



JOB DESIGN CHANGES DUE TO AUTOMATION AND CONSEQUENCES FOR HUMAN RESOURCE MANAGEMENT PRACTICES

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Abstract

Automation fundamentally alters job design through task substitution and human augmentation, shifting skill requirements and work characteristics. This literature analysis examines how job redesign due to automation creates implications for human resource management policies. Findings indicate that recruitment must prioritize adaptability over experience, training requires reskilling programs, performance assessment should measure system optimization behaviors, compensation needs competency based structures, career management demands horizontal pathways, industrial relations require transparent communication, occupational health must include mental aspects, and HR functions must evolve strategically. Proactive, inclusive, and ethically grounded HR policies are essential for organizations to harness automation benefits while minimizing workforce disruption.

Keywords: automation, job redesign, human resource management, workforce adaptation, employment policy

Introduction

Workplace automation has become a major force driving fundamental changes in the structure of work across all industrial sectors. Technological developments such as advanced robotics, artificial intelligence, and natural language processing enable machines to perform tasks that previously required intensive human intervention. The manufacturing, financial services, logistics, and public administration sectors are experiencing waves of automation that are shifting the boundaries between human work and machine work. Production processes that once relied on large amounts of manual labor are now shifting to automated systems capable of operating with minimal intervention. This change affects not only low-level jobs but also professional occupations involving data processing and routine decision-making. These developments show that technology has now touched almost all parts of our lives, including legal regulations and the way we make agreements digitally (Maulani et al., 2023). Organizations worldwide are investing heavily in automation infrastructure to achieve higher operational efficiency. The consequence of this investment is a shift in skill demands, where routine and repetitive skills are decreasing in value while analytical and interpersonal skills are increasing in significance (Acemoglu & Restrepo, 2018). However, we also need to be aware that this technological advancement must be accompanied by a sense of responsibility to remain fair for everyone (Radjawane & Mardikaningsih, 2022; Mardikaningsih & Oluwatoyin, 2023). The workforce is faced with the need to understand how their jobs are changing or even disappearing altogether. This condition forces organizations to rethink job design as a response to new operational realities.

Job redesign emerges as a central issue in discussions about automation because technology changes what workers do, how they do it, and with whom they interact (Peng & Bhaskar, 2023). It is important for us to ensure that everyone has the same opportunity to progress and that no one feels left behind simply because they lack an understanding of the latest technology (Sinambela et al., 2022; Ramle & Mardikaningsih, 2022). Well-designed jobs are able to maximize the synergy between human capabilities and machine capacity, thereby resulting in higher productivity. Conversely, poor job design can lead to role confusion, cognitive overload, or even technological unemployment

for some workers. Traditional job design principles that emphasize task specialization and hierarchical control are starting to have their relevance questioned (Parker & Grote, 2022). Furthermore, a harmonious and supportive work atmosphere is still needed so that these major changes do not cause problems in society (Sulistyo & Hartanto, 2023). The era of automation demands a job design approach that is more dynamic, flexible, and oriented toward continuous learning. Workers need to be given sufficient autonomy to adapt to rapidly occurring technological changes. In addition, job design must consider the psychological aspects of workers, such as the meaning of work and opportunities for self-development, so that motivation remains maintained. Organizations that fail to adjust job design to the reality of automation will face retention and productivity issues. Therefore, an understanding of the job redesign process becomes crucial for the survival of organizations amidst the current of automation.

Human Resource Management (HRM) faces significant challenges in responding to changes in job design resulting from automation. HRM policies, which have long been designed based on assumptions about job stability and role clarity, are beginning to show their limitations (Vrontis et al., 2022). In managing people and systems, companies also need to continuously seek smarter and more modern new ways, especially in the field of digital finance (Putra et al., 2023). Recruitment, selection, training, performance appraisal, and compensation processes all need to be re-evaluated to align with the increasingly dynamic needs of the organization. HRM departments can no longer rely on established practices without considering how automation changes the nature of the work itself (Gibbs, 2017). For example, employee selection criteria need to be expanded to include the capacity to learn new technologies, not just the mastery of current technical skills. Performance appraisal systems must be able to measure adaptability and contributions toward the optimization of automation systems, rather than mere quantitative output. Compensation policies need to be designed to provide incentives for the development of competencies relevant to the digital era. Ultimately, all these changes are implemented so that companies can survive and continue to grow in this fast-paced future. In other words, HRM is required to undergo

a fundamental transformation in its philosophy and practice. Failure to make these adjustments will result in a misalignment between organizational strategy and the capacity of the workforce.

Changes in job design caused by automation bring consequences for career structures and employee development paths. Partially automated jobs often eliminate traditional career ladders that depend on the accumulation of experience in routine tasks. This condition requires us to be more digitally literate from a young age so as not to be shocked when entering the new world of work (Kurniawan et al., 2021). Employees who previously expected promotions based on length of service and mastery of fixed procedures now find that those paths are no longer available. In their place, a need arises for more competency-based career paths, where progress is determined by the ability to master new technologies and contribute to process improvement. Organizations need to redesign career structures to remain capable of providing development opportunities for employees amidst automation. This includes the creation of new roles focused on overseeing automation systems, algorithm maintenance, or data analysis for continuous improvement. Additionally, job rotation programs and cross-functional assignments are becoming increasingly important for building workforce flexibility. Employees accustomed to working in a single specific function need to be encouraged to broaden their horizons into areas related to automation (Hirschi, 2018). Moreover, in the future, the new generation entering the workforce will certainly face an environment that is much more digital than it is now (Gani & Darmawan, 2023). HRM has the responsibility to facilitate this career transition through policies that support internal mobility and lifelong learning. Without serious attention to the career aspect, organizations risk losing talented employees who feel they have no future.

The implications of automation for job design also touch upon aspects of employees' psychological well-being. Continuously changing jobs can cause stress, anxiety, and feelings of insecurity about the future. Often, too much pressure in workplaces that serve the public can make employees feel very emotionally and mentally exhausted (Khayru & Darmawan, 2023). Employees whose jobs are reduced to machine supervision tasks may experience a decrease in the meaning of work and

intrinsic satisfaction. On the other hand, automation can free employees from monotonous, boring work, allowing them to focus on more challenging and meaningful tasks. The final outcome of this process depends heavily on how the organization redesigns the work and how HRM policies support that transition. A participatory approach to job redesign, where employees are involved in decisions about which tasks will be automated and how they will interact with new systems, tends to produce more positive psychological outcomes (Wang et al., 2020). Conversely, a top-down approach that ignores the employees' voices can trigger resistance and a decline in well-being (Ilhami & Setiadi, 2023). Therefore, it is very important to create a work environment that values differences and makes everyone feel accepted without exception (Irfan & Hariani, 2023). HRM needs to integrate psychological well-being considerations into every policy related to automation. Employee support programs, career counseling, and mental health initiatives become essential components of the HRM response to changes in job design.

The main problem faced by organizations is the lack of a systematic framework for redesigning jobs in the era of automation. Many companies implement automation technology without conducting adequate analysis of how that technology will change the tasks, responsibilities, and interactions of workers. As a result, a mismatch occurs between the capacity of the automation system and the way workers perform their roles. Workers often complain that new systems make things difficult for them because they do not fit with established workflows. This is actually similar to how social media is now very influential in building self-image and relationships with others in the virtual world (Hariani & Mardikaningsih, 2022). On the other hand, automation systems are not used optimally because workers do not understand how to utilize the advanced features available. This gap between technological potential and actual practice in the workplace represents a significant waste of resources. Organizations lose the efficiency benefits that should have been gained from their automation investments. Worse still, this mismatch can lead to a decline in productivity if workers spend time overcoming technical problems that should not have arisen (Guzman & Acosta-Gomez, 2021). Yet, if we can utilize it correctly, internet technology and social media have great potential to help advance our businesses broadly (Infante &

Mardikaningsih, 2022). The root of this problem is the lack of attention to the job redesign phase prior to technology implementation. Companies tend to focus on the technical aspects of selecting and installing automation systems, while the human aspects of that change are ignored.

Another problem lies in the misalignment between existing HRM policies and the demands of job redesign in the automation era. Traditional recruitment systems that prioritize work experience in the same field become less relevant when job descriptions change rapidly. Candidates with broad but non-specific experience may be more valuable than candidates with narrow experience in an area that is about to be automated. Training systems based on scheduled, uniform programs for all employees are unable to accommodate diverse individual learning needs. Employees from different backgrounds require different training approaches to master the necessary new skills. Performance appraisal systems that measure individual output within a specific timeframe are unsuitable for work that requires intensive collaboration with automated systems (Malik et al., 2023). Performance in optimizing technology use is often the result of collective team efforts, not just individuals. Compensation systems based on hierarchical positions ignore employee contributions to process innovation and automation system improvement. All these misalignments create friction that hinders organizational adaptation to automation. HRM is trapped in established procedures while the business environment demands greater flexibility. Changing deep-rooted policies requires significant time and effort, while the pressure to adapt continues to mount.

The purpose of this study is to provide guidance for organizations in redesigning jobs and adjusting HRM policies amidst the acceleration of automation. Without clear guidance, organizations will continue to make the same mistakes: implementing technology without adequate preparation regarding the human aspect. This research is necessary to identify job design principles that align with the characteristics of contemporary automation. Furthermore, this study aims to reveal how HRM policies must be modified to support effective job redesign (Osterman, 2023). The theoretical contribution of this research is the enrichment of change management and HRM literature with a specific focus on automation. The practical contribution is the availability of

policy recommendations that can be directly adopted by HRM practitioners in various organizations.

The objective of this research is to analyze changes in job design caused by automation and to identify the implications of these changes for HRM policies. This study aims to produce a conceptual framework that links the characteristics of automation with job design elements and HRM practices, bridging the gap between technological advancement and human-centric management. By exploring how redistributed tasks affect employee engagement and skill variety, the results are expected to contribute to the development of HRM theory in the digital era. Ultimately, this research provides a practical reference for organizations to facilitate a smooth transition toward a collaborative human-machine work environment while effectively adjusting their human resource policies.

Method

This research employs a qualitative literature study approach to address the established research problems. This method was selected because the topics of automation and job design require a synthesis of knowledge from various sources scattered across different disciplines. As explained by Beins (2017), library research allows researchers to build a theoretical understanding of a phenomenon without conducting primary data collection, which consumes significant time and resources. The research procedure follows the guidelines proposed by Stratton (2019) regarding systematic steps in conducting a literature review: identifying the research question, performing a structured literature search, evaluating the quality of sources, extracting relevant information, and synthesizing findings. The analyzed sources include scientific journal articles, textbooks, and research reports from credible institutions discussing automation, job design, and HRM policies. The literature search was conducted using keywords such as *automation*, *job redesign*, *human resource management*, *workplace technology*, and *skill transformation*. Patel and Patel (2019) emphasize the importance of critical evaluation of literature sources to ensure that only credible and relevant sources are used in the analysis. Therefore, strict inclusion criteria were applied, including topic relevance, methodological quality, and publication year within the last decade.

Data analysis in this literature study follows the qualitative research methodology principles outlined by Mohajan (2018), where textual data from literature sources are analyzed through a process of thematic codification and narrative synthesis. The researcher performed repeated readings of the selected sources to identify main themes related to changes in job design due to automation. These themes were then categorized based on job design dimensions such as autonomy, skill variety, task identity, task significance, and feedback. Subsequently, the implications of each job design change for HRM policies were systematically analyzed. Fowler Jr (2013) cautions that generalizations from literature studies must be made carefully because every organization has unique characteristics. Therefore, the analysis results are presented in the form of a flexible conceptual framework rather than a rigid prescription to be followed by all organizations. The synthesis process was conducted by comparing findings from various sources to identify consensus, contradictions, and gaps in the existing literature. The final result of this process is a comprehensive mapping of the relationship between automation, job design, and HRM policies, which can serve as a foundation for future empirical research.

Result and Discussion

Automation related to human resource management refers to the use of digital technology, software, and algorithm-based systems to replace or simplify administrative and analytical processes in workforce management. This practice includes the integration of information systems capable of performing routine functions such as employee data processing, payroll, attendance, recruitment based on applicant tracking systems, to real-time performance analysis. Within this framework, the role of HRM shifts from manual activities toward more efficient, accurate, and standardized system-based management. This is in line with major changes in the industrial world where the use of big data and advanced technology is now the primary key to streamlining the production and distribution of goods (Putra & Arifin, 2021). The scope of automation covers the entire HR management cycle, starting from workforce needs planning, digital selection processes, employee

administration management, data-based performance evaluation, to competency development through digital learning systems. In addition, automation also includes the use of artificial intelligence to support decision-making, including workforce requirement predictions and employee behavior analysis (Bondarouk & Brewster, 2016; Ilhami & Setiadi, 2023). However, we must continue to prioritize ethics so that every decision made by these smart systems can still be held morally accountable (Gani & Darmawan, 2022).

Measurement indicators for automation in HRM can be seen through several dimensions that reflect the level of maturity and effectiveness of its implementation. The first dimension is the level of process digitalization, the second dimension is operational efficiency, and the third dimension is data accuracy and consistency. The fourth dimension is system integration, the fifth dimension is the quality of decision-making, and the sixth dimension is user acceptance (Marler & Boudreau, 2017). Similar to the use of social media or electronic mail in promotion, the success of technology in the office also highly depends on how easily that technology is accepted by its users (Sinambela & Darmawan, 2021). Through these indicators, organizations can assess the extent to which HRM automation is able to improve the effectiveness of human resource management sustainably. The application of appropriate technology is also very important in the world of education so that school children can learn in a more modern way while remaining safe for them (Darmawan, 2023).

Job design refers to the systematic process of structuring, organizing, and assigning tasks, responsibilities, and work relationships within a position to align with organizational goals and individual capacities. This concept emphasizes how work is formed so that it can provide role clarity, task execution efficiency, and meaningful work experiences for employees. In practice, job design is not only related to the division of tasks but also encompasses work structure, levels of autonomy, the variety of skills used, and the meaning of the work as perceived by the individual. The challenge in organizing this work often feels heavier for career women who must divide their time between office affairs and household matters (Fauzi, 2023). The scope of job design includes determining job specifications, arranging workflows,

relationships between roles within a team, and the integration of organizational needs with the psychological needs of employees (Grant & Parker, 2009). Additionally, job design also includes adjustments to technological developments, changes in the work environment, and the increasing demand for flexibility in the modern world of work.

Measurement indicators for job design can be seen through several main dimensions such as task clarity, skill variety, level of autonomy, job significance, feedback, and workload (Morgeson & Humphrey, 2006). We must also not forget that changes in work methods within diverse social environments require a strong sense of togetherness to prevent conflict between groups (Fariz, 2021). Through these indicators, job design can be systematically evaluated to ensure that designed jobs are capable of supporting performance as well as employee well-being. A mature strategy in developing product technology is highly necessary so that a business can continue to compete in the vast global market (Mardikaningsih & Hariani, 2023).

Automation changes job design through the mechanism of task substitution, namely the replacement of the execution of certain tasks from humans to machines (Mohamed et al., 2022). This substitution does not occur evenly across all types of tasks; tasks that are routine, predictable, and follow explicit rules are most vulnerable to automation. Conversely, tasks that require creative problem-solving, complex social interaction, or handling unstructured situations tend to remain the human domain. The implication of task substitution for job design is the shrinking scope of work for roles previously dominated by routine tasks. The jobs that remain after automation often have characteristics that are very different from previous jobs. This change shifts the required skill profile from transactional speed and accuracy to communication skills and technical problem-solving. Post-automation job design must consider how the remaining human tasks can be grouped into coherent and meaningful roles. Poor grouping can result in fragmented and psychologically unsatisfying jobs. Organizations need to conduct careful task analysis before implementing automation to understand the extent to which substitution will occur and how the remaining tasks can be optimally redesigned.

In addition to task substitution, automation also changes job design through the mechanism of augmentation, which is the enhancement of human capacity in performing tasks with the help of technological systems (Crowston & Bolici, 2020). Augmentation differs from substitution because humans remain the primary actors, yet are equipped with digital tools that expand their cognitive or physical capabilities. This is actually similar to how we use search engines on the internet to help businesses become more easily discoverable by many people (Arifin et al., 2021). A financial analyst using predictive software can process a much larger volume of data than before, yet the final decision remains in human hands. Augmentation changes job design by shifting the focus from performing routine tasks to interpreting system outputs and strategic decision-making. Workers need to develop new skills in reading and verifying results from automation systems, as well as identifying anomalies that may indicate system errors. We must also ensure that senior workers continue to feel healthy and productive even though their work environment is now filled with advanced technology (Darmawan, 2020). Job design that accommodates augmentation must provide time and space for workers to perform these verifications, which often require concentration and critical thinking. Organizations that succeed in augmentation are those capable of designing job roles where humans and machines complement each other rather than compete.

Changes in job design due to automation bring direct implications for recruitment and selection policies within HRM (Langer et al., 2021). Selection criteria that have so far focused on work experience in the same field become less relevant because the nature of the work is changing fundamentally. In this fast-paced world, every organization is indeed required to continue innovating so it can remain competitive with other companies at a global level (Abdulah et al., 2021). A candidate with ten years of experience as a cashier may not have an advantage over a candidate with two years of experience who demonstrates a high capacity for learning technology. Recruitment policies need to shift the weight of assessment from declarative knowledge about existing procedures to the ability to solve new problems and adapt to changing systems. It is important for companies to look for people who not only have technological tools but also possess good digital skills to utilize them

(Arifin & Darmawan, 2021). HRM departments need to collaborate with information technology units to identify new competencies that will be relevant in the future. The selection process must also be able to screen candidates who have a positive psychological disposition toward change, such as openness to new experiences and resilience in the face of technical failures.

The implications of automation for training and development policies within HRM are very significant due to the skill gaps caused by changes in job design (Langer et al., 2021). Employees whose jobs change as a result of automation require retraining or reskilling to be able to perform their new tasks. In this process of change, the role of women as drivers of social change in their surrounding environment is also a very inspiring thing to note (Aisyah, 2023). Effective reskilling programs require careful instructional design, starting with an accurate needs analysis of what skills are truly required in the new workplace. Training methods must vary between classical learning, simulations, internships, and digital-based self-learning. Managing this change must indeed be done by integrating appropriate technological and management strategies so that digital transformation runs smoothly (Sinambela, 2023). Organizations need to allocate a specific budget for reskilling and view it as an investment, not a cost. Without adequate training policies, automation will cause structural unemployment that could actually be avoided.

Performance appraisal policies in HRM must also adapt to changes in job design resulting from automation. Traditional performance indicators that measure quantitative output per unit of time become problematic when output is heavily determined by the speed of the automation system rather than the individual effort of the employee. The experience of working in an all-digital office today provides new lessons for employees on how to work in a more modern way (Putra et al., 2022). Performance appraisal systems need to shift focus from output to behaviors that support the optimization of the automation system. Such behaviors include initiatives to propose process improvements, diligence in verifying system output, and collaboration with coworkers in technical problem-solving. Appraisals also need to consider employee contributions to collective learning, for example, through creating

documentation or training colleagues on using the new system. Moreover, now that many people are becoming accustomed to working remotely, digital work systems have become very important to consider (Mardikaningsih & Darmawan, 2022). Well-designed performance appraisal policies can become instruments to encourage continuous adaptation, rather than just administrative tools for compensation and promotion decisions (Jeske & Calvard, 2020).

Automation brings implications for compensation policies in HRM due to changes in the relative value of various types of skills in the labor market (Schlogl & Sumner, 2020). Acemoglu and Restrepo (2018) argue that skills that are routine and easily automated experience a decline in value, while skills that are complementary to automation technology experience an increase in value. Compensation structures need to be adjusted to reflect these value changes so that organizations remain able to attract and retain the talent needed. Employees who successfully master new skills post-automation may expect significant compensation increases, while employees whose skills become obsolete may have to accept stagnant or even decreasing compensation. This inequality can create internal tension if not managed carefully. Compensation policies need to consider competency-based components, where the level of mastery of certain skills becomes the basis for setting wages, rather than length of service or position in the hierarchy. Variable components such as bonuses for process innovation or cost savings through automation optimization can be effective incentives. Additionally, compensation policies need to consider aspects of procedural justice; employees must understand how compensation decisions are made and have the opportunity to influence outcomes through competency improvement. Transparency regarding compensation criteria becomes increasingly important in the era of automation where organizational structures become flatter and job roles more fluid. Organizations that fail to adjust compensation policies risk losing their best employees to more responsive competitors.

Changes in job design due to automation also affect career management policies within HRM. Traditional career paths that are linear and based on promotion to positions with greater responsibility become less relevant when many middle-level positions are automated.

Employees need new perspectives on how they can develop professionally without having to climb an increasingly thinning hierarchy. Career management policies need to shift focus from vertical promotion to horizontal and diagonal development. Horizontal development means expanding the scope of competencies within the same level, for example, a technician learning to manage projects or train colleagues. Diagonal development means moving to a different but equivalent function, such as from production to quality assurance or from sales to customer service. Organizations need to create career structures that allow for this movement without financial or status penalties. Internal certification systems for various levels of competency mastery can serve as a replacement for traditional job levels. Employees who achieve higher-level certifications can be given recognition and incentives equivalent to a promotion, even if their organizational position does not change. Career management policies also need to provide mechanisms for individual career planning, where employees are assisted in identifying development paths that suit their interests and talents. Mentoring by senior employees who have successfully navigated career transitions in the era of automation can be a valuable learning source. Without adaptive career management policies, organizations will find it difficult to retain talented employees who feel they have no future (Brougham & Cuevas, 2018).

The implications of automation for industrial relations policies and employee engagement in HRM cannot be ignored. Automation often triggers concerns about job security, which, if not managed well, can damage the relationship between management and labor unions (Gibbs, 2017). Transparent communication policies regarding automation plans, including which jobs will be affected and how employees will be supported, are prerequisites for maintaining a conducive industrial relations climate. Organizations need to involve employee representatives in the decision-making process regarding automation and job redesign, rather than just informing them after decisions are made. This involvement can occur through joint consultation forum mechanisms, joint technology committees, or worker representatives on the board of directors. Labor unions need to be given access to adequate information about automation plans so they

can provide constructive input. Policies regarding the handling of employee surpluses due to automation, such as voluntary early retirement programs, proper severance pay, or job placement assistance, must be negotiated transparently. Organizations that ignore industrial relations aspects in the automation process risk facing conflicts, strikes, or litigation that can disrupt operations. On the other hand, organizations that succeed in building partnerships with labor unions in facing automation can turn potential conflict into collaboration for mutual competitiveness improvement. Adaptive industrial relations policies are an essential component of a comprehensive HRM response to automation.

Automation also brings implications for occupational health and safety policies in HRM. Changes in job design can create new health risks that did not exist before. Workers transitioning from physical work to work in front of computer screens may experience ergonomic problems, eye strain, or musculoskeletal disorders (Ilhami & Setiadi, 2023). Conversely, workers who continue to perform physical tasks alongside automated systems may face new risks from interacting with fast-moving machinery. Safety policies need to be updated to include safety procedures for human-machine interaction, including safety zones, emergency stop systems, and training on safe behavior around automated equipment. Mental health aspects also become a concern because the pressure to continuously learn new technologies and anxiety about replacement by machines can lead to chronic stress. Occupational health policies need to include early stress detection programs, psychological counseling, and workload adjustments during transition periods. Organizations need to conduct health and safety risk assessments regularly, especially whenever new automation technology is implemented. Workstation design must consider ergonomic and anthropometric principles to minimize the risk of injury. Furthermore, policies on working hours and breaks need to be adjusted because of the changing nature of work; monotonous monitoring of automated systems can cause dangerous attention fatigue if not interspersed with sufficient rest. Organizations that ignore health and safety aspects in the HRM response to automation risk facing increased workers' compensation claims and absenteeism that harms productivity.

Changes in job design due to automation demand a new role for the HRM function within organizations (Parker & Grote, 2022). The HRM function can no longer serve as an administrative unit that only handles recruitment and payroll. A strategic role is required where HRM is involved in planning automation implementation from the very beginning, rather than after technical decisions have been made. HRM professionals need to develop competencies in understanding automation technology so they can provide relevant input regarding human resource implications. They must be able to conduct impact analyses of automation on the workforce, identify the groups of employees most affected, and design appropriate interventions. The HRM function also needs to build an intelligence system regarding automation trends in related industries so that organizations can anticipate changes rather than just responding to them. The role of a change agent becomes central, where HRM facilitates the organizational adaptation process through communication, training, and psychological support. Furthermore, HRM needs to develop new metrics to measure the success of adaptation, such as the speed of reskilling, technology adoption rates, or employee retention post-automation. An HRM function that successfully transforms will become a strategic partner for top management in navigating the era of automation, rather than just an executor of policies established by other units. Investment in the development of HRM capabilities themselves is a prerequisite for organizations to respond to automation effectively.

One of the most significant implications of automation for HRM policy is the need to shift from a reactive to a proactive approach (Ilhami & Setiadi, 2023). Thus far, many organizations wait until automation technology is implemented before realizing that their HRM policies are unsuitable. This reactive approach is always late and results in rushed and suboptimal solutions. Proactive HRM policy means the organization routinely performs technological environment scans to identify what automation is likely to enter their industry within the next three to five years. Based on these scans, HRM can prepare the workforce through anticipatory training programs even before the technology is implemented. Succession planning also needs to consider how automation will change future leadership needs. Recruitment policies

can be directed toward finding candidates with competencies that will be relevant in the future, not just those needed today. A proactive approach requires a mindset shift from merely supporting current operations to building capacity for the future. This also requires a significant allocation of resources for activities whose results may only be visible in the long term, which is often difficult to justify in a management culture oriented toward short-term results. Nonetheless, organizations that successfully adopt a proactive approach will have a significant competitive advantage over competitors who are always reacting to change.

Automation also brings implications for diversity and inclusion policies within HRM (DiRomualdo et al., 2018). Changes in job design can affect different groups of employees disproportionately. Workers with lower levels of formal education tend to occupy roles more vulnerable to automation, putting them at a higher risk of negative impacts. Similarly, older workers may face greater difficulties in learning new technologies compared to younger workers. HRM policies need to ensure that the automation transition does not exacerbate existing inequalities. Reskilling programs must be designed to accommodate diverse learning needs, including providing special assistance for workers who lack confidence with technology. Organizations must avoid age discrimination practices in training and promotion programs post-automation. Additionally, recruitment policies for new roles emerging from automation must reach out to groups that have been historically underrepresented. A diversity of perspectives actually becomes more valuable in the era of automation because complex problem-solving requires input from various backgrounds. Organizations that succeed in building a diverse and inclusive workforce will have an advantage in innovation and adaptability. HRM policies that are responsive to diversity and inclusion aspects in the context of automation are not only an ethical demand but also a business necessity.

Changes in job design due to automation require adjustments in the organization's knowledge management policies. Knowledge regarding how to operate automated systems, troubleshoot emerging problems, and optimize their use represents a critical asset that must be managed systematically. Knowledge management policies should encourage the documentation of procedures, tips, and lessons learned from the

experience of using automated systems. However, formal documentation alone is not enough because much knowledge is tacit and can only be transferred through direct interaction. We must remember that the way we learn and behave today is heavily influenced by what we see on the internet, music, and popular films (Kurniawan & Khayru, 2021). Organizations need to create collaboration spaces, both physical and virtual, where employees can share experiences regarding the use of automated systems (Gibbs, 2017). Communities of practice focusing on specific technologies can serve as a forum for this knowledge exchange. Incentive policies need to be designed to encourage employees to contribute to the collective knowledge base. Furthermore, the process of transferring knowledge from employees who are about to retire or leave to newer employees is becoming increasingly critical. Organizations that ignore knowledge management risk losing critical capabilities when key employees leave. HRM policies integrated with knowledge management are an essential component of a comprehensive response to automation.

Automation also affects work flexibility policies in HRM because technology enables new forms of work arrangements (Petersen et al., 2022). Jobs that are largely automated can often be performed remotely because interaction with digital systems does not require a physical presence at a specific location. Just as in the healthcare world, the use of smart technology has now been proven to be very helpful in providing faster and more modern services (Khayru, 2022). Remote work policies need to be adjusted to accommodate this reality, including rules regarding working hours, supervision, and cost reimbursement. Flexibility in working time also becomes more feasible because automated systems can operate 24 hours a day, allowing monitoring work to be scheduled in more flexible shifts. However, work flexibility policies must be carefully designed to prevent exploitation. Clear boundaries between work time and personal time need to be established and enforced. Additionally, work flexibility policies must consider aspects of equal access; not all employees have a home environment conducive to remote work. HRM needs to periodically evaluate the impact of work flexibility policies on productivity and employee well-being.

The long-term implication of automation for HRM policies is a paradigm shift from fixed job management to fluid talent management.

The concept of permanent jobs with stable job descriptions and long-term employment relationships becomes less relevant as technology continues to change. In the future, the relationship between humans and technology within the office will become increasingly close and inseparable (Darmawan, 2022). Organizations may need to adopt more flexible employment models, a mix of permanent employees, contract workers, freelancers, and contributors from digital platforms. HRM policies must be able to accommodate these various forms of employment relationships without creating unfair hierarchies. Payroll systems, benefits, and social protections need to be redesigned to fit more fluid employment models. Performance management must be able to integrate contributions from various types of workers in team result assessments. Career development needs to consider paths that may involve movement between different employment statuses. Organizations also need to rethink the concepts of loyalty and retention through the creation of positive work experiences. This paradigm shift represents the greatest challenge for HRM because it touches upon the most fundamental assumptions about the relationship between individuals and organizations.

Automation brings implications for ethics and social responsibility policies within HRM. The decision to automate jobs has consequences for the livelihoods of employees and the surrounding communities that depend on the organization's existence. HRM policies need to reflect the organization's commitment to ethical principles in the implementation of automation. The first principle is transparency, the second is fairness, and the third is accountability, where the organization is responsible for the consequences of its automation decisions. The fourth principle is respect for the dignity of workers, where automation is not designed to monitor or control employees in a degrading manner. Essentially, every technological advancement we use must continue to prioritize goodness and honesty for all parties involved. HRM policies must ensure that automation systems are not used to monitor employees excessively or make employment decisions without meaningful human intervention. The aspect of social responsibility includes the organization's contribution to community efforts in preparing the workforce for the era of automation. Organizations that ignore ethical and social responsibility

aspects risk facing negative public reactions. Conversely, organizations that place ethics at the center of their HRM policies in responding to automation will build a sustainable reputation.

Conclusion

Automation transforms job design through the substitution of routine tasks and the augmentation of human capacity, resulting in shifts in skill profiles, the fragmentation or restructuring of roles, and changes in the psychological characteristics of work. These job design changes carry broad implications for HRM policies, including recruitment that must shift toward adaptability criteria, training that needs to focus on reskilling, performance appraisals that measure system optimization behavior, dynamic competency-based compensation, career management with horizontal pathways, transparent industrial relations, occupational health that encompasses mental aspects, and the strategic role of the HRM function as a partner in change. A proactive, inclusive, and ethically-grounded HRM response is a prerequisite for organizations to reap the benefits of automation while minimizing negative impacts on the workforce.

The practical implications of this research are that organizations need to immediately conduct an audit of HRM policy readiness in the face of automation, focusing on the gap between existing practices and the new demands of job design changes. Further research is suggested to empirically test the relationship between post-automation job design characteristics and HRM outcomes such as retention, productivity, and innovation. Organizations are advised to form cross-functional teams consisting of representatives from HRM, information technology, and operations to plan integrated automation implementation. Pilot programs in specific work units before full-scale automation can help identify policy issues that need correction. Investment in developing the capabilities of HRM professionals regarding automation technology is a priority, as this function will lead the policy adaptation process.

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