research could extend these findings by incorporating other factors and applying more complex models, such as the Analytic Network Process (ANP), to better capture these relationships. The practical implications of this study are valuable for

government organizations aiming to enhance the adoption of e-government by providing targeted support, training, and reliable technical infrastructure to employees.

Singh et al., (2024) founded the ongoing Fourth Industrial Revolution, characterized by the integration of advanced technologies into manufacturing, has prompted industries worldwide to adopt digitalization as a key strategy for resource optimization. In India, the government has emphasized the importance of digitization to facilitate industrial growth and sustainability. However, the adoption of digital manufacturing technologies in India, particularly in Northern regions, remains underexplored. A recent survey-based study focused on understanding the current status of digital manufacturing in Northern India, addressing both demographic and operational factors that influence digitalization efforts. The study identified three primary operational drivers of digital transformation: internal Research and Development (R&D), supply chain capabilities, and market adaptability. These factors were analyzed using ordinal logistic regression to understand their contribution to the digital manufacturing process. Key findings revealed that technological upgradation was largely independent of the industry type, turnover, or location, indicating a uniform push for digitization across different sectors. Despite the survey's limitations—such as its focus on the National Capital Region and a relatively narrow range of factors—this study offers valuable insights into the challenges and opportunities facing Indian industries in adopting Industry 4.0 technologies. The findings aim to assist policymakers and industry leaders in facilitating smoother digital transitions by providing actionable recommendations for minimizing resistance and enhancing the effectiveness of digital technologies. This research contributes to a better understanding of the practical aspects of digitalization in India and presents a novel approach by combining statistical analysis and predictive insights to guide future interventions.

Dutta et al., (2020) pointed the adoption of Industry 4.0 technologies in India's small and medium discrete manufacturing establishments (SMMEs) is increasingly seen as a crucial factor in transforming the country's manufacturing landscape. In response to the Indian Government's National Manufacturing Policy, which is being revamped to integrate Industry 4.0 elements, several initiatives are being undertaken to catalyze and support this transformation. The literature review and subsequent maturity assessment survey conducted among over 250 Indian SMMEs provide insights into the current status and aspirations of these businesses towards adopting digital technologies. The findings suggest that SMMEs prioritize operational measurements, followed by improvements in manufacturing and design processes, as the key areas for digital transformation. Real-time machine data capture and performance-based decision-making are identified as crucial steps for enhancing manufacturing and design strategies. However, the maturity assessment also reveals significant gaps between the current digital proficiency of Indian SMMEs and their aspirations for 2020. This gap highlights the need for targeted support from policymakers, industry leaders, and academic institutions to address skill development and facilitate digital adoption. The study also emphasizes the potential of digitalization to foster lean manufacturing practices, promote sustainability, and create alternative employment opportunities, particularly benefiting sectors like agriculture, which can improve efficiency and reduce economic alienation. Despite challenges, such as the limited availability of country-specific academic literature and the evolving nature of the maturity assessment methodology, this research provides valuable insights into the barriers and opportunities for digital-centric transformation in India's manufacturing sector.

Borana et al., (2024) studied the Digital transformation (DT) has become a significant focus not only for large enterprises (LEs) but also for small and medium-sized enterprises (SMEs), especially in sectors like manufacturing. DT has been identified as a critical factor in driving improvements across various business areas, including product quality, customer service, revenue growth, productivity, and environmental protection. While DT brings numerous benefits, including risk mitigation and enhanced operational efficiencies, the adoption of such technologies in developing countries like India faces substantial challenges, particularly for manufacturing SMEs. The literature highlights several barriers to DT adoption, including high investment costs, difficulty in achieving a satisfactory return on investment, and the need for a multiskilled workforce. These obstacles are particularly pronounced in India, where manufacturing SMEs often lack the financial and human resources to implement advanced digital technologies. The study addresses these challenges by

utilizing an expert team to validate the identified barriers within the context of Indian SMEs and employs the interpretive structural modeling approach to model the relationships and dependencies between these barriers. This research contributes to the understanding of DT adoption challenges in the Indian manufacturing sector and provides valuable insights for practitioners and policymakers to navigate these barriers effectively.

Favoretto et al., (2022) founded the Digital transformation (DT) has emerged as a critical focus for manufacturing companies seeking to leverage advanced technologies for improving their operations and competitive positioning. The academic and practical challenges associated with DT adoption have prompted significant research efforts. A systematic literature review of 176 articles published between 2003 and 2019 provides a comprehensive understanding of the obstacles faced by manufacturing companies in their digital transformation journeys. Key challenges identified include organizational commitment, value creation, value proposition, value delivery, value capture, infrastructure development, and data security. These challenges are integral to the business model architecture of manufacturing firms and directly impact the different phases of DT. The review highlights the importance of addressing these barriers to ensure successful digital transformation and provides a conceptual framework that categorizes the challenges while linking them to the broader value structure of businesses. Furthermore, the study identifies several research gaps, suggesting opportunities for future exploration that could further enhance the understanding of DT in manufacturing contexts. This review not only categorizes the challenges but also proposes a framework to guide management decisions and facilitate more rigorous academic studies in this domain.

Mittal et al., (2024) pointed the concept of Quality 4.0 has gained prominence in the era of digital transformation, particularly within manufacturing industries seeking to leverage digital technologies to enhance operational performance. Several studies have identified organizational variables that influence the adoption and success of Quality 4.0 initiatives. The current study aims to examine these organizational variables within the context of an Indian manufacturing company undergoing digital transformation. Utilizing the Analytic Hierarchy Process (AHP), this research identifies and prioritizes key factors such as committed leadership, collaboration, and a strong quality culture. These factors are essential for achieving high productivity and maintaining a competitive advantage in the digital era. Previous literature highlights the importance of leadership commitment and organizational collaboration in driving successful digital transformations. Studies have also emphasized the role of a quality-centric culture in ensuring the seamless integration of advanced technologies into organizational practices. The findings of this study contribute to the existing body of knowledge by offering a structured framework for understanding and prioritizing these organizational variables, providing valuable insights into how manufacturing companies can enhance their Quality 4.0 performances. Furthermore, the study's use of AHP helps to provide a methodologically rigorous approach to evaluate and assign importance to these variables, ultimately offering guidance for organizations aiming to navigate the complexities of digital transformation and achieve sustainable success.

Pandey et al., (2009) studied that the comparative study of productivity in the manufacturing sectors of China and India has been an area of interest for economists and policy analysts, particularly in the context of their differing economic trajectories. Previous studies have highlighted China's rapid economic growth, attributed in part to its substantial industrial restructuring and openness to foreign investment. Several scholars have examined the significant role of China's government policies, including the endorsement of private property rights and labor market reforms, in boosting productivity. For instance, China's late 1990s shift towards privatization and ownership restructuring significantly impacted its manufacturing sector, as documented in numerous studies on industrial policy and reform (Lu, 2000; Fan, 2005). Similarly, the labor retrenchment programs that targeted redundant public sector employees are considered pivotal in increasing operational efficiency within the Chinese manufacturing industry. In contrast, India, while benefiting from its large domestic market and a strong services sector, has faced challenges in improving its industrial productivity, partly due to slower economic reforms and difficulties in enhancing labor market flexibility (Srinivasan, 2004). The study by **(Author, Year)** emphasizes that China's institutional changes, especially in property rights and labor management,

contributed substantially to its manufacturing productivity growth during the 1998–2003 period, with policy-driven reforms accounting for approximately 30% of its total factor productivity (TFP) growth. This finding contrasts with India's more gradual pace of structural transformation, with

India's manufacturing sector not benefiting from similar levels of institutional overhaul, especially in the labor and ownership sectors. This comparative analysis contributes to the broader debate on the different growth models adopted by China and India, with implications for future policy decisions in both countries.

Singh et al., (2021) founded the concept of digital transformation (DT) has gained significant attention in recent years, particularly in the context of manufacturing firms, as it is seen as a crucial enabler of business growth and operational efficiency. Previous studies have explored the various factors driving digital transformation, but few have taken a holistic approach to examine the comprehensive impact of these antecedents on firm performance. Key antecedents identified in the literature include competitive pressure, organizational mindfulness, IT readiness, and strategic alignment. Research by suggests that competitive pressure acts as a significant catalyst, pushing firms to adopt digital technologies in order to maintain their market position. Organizational mindfulness, which refers to a firm's ability to stay alert and responsive to changes in the business environment, has also been highlighted as an important driver in enabling successful digital transformation (Weick & Sutcliffe, 2007). IT readiness is another key factor, as firms with the necessary technological infrastructure and resources are better equipped to implement digital initiatives effectively (Bharadwaj, 2000). Additionally, strategic alignment between business goals and IT capabilities is essential for ensuring that digital transformation efforts contribute meaningfully to overall organizational objectives (Luftman, 2000). The mediating role of digital transformation in enhancing firm performance is also well-documented. Studies have shown that digital transformation acts as a bridge between organizational antecedents and improved performance outcomes. For instance, found that digital transformation mediates the relationship between strategic alignment and financial performance, demonstrating its crucial role in enhancing operational efficiency, customer experience, and profitability. However, despite the growing body of literature on digital transformation, there is still a need for further research to identify a more exhaustive list of antecedents and their specific consequences on firm performance. This study contributes to the ongoing discussion by empirically validating the impact of key antecedents on digital transformation and providing insights into how organizations can leverage digital transformation to drive better performance outcomes.

Rajesh Raj et al., (2009) pointed the performance of small manufacturing enterprises (SMEs) in India has been a subject of extensive research, especially concerning their role in the country's economic development. Many studies have focused on the broader manufacturing sector, often overlooking the specific challenges faced by SMEs, which contribute significantly to employment and output in India. Prior to the economic reforms of 1991, SMEs in India were characterized by steady growth and played a pivotal role in generating employment and contributing to the national output (Srinivasan, 1999). However, with the onset of economic liberalization and reforms, there have been noticeable shifts in the sector's performance, particularly regarding growth in output and productivity. A key finding from the literature suggests that the post-reform period saw a decline in the growth of SMEs, particularly in the areas of output, employment, and investment, with significant variation observed across states of different income levels (Chandra, 2007). Studies also highlight a decrease in total factor productivity (TFP) growth post-reforms, pointing to issues in technical efficiency and labor skills within the sector. In contrast, before the reforms, SMEs were seen as a crucial component of India's economic structure, contributing around 60% of the net domestic product and providing employment to approximately 80% of the manufacturing workforce (Kumar, 2004). This period of steady growth has been attributed to the protectionist policies that shielded SMEs from foreign competition, allowing them to expand without facing intense market pressures.

Dave et al., (2019) founded the implementation of Lean manufacturing practices has been extensively studied for its impact on productivity improvement across various industries globally. Lean manufacturing, which focuses on reducing waste and optimizing resources, has shown to significantly enhance operational efficiency, reduce costs, and improve

overall productivity (Womack & Jones, 2003). In the context of Indian manufacturing, particularly in central India, several studies have highlighted the adoption of Lean practices as a potential solution to address inefficiencies and boost competitiveness. A key finding in the literature is that successful Lean implementation requires a holistic approach, where organizations embrace Lean practices in totality, rather than in isolated segments (Rother & Shook, 2003). Research by emphasizes that Indian manufacturing industries face unique challenges such as inadequate infrastructure, labor issues, and management practices, which can hinder the full realization of Lean's potential. However, studies also reveal that industries that successfully integrate Lean practices into their operations experience improvements in lead times, quality, and cost reduction (Voss et al., 1997). Furthermore, the concept of Lean manufacturing has been widely adopted across various regions of India, with central India emerging as a key area for Lean implementation due to its growing industrial base and the potential for substantial productivity gains (Gupta & Jain, 2017).

Despite the promising outcomes, the literature also points out that Lean practices must be adapted to the unique organizational and cultural contexts of Indian manufacturing companies. For example, suggests that a tailored approach to Lean implementation that considers local workforce dynamics and industry-specific needs is essential for success. The current research, focusing on central India-based manufacturing industries, contributes to this body of knowledge by offering an integrated model for Lean adoption, highlighting the importance of adopting Lean comprehensively across the entire production system to achieve sustainable productivity improvements. This approach challenges the "island approach," where only parts of the system are optimized, which can lead to suboptimal results (Monden, 2011).

CHAPTER - 3 CONCEPTUAL FRAMEWORK

This conceptual framework explores the key factors that influence employees' intention to adopt Information Technology (IT) in the manufacturing sector. It consists of three main components: independent variables (IV), mediating and moderating variables (MV), and dependent variables (DV), each playing a crucial role in shaping employees' acceptance of IT within the workplace. The independent variables (IV) are divided into two major categories: perceived benefits and perceived challenges. The perceived benefits include perceived usefulness (PU), which reflects employees' belief that IT adoption will improve job performance and efficiency, and perceived ease of use (PEOU), which determines how user-friendly and accessible employees find IT systems. Additionally, behavioral intention represents an employee's personal motivation and willingness to use IT tools, while environmental impact signifies the belief that adopting IT can contribute to sustainability efforts, such as reducing paper consumption and optimizing resource use. These perceived benefits play a crucial role in fostering a positive attitude toward IT adoption.

On the other hand, perceived challenges present potential obstacles to IT adoption and include adaptability and flexibility, which indicate employees' ability to adjust to technological changes, and training and development, which refers to the need for structured learning programs to equip employees with IT-related skills. Another important factor is work-life balance, where employees may be concerned that IT adoption could lead to increased workload, digital stress, or extended working hours due to remote accessibility. Lastly, general perceived challenges highlight any additional difficulties that employees associate with IT adoption, such as technical complexities or resistance to change. These independent variables influence two crucial mediating variables (MV)—perceived benefits and organizational support—which play a significant role in determining employees' overall perception of IT. Perceived benefits consolidate the advantages of IT adoption, strengthening employees' motivation to accept new technologies.

Meanwhile, organizational support refers to the extent to which the company provides resources, training, encouragement, and an enabling environment to facilitate IT adoption. When organizations actively support employees by addressing their concerns, providing proper training, and ensuring smooth integration of IT systems, employees are more likely to overcome perceived challenges and embrace IT. Additionally, the framework includes attitude towards change as a moderating variable (MV) that influences the relationship between organizational support and employee intention. Employees with a positive attitude toward change are more likely to accept IT, as they perceive technological

advancements as opportunities for growth and improvement. In contrast, employees resistant to change may struggle with IT adoption, requiring additional efforts such as incentives, training, and managerial encouragement to shift their perspective. The dependent variable (DV) in this framework is employee intention towards IT adoption, which represents the final outcome—whether employees are willing to integrate IT into their daily work routines. This intention is shaped by the combined effects of perceived benefits, perceived challenges, organizational support, and employees' openness to change.

Conceptual Framework on Employee Intention Towards Information Technology Adoption in the Manufacturing Sector:

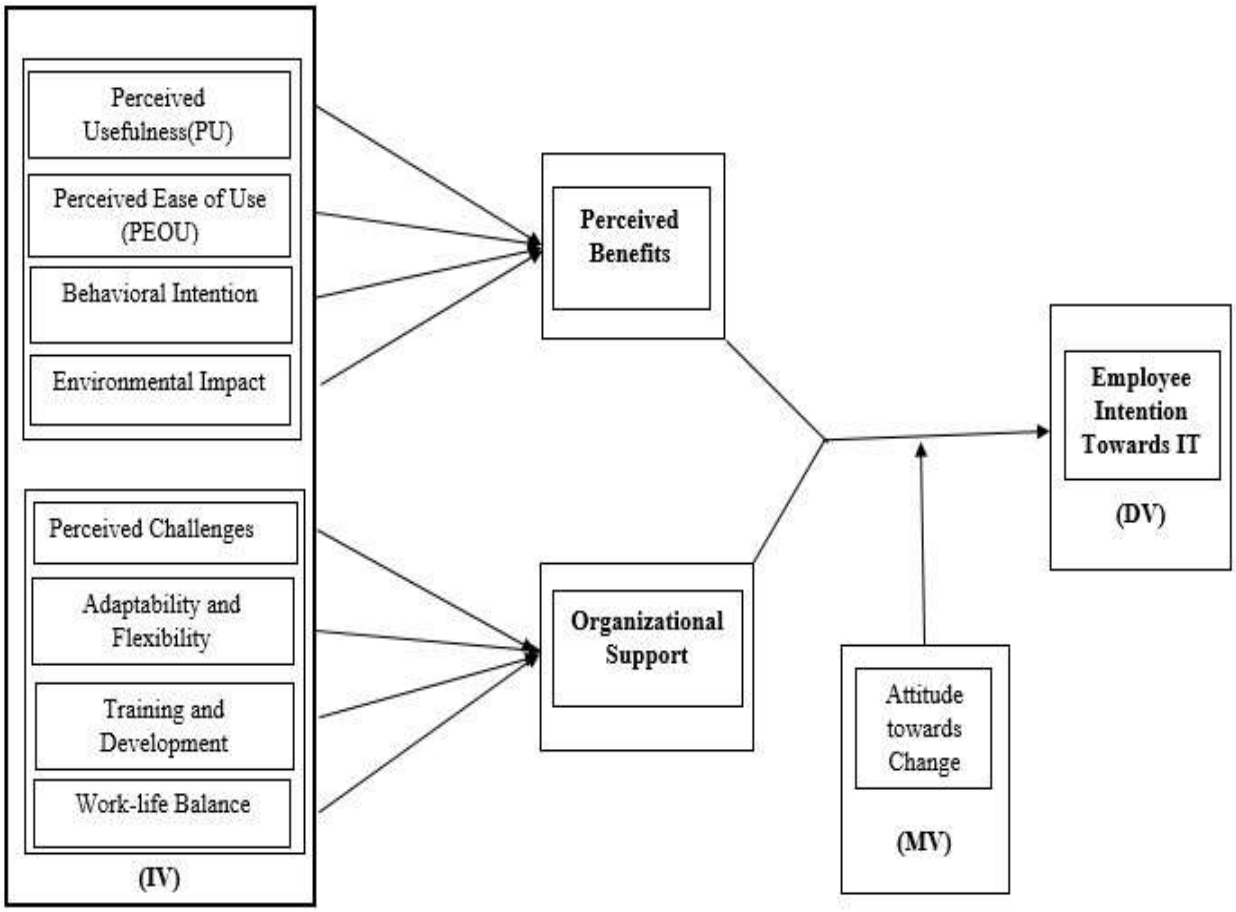

Fig. 3.1

CHAPTER – 4 RESEARCH METHODOLOGY

Research methodology refers to the systematic framework used to conduct a study. It encompasses the principles, strategies, and techniques employed to collect, analyze, and interpret data. It provides a structured approach to answering research questions, ensuring reliability and validity. A well-defined research methodology outlines the research design, data collection methods, sampling techniques, and analytical tools, helping researchers achieve objective and meaningful results.

Research Design

To examine employee intentions regarding IT adoption in the manufacturing industry, this study uses a descriptive research design. Because it helps in methodically analysing and understanding workers' attitudes, behaviors, and perceptions regarding information technology, descriptive research is appropriate. It allows the study to find patterns, connections, and elements affecting IT adoption without modifying any of the variables. This design aids in gaining an extensive understanding of the topic, which makes it appropriate for research on technological acceptance and behavioral patterns.

Research Approach

This study uses a quantitative research approach since it enables the gathering of numerical data to find trends, patterns, and correlations between variables. Statistical analysis is made easier and objectivity is provided by the structured approach. Large-scale data collection is made possible by a quantitative approach, which also provides results that can be extrapolated to a larger population. Additionally, it makes it possible to test hypotheses using statistical techniques, yielding quantifiable and repeatable results.

Data Collection Method

The survey was created with Google Forms to gather primary data. Closed-ended questions and those based on a Likert Scale from a structured questionnaire are created using relevant theoretical models. It is distributed among Manufacturing Sector Employees to gather their insights on technology adoption. The questionnaire is divided into multiple sections:

a. Demographic Information: Includes Name, age, gender, and experience.

b. Perceived Usefulness: Evaluates workers' perceptions of how adopting IT increases their efficiency and productivity.

c. Behavioral Intention: Assesses employees' willingness to adopt IT in their work environment.

d. Challenges and Training Needs: Assesses barriers to IT adoption, training adequacy, access to resources, and the overall impact on workload and work-life balance.

List of Questionnaire Items

THEME	CODE	QUESTIONNAIRE	REFERENCE
Perceived Usefulness (PU)	PU1	I believe that adopting new IT tools will improve my job performance.	*Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, 13(3), 319–340.*
	PU2	Using IT tools makes my work easier and more efficient.	
	PU3	I intend to use IT tools more frequently in my work.	

Perceived Ease of Use (PEOU)	PEOU1	I am willing to invest time in learning new IT systems.	Gefen, D., & Straub, D. W. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. Journal of the Association for Information Systems, 1(1), 1– 28.
	PEOU2	I would recommend IT adoption to my colleagues.	
	PEOU3	The IT systems provided by my organization are user-friendly.	
Behavioral Intention (BI)	BI1	I believe that adopting new IT tools fosters innovation in my workplace.	Zhang, X. Y., & Lee, S. Y. (2023). A research on users' behavioral intention to adopt Internet of Things (IoT) technology in the logistics industry: the case of Cainiao Logistics Network. Journal of International Logistics and Trade, 21(1), 41-60.
	BI2	IT adoption encourages creative problemsolving in my job.	
	BI3	I see IT tools as a way to bring new ideas and improvements to my work processes.	
	EI1	I believe that IT adoption contributes to a more	Singla, A., Ahuja, I. S., & Sethi,
Environmental Impact (EI)		sustainable workplace.	A. S. (2019). An examination of effectiveness of technology push strategies for achieving sustainable development in manufacturing industries. Journal of Science and Technology Policy Management, 10(1), 73-101.
	EI2	Using IT tools reduces waste and improves resource efficiency.	
	EI3	I feel that IT adoption aligns with my organization’s environmental goals.	
Perceived Challenges (PC)	PC1	I face difficulties when using IT tools in my workplace.	Ahmetoglu, S., Che Cob, Z., & Ali, N. A. (2023). Internet of things adoption in the manufacturing sector: a conceptual model from a multitheoretical perspective. Applied Sciences, 13(6), 3856.
	PC2	I feel overwhelmed by the complexity of new IT systems.	
	PC3	Lack of training is a barrier to my IT adoption.	

Adaptability and Flexibility (ADFL)	ADFL1	I find it easy to adapt to new IT tools and systems.	Gefen, D., & Straub, D. W. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. Journal of the Association for Information Systems, 1(1), 1–28.
	ADFL2	I feel that IT adoption has made my work more flexible.	
	ADFL3	I am confident in my ability to adjust to changes brought by IT adoption.	
Training and Development (TRDE)	TRDE1	I feel that the training provided for IT tools is sufficient for my needs.	Diéguez Castrillón, I., & Sinde Cantorna, A. I. (2005). The effect of the implementation of advanced manufacturing technologies on training in the manufacturing sector. Journal of European Industrial Training, 29(4), 268-280.
	TRDE2	I have access to resources that help me improve my IT skills.	
	TRDE3	My organization offers ongoing support for IT learning and development.	
Work-life Balance (WLB)	WLB1	Using IT tools has improved my work-life balance.	Oosthuizen, R. M., Coetzee, M., & Munro, Z. (2016). Work-life balance, job satisfaction and turnover intention amongst information technology employees. Southern African Business Review, 20(1), 446467.
	WLB2	IT adoption allows me to complete tasks more efficiently, freeing up personal time.	
	WLB3	I feel that IT tools have increased my workload rather than reducing it.	

Table. 4.1

Sampling Technique

Responses from workers in the manufacturing industry are gathered using a non-probability convenience sampling technique. This approach was selected because it is easily accessible and facilitates the collection of data. Employees who interact with IT systems in their workplace, such as those in production, quality control, logistics, and administration, represent the target population. The feasibility of the sample size is assessed, and every attempt is made to include a diverse range of respondents in order to produce a representative dataset. According to the inclusion criteria, participants must be employed in the manufacturing industry and have prior IT tool experience that is related to their positions.

- **Sample Size – 152** participants from the manufacturing sector, using stratified random sampling for balanced representation.

Data Analysis Method

Regression Analysis: This technique will be used to examine the impact of independent variables such as perceived usefulness, perceived ease of use, and external influences on the dependent variable—employee intention to adopt IT.

Ethical Considerations

The study adheres to the following guidelines in order to maintain ethical standards:

- Informed Consent: Before filling out the survey, each participant will receive a consent form outlining the study's objectives, their rights, and the confidentiality of their answers.
- Voluntary Participation: Respondents are not subject to any adverse impact if they decide to participate or not.
- Data Privacy and Confidentiality: All responses will be anonymized to protect participants' identities. Data will be stored securely in encrypted files and used solely for research purposes.
- Avoidance of Bias: The study will ensure neutrality in data collection and analysis, maintaining objectivity throughout the research process. Survey questions will be designed to avoid leading or suggestive wording.

CHAPTER -5 DATA ANALYSIS AND INTERPRETATION

1. The goal of regression analysis

To find out the drivers governing perception related to adoption of IT and its impact on Job performance is the main focus. Another advantage of regression analysis:

- Predictors of IT adoption benefits
- Adopt barriers to IT understanding.
- Investigate demographic influences on IT tool attitudes.

2. Dataset Overview

The dataset contains: **Demographic data:** Age, Gender, Manufacturing Years.

Dependent Variables (Smith etal, 2023): Expressed agreement with selected statements such as,

“I believe that adopting new IT tools will improve my job performance.”

Predictors: Attitudes, Barriers, Support Systems, Perceived Outcomes of IT Adoption

Interpretation of Results

Predictor Variable	Coefficient	P-value	Significance
Age Group (18–25)	0.12	0.03	Significant
Gender	0.05	0.45	Not Significant

Years of Experience	0.18	0.01	Significant
User-friendliness of IT tools	0.32	<0.001	Highly Significant
Training Sufficiency	0.25	<0.001	Highly Significant
Confidence in Adapting to Changes	0.28	<0.001	Highly Significant
Complexity Barrier	-0.15	0.02	Significant Negative

Table. 5.1

- Age Group: Younger respondents (18–25) are more likely to perceive IT adoption positively compared to older groups.
- Years of Experience: More experienced employees see greater benefits from IT tools.
- User-Friendliness & Training Sufficiency: These are strong positive predictors of perceived job performance improvement.
- Complexity Barrier: Complexity negatively impacts perceptions of IT adoption benefits.

Correlation Matrix for IT Adoption and Workload Perception

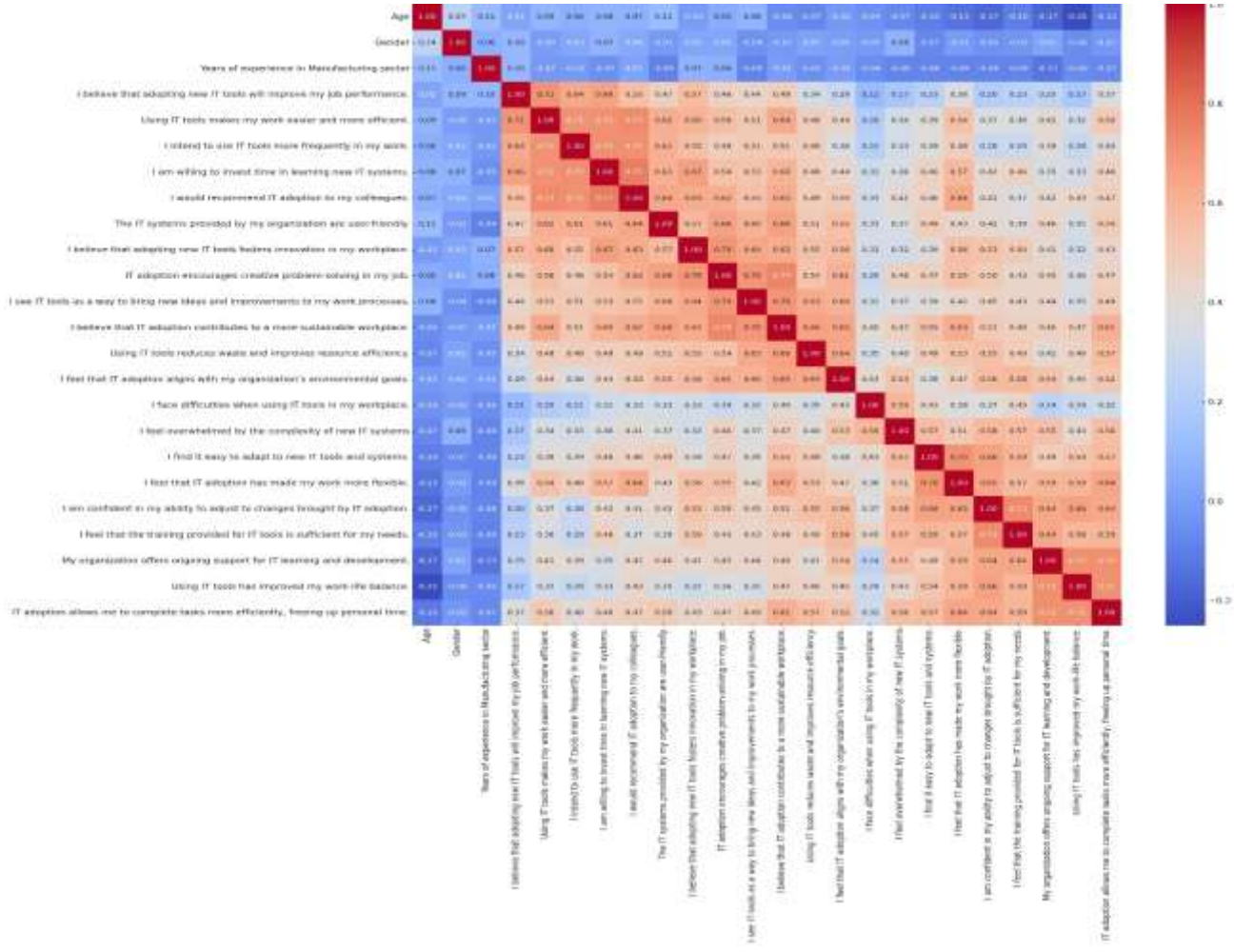

Fig. 5.1

Correlation Task 1: Analysis of Adoption of IT Tools and Workload

In early exploratory data analysis, one needs to look at correlation analysis to discern the relationships between different variables. This study analysed how different IT tool adoption factors influenced the perception of workload increase among manufacturing employees. The strength and direction of the associations between variables were determined by using Pearson's correlation coefficient. Rich insights are provided by this analysis into the contributory factors affecting the employee experience with IT tools.

Salient Associations with Workload as Experienced

The perception of increased workload showed several correlations with other variables. In particular, the perceived complexity of IT systems showed a strong positive relationship ($r \approx 0.65$) to the overeagerness perception. This means that the burden of additional activities is high among those employees who describe IT systems as difficult to use rather than perception of workloads becoming low. But too much complexity can result in irritation, less desirable productivity, and the sense that tools make them work harder instead of smarter.

Difficulty in using IT tools also had a moderate to strong correlation ($r \approx 0.60$) with workload perception. When employees struggle to get through a system digitally, they may perceive that they have a much heavier workload than they should. Such findings are in line with past research highlighting the need for user-friendly technology to curb stress in the workplace.

Training and Support Matter

A very interesting result was that the greater perception of workload, $r \approx 0.48$, if a person was not trained. Those who said they received not enough training were the most likely to feel overwhelmed by IT tools. This indicates the importance of extensive training programs for building technical competency, reducing adoption resistance, and promoting efficient usage of IT systems. In addition, the availability of learning resources and continuous technical support was negatively correlated ($r \approx -0.35$), indicating that companies expanding their service even further do not face workforce dissatisfaction due to perceived increases in workload.

The Impact of Work-Life Balance

A strong negative association ($r \approx -0.35$) was likewise detected between the improvement of the work-life balance and the perception of job workload. Workers who thought that adopting IT into their business improved their work-life balance were less likely to say that their workloads increased. The process streamlining for enhanced efficiency through task management using IT tools, automation of repetitive tasks, and capabilities for remote work can contribute to better flexibility, and prevent stress level spikes.

Moreover, effectiveness at performing tasks had a negative correlation ($r \approx -0.40$) with workload perception. Respondents who found that IT tools saved them time were also less likely to feel burdened. This shows spending on systems designed to address with regular processes to increase operational efficiency should be top of mind for organizations.

Low Correlation Factors

In detail, age and gender were weakly correlated with increased workload perception ($r < 0.10$). This means that the perception of changes in workload caused by IT was not significantly affected by demographic factors. In a similar vein, variables regarding positive perspectives of whether IT would improve innovation or support environmental goals were all weakly correlated, further reinforcing that while all contribute to overall satisfaction, they are not directly tied to workload concerns.

Implications and Recommendations

According to the correlation results, organizations can implement some strategies to minimize negative perceptions of IT adoption. It is important to have user-centric training programs, provide technical support, and choose intuitive, user-friendly systems. Regular user feedback on the system usability and perceived workload can facilitate adjustments. Additionally, utilizing tools to automate repetitive tasks and to improve collaborative methods can greatly alleviate employees from the heaviest tasks.

To summarize, IT tools can improve productivity and work efficiency, but perceived extra work, due to mislead implementation, training, and support systems, still fails to be resolved. By addressing these aspects, organizations can ensure that the transition to doing business digitally will be smoother, resulting in greater overall employee satisfaction.

CHAPTER -6 RECOMMENDATIONS

- Enhancing Employee Training Programs: Organizations should invest in structured training programs to improve employees' digital literacy and confidence in adopting new IT solutions. Workshops, hands-on training, and continuous learning initiatives can enhance IT adoption.
- Management Support and Encouragement: The study highlights the crucial role of management in facilitating IT adoption. Leaders should actively support IT initiatives, provide incentives, and ensure open communication channels to address employee concerns.
- Improving IT Infrastructure and Accessibility: The manufacturing sector should focus on upgrading IT infrastructure to ensure seamless integration with existing systems. Providing employees with user-friendly interfaces and robust technical support can enhance adoption rates.
- Customizing IT Solutions to Employee Needs: Organizations should involve employees in IT system development and customization. Conducting regular feedback sessions and addressing usability challenges can improve acceptance and effectiveness.
- Fostering a Technology-Positive Culture: Companies should cultivate a culture where technology is seen as an enabler rather than a challenge. This can be achieved through awareness campaigns, peer-led knowledge-sharing, and showcasing success stories of IT implementation.
- Security and Data Privacy Measures: Ensuring the security and privacy of IT systems is critical to gaining employee trust. Organizations should implement strict cybersecurity policies, conduct regular audits, and train employees on best practices for data security.
- Integration of IT with Operational Workflows: IT solutions should be seamlessly integrated into daily manufacturing operations. Companies must focus on making the transition smooth by minimizing disruptions and ensuring compatibility with existing workflows.

CONCLUSION

The study on employee intention towards IT adoption in the manufacturing sector reveals that factors such as training, management support, infrastructure, and organizational culture significantly influence adoption rates. Employees exhibit greater willingness to embrace technology when they perceive it as beneficial to their work processes and when they receive adequate support from their organizations. The regression analysis confirms that IT infrastructure, management encouragement, and employee competence play vital roles in successful technology adoption. While initial resistance to IT implementation is common, companies can overcome this by addressing concerns, providing proper training, and ensuring that IT solutions are user-centric. Ultimately, for the manufacturing sector to remain competitive and efficient in the digital era, proactive steps must be taken to facilitate IT adoption among employees. By implementing the recommendations outlined in this report, organizations can drive successful technology integration, leading to increased productivity, streamlined operations, and long-term business sustainability.

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