DIGITAL TRANSFORMATION IN HRM

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ABSTRACT

Nowadays, digitalization is widespread. Because of its accuracy and time-saving capabilities, it is widely used and trusted. Because the digital era is advancing so quickly, it is radically changing how businesses function. As a result, human resources operations are also undergoing digital transformation. The purpose of this study is to examine the significance of digital transformation in human resource management and the ways in which it is impacting HR services and employees in both positive and negative ways. The study also takes into account a number of digital tools that emerged with Industry 4.0 and are frequently utilized in HR operations, such as virtual reality, cloud-based services, SaaS, robotics, and artificial intelligence.The study is descriptive in nature and was carried out using secondary data. Online resources, published research papers, blogs, articles, and corporate reports have all provided data.

Keywords: SaaS, Industry 4.0, HR, Human Resource Management, and Digital Transformation.

INTRODUCTION

Human resource management, or HRM for short, is one of the most crucial aspects of business management and is crucial to the operation and long-term growth of the company. The traditional HRM model has faced challenges in recent years due to the emergence of new digital technologies like cloud computing and big data. Every business now faces common challenges, including how to integrate the ideas of digitization and standardization with HRM, how HR departments will develop a digital workplace, and how they will ultimately produce a contemporary HRM model.This paper has examined issues and offered some recommendations aimed at resolving all the conflicts and challenges in the process of digitizing and standardizing current HRM. Hopefully, this will raise the management level and efficiency of the company and significantly contribute to the growth of the national economy.

LITERATURE SURVEY

The integration of digital technology into every aspect of a business is known as "digital transformation," and it results in significant adjustments to how a company runs and provides value to its clients. It can also be viewed as a culture shift that calls for a company to constantly question the status quo, try new things, and prepare for some failure. According to (Stolterman and Fors, 2004), digital transformation is defined as digitalization and a business model that is fueled by modifications pertaining to the use of digitalized technology in every conceivable facet of human civilization.It is important to remember that digital transformation differs from digitization, which is defined as the capacity to convert existing goods and services into digital versions that are therefore more advantageous than physical goods (Gassmann et al., 2014). The term "industry 4.0" refers to the combination of physical assets and modern digital technologies, such as the internet, artificial intelligence, robots, drones, autonomous vehicles, 3D printers, nanotech, cloud computing, and several others that transfer, analyze, and act upon information. In the end, this allows businesses, consumers, and society as a whole to become more adaptable, responsive, and make more data-driven and logical decisions.Ram Jambunathan, managing director of SAP.iO, claims that in order to radically alter company structures and procedures Businesses are starting to realize the significance of digital technology and the enormous influence of Industry 4.0. Determining the intermediate steps required to harness and leverage the advantages of Industry 4.0 in the future remains a challenge. Developing a long-term business and investment strategy is just as important as developing a roadmap for technology adoption.

Energy has become a major worldwide concern in the twenty-first century. Fossil fuel supplies are being depleted at a rate never seen before due to the combination of fast population growth, technological advancement, urbanization, and industrial expansion [1], [2]. By raising greenhouse gas emissions and upsetting climate patterns, the widespread use of fossil fuels has a direct effect on environmental systems [3], [4]. Over the past 60 years, there has been a notable increase in the world's petroleum consumption. Despite growing electrification efforts, the world's oil consumption surpassed 100 million barrels per day for the first time in 2023 [5], [6]. The global petroleum consumption from 1960 to 2024 is shown in Fig. 1 [7], [8].

One of the main consumers of fossil fuels and a significant source of greenhouse gas emissions is the transportation industry [9], [10]. Between 1971 and 2002, the transportation sector's daily petroleum consumption rose from 16 million to 37 million barrels [5]. According to recent data from the International Energy Agency (IEA), transportation accounts for more than 37% of

CO2 emissions from end-use sectors, with over three-quarters of these emissions coming from road transportation [6], [9]. According to the International Energy Annual, transportation will account for 54% of global oil consumption, which is expected to reach 121 million barrels per day by 2030 [7].

As market forces accelerate the shift from fossil fuel-based mobility to battery-powered alternatives, the development of electric vehicle (EV) battery technology is essential for the future of sustainable transportation [11], [12]. The choice of battery technology is an important part of the electrification process because battery performance directly affects the range, safety, cost, and environmental effect of electric cars [13]. Because of their high energy density, long cycle life, and quick charging times, lithium-ion batteries have been the preferred technology for modern passenger electric vehicles [14]. Lead-acid batteries are a mature technology, but they are still necessary for low-speed electric vehicles (LSEVs), electric rickshaws, and two/three-wheelers, particularly in developing nations where infrastructure constraints, moderate performance requirements, and cost constraints continue to exist [14].

Lead-acid batteries continue to dominate the electric mobility markets in South Asia and Africa due to intricate institutional, infrastructural, and economic considerations that are essentially different from those in industrialized countries. Despite the technical superiority of lithium-ion batteries, adoption is significantly hampered by initial cost differences (lead-acid batteries maintain 3-5× cost advantages), unstable grid infrastructure with frequent power outages, established recycling networks offering salvage value, and policy environments with high import tariffs on lithium-ion batteries [18], [19], [20]. Lead-acid batteries continue to be rationally optimal options for millions of operators facing constraints rarely taken into account in developed market analyses, highlighting the fact that optimal battery technology selection cannot be separated from local economic and infrastructural contexts.

2. Conflicts and Problems of HR Reform in the Digital Transformation Background

Some features of the current HRM include more varied organizational structures, a wider range of management in the actual operation, a more frequent flow of talented individuals both within and between companies, and increased demands for the quantity and timeliness of basic personnel information. Therefore, in order to strengthen the linkage of HR information, make reasonable use of scientific management tools, standardize the HRM method, and provide high-quality service to the company's development strategy, businesses urgently need to construct a highly efficient HRM model [1][2]. As of right now, most businesses have implemented office automation, web-based financial fund management services, long-distance project management services, and other forms of information reform. They have also moved toward group company centralization.However, the information construction of HRM lags significantly behind that of other areas due to the company's complicated people structure, the mandated HRM work policy, and the variety of professional talents of HR practitioners. In particular, the following factors are causing issues with the present HRM digitalization and standardization change.

2.1 Positioning Deviation

Companies are currently dealing with issues of inactive mechanisms and non-standard management since the long-standing issue of "focusing on production, yet neglecting management" has not been fully resolved. Due to these issues, the economic advantage is still stagnating even while the business scale is growing, which has become an internal factor limiting the development of firms. As of right now, some companies' HRM system digitization is still restricted to the electronization of current business processes rather than the actual contents of HRM, which include the systematic collection, gathering, and analysis of human resource information through management under the historical background of big data and the deep action on strategic direction planning of human resources, optimization of organizational structural construction, projects' leading team establishment, precise positioning of elites, planning and development of employees' careers, management of employees' training information, etc.The existing HR information system lacks sufficient supporting data due to the ambiguous posture. Because the system solely functions as the HRM department's operational software and does not communicate with the closely connected financial information and production management systems, businesses may have a tendency to act behind closed doors due to the system's limited analytical capabilities [3]. Senior managing leaders will abandon all decision support systems, including human resource information systems, because managers at different levels are unable to handle office work flow, production and management procedures, and human resource service processes on the same operating platform [4].Even if information construction is

constantly being improved, senior executives continue to work offline, which raises costs and workloads while decreasing productivity.

2.2 Poor Integration

Decentralized internal systems, inadequate horizontal integration, and stagnating longitudinal connectivity are issues with the traditional management paradigm and information system [5]. Consequently, the company's efforts to maintain uniform control are negatively impacted by the "lonely island" and "chimney" in the existing digital information system. Inefficient information, a lack of comprehensive data planning, and a failure to integrate into the whole management information platform are all consequences of the disjointed business system. When personnel planning is separated from actual production, annual budgeting from financial management, and human resources from other business systems, the relationships between various businesses or even the various divisions of the same business are primarily independent, fragmented, and segmentary, making it challenging to achieve information sharing.It is challenging for management staff at various levels to be fully informed about the daily human resource situation of the basic units.

In addition to lacking group and company-level data, operating standards, and standard business flow, basic data also lacks effective integration and a lesser degree of standardization [6]. As a result, information coding is not unified with numerous definitions, and it is challenging to understand how data relate to and match. Additionally, certain outstanding subsystems have lower portability due to inadequate availability and integration, which makes it difficult to implement business integration and promotion or effectively support a company's business analysis [7].

2.3 Lower-level Standardization of Data and Business Process

The characteristics of the actual production process, the growth of the company brought about by human resources, and the management of the labor costs caused by human resources themselves are not fully understood by the traditional HRM model, which concentrates more on the management and control of particular businesses. Consequently, the scarcity cost cannot be rationally allocated to the control center of the company's total cost since the old HRM model has poorer management and control capabilities. The management process uses comparatively static data. Because of the traditional model's lack of analysis functions, ineffective decision support, and corresponding management and control capabilities, the decision-making process is more dependent on previously acquired knowledge, and the management level of the organization is more dependent on the effectiveness of managing employees with greater levels of uncertainty [8].In addition to lacking group and company-level data, working standards, and regular business flow, the system's data has a lesser degree of uniformity. As a result, information coding is not unified with numerous definitions, and it is challenging to understand how data relate to and match. Additionally, certain outstanding subsystems have weaker portability due to limited availability and integration, which makes it difficult to implement business integration and promotion or effectively support the company's business analysis.

3. Significance of the Standardization Reform of HR in the Digital Transformation

The current corporate transformation greatly depends on the appearance of digitalization. HR used to have a practice of using historical patterns to forecast future adjustments, or progressive optimization. The entire company model has transformed as a result of the digital transition, and HR's boundless imagination space allows it to quickly continue innovation and research. HR must take into account system innovation from the perspectives of two fundamental disciplines in light of future research. The first is value creation, which states that HR initiatives should increase corporate value; the second is effectiveness improvement, which asks whether new HR initiatives can assist the organization enhance benefits.The HR digital management information platform is a collection of centralized information systems, and the company's management procedures can be naturally linked with information technology to help realize personnel's whole life cycle management from approval of the onboarding process to daily personnel and salary dispatching management to leaving the company; additionally, it can realize the entire operational process management from personnel management, salary management, talent training management, real-time budget control and cost management, etc. [9].The business process can be regular and standardized by defining responsibilities; fixed business processes can be adopted and internal control and warning can be realized by applying flexible and powerful workflow technology. This helps to provide the foundation for the effective control of various management levels, to limit arbitrariness, and to strengthen the company's internal control. At the same time, altering employees' working styles, perspectives, and behavioral patterns may enable them to undertake creative work instead of

boring tasks, boost productivity, make scientific decisions, and enhance the overall effectiveness of the business.

3.1 An Irresistible Trend of Company Adapting to the Economic Developing and Information-Based Society

In the past, several businesses used monopoly management in their early stages of development, which left them with inadequate management and frequent issues with their company and internal management systems. Advanced management concepts, methods, and procedures have been brought by the opening of markets following WTO membership, but it presents a significant challenge to businesses and forces them to adapt their management models. Higher standards regarding institutional monitoring systems, salary computation, and the personnel situation of the company and its subordinates have been proposed as the enterprise scale grows [10].In order to guarantee the company's breakthrough development, it is now crucial for businesses to expand the information system's function and application range. The information system must offer real-time data support that is integrated, within the regional scale, and able to guide the business operation. Applying the digital management information platform of human resources will, on the one hand, significantly accelerate the construction pace of enterprise informatization; on the other hand, the company will be able to create an information platform that closely connects the internal and external information resources, ensuring that businesses can make prompt and scientific decisions in the highly competitive market.

3.2 Necessity for the State to Deepen the Reform of Enterprises

Information has become the sixth energy due to the state's rapid pace of enterprise reform and the modern information society. Additionally, a growing number of domestic and international businesses are using computers to gather information as a magic weapon to boost labor productivity, increase efficiency, and seize market initiatives. The HR digital management information platform can assist in streamlining work contents, improving the readability and comparability of human HR information, refining the granularity of basic business data information, and enhancing HR by implementing the modules of controlling project management, office automation and HRM, and information resource sharing [11].The tight control of the medium and long-term HR budget and the early warning of the contract breach crises may be achieved via the efficient monitoring and analysis of the HR flow status both within and outside of enterprises in the HR digital information system. As a result, it may also have an impact on how managers at all levels perceive the operational circumstances of businesses in order to drastically change the conventional approach to management, effectively increase the ability and efficacy of management and control in businesses, and strengthen enterprise reform.

3.3 Improving Companies' Crisis Control, and Reducing Operating Costs

Through the integration of various internal and external business processes, the HR digital management information platform enhances data consistency and achieves simultaneous logistics, capital flow, and information flow. In order to achieve cooperative production work and on-demand manufacturing, enhance efficiency and resource integration, prevent waste, and reduce businesses' operational crises, the system gathers personnel, funds, materials, and other crucial resources by integrating the entire production process.In the areas of HRM, pay management, reporting and statistics, and talent development and management, real-time data analysis may also aid in the integration, modernization, standardization, and automation of business operating activities. Additionally, because of real-time data analysis, an ever-increasing amount of data and information can be provided in a fast and efficient manner, enabling businesses to make the best decisions and withstand periodic crises.

3.4 Standardizing Operation Process, and Improving Enterprising Management Model

The HR digital management information platform is an integrated management model that blends advanced management concepts with management techniques, internal resources with external environmental information, and other urgent tasks include optimizing the enterprising management model and integrating information application and informatization management innovation. In order to deliver an integrated, effective, and highly efficient information management system, this platform breaks the long-standing management model and combines and optimizes business process and enterprise resource allocation based on real conditions.There will be a more logical business process and less rehandling. The HR digital management information platform may carry out flow control and data verification in the interim. This implies that the system will automatically produce confirming information, stop low-level human mistake, and improve management efficiency with a clear direction whenever an error occurs within the control scale. The necessity of continuing the HR digitization and standardization reform has thus been highlighted; this will become the course of development and the inevitable choice for modern HRM.

4. Suggestions about the HR Standardization Reform in the Digital Transformation

Human resources will undergo fast adjustment and change as a result of the digitization and standardization reform. Building the management model and designing the system blueprint to standardize the pertinent business process based on the real business situation and procedure reviews is the strategy required to effectively improve enterprises' overall competitive forces and sustainable development levels.Simultaneously, on the basis of guaranteeing the modularization, standardization, and functionization of the system construction, lessen the workload of employees, improve the functions of data batch penetration, extraction, integration, and processing, simplify the business operational process of HRM, and promptly develop a multi-operating platform, guarantee that the information is trustworthy and researchable based on the integrated system, solve all the issues in the reform process by taking all the effective measures, and improve the final results.

4.1 Properly Determining the Organizational Leadership and Personnel Allocation

For the HRM digitization and standardization reform to be successful in the end, management people at various levels must pay close attention, define who is in charge of the project, and coordinate promotion and coordination. In addition to all branches and subsidiaries fully participating in the project construction in accordance with the headquarter's unified progress, three parties—HR departments, information departments, and technology programmers—must work closely together. Additionally, individuals in charge of HR departments at various levels must guarantee effective cooperation and organization throughout the entire process and provide guarantees from aspects of resource and organization.In addition, we must pay close attention to how well the system will function once it is put into place in the future, bolster the development of the HR information technology ranks, create a sensible talent introduction plan, develop interdisciplinary talent that excels in both business and information technology, and create a high-caliber and elite HR informatization professional force. To provide enough training time and successful training outcomes, the training efforts of the entire team and different types of users should be guaranteed at every stage of project promotion.

4.2 Properly Solving the Problem of Functional Positioning of System Modularization

Reasonable functional placement is crucial to the success of the HRM information system. The reform of HR digitization and standardization must be grounded in the real business environment, understand the fundamental conflict, and concentrate on the crucial aspect of management and control. Additionally, divide the application system based on the quality of the relationship between the linked functional modules and the business relevance, integrate related and similar systems, reduce the overall complexity of the system, realize the function of one or more of the basic functional modules, such as organization management, personnel management, and salary management, and then gradually improve and expand the optimization.The headquarters must oversee the company's HRM digitalization and standardization reform and uphold the cohesive planning of both system planning and promotion. The system can be used to meet the demands of management, control, and analysis of headquarters and subsidiaries; establish the modularization of business processes by making management interfaces, responsibilities, and work standards clear; enhance the professional quality and service level of all personnel from various levels; alter employees' current working patterns; and shift the focus from business-oriented to strategic decision-making.Simultaneously, choose an appropriate business process in the system based on the real circumstances, enable the fundamental unit to participate fully via reasonable and standard operation, enhance working efficiency, and guarantee the quality of data and information.

4.3 Properly Solving the Problems of System Standardization

Conflicts between individual work habits and standardized corporate procedures are unavoidable due to the diversity and complexity of HRM job. As a result, a single standard is crucial and provides a strong basis for future data analysis and analytics. In the HRM digitization and standardization reform, the characteristics of the HR business are analyzed in accordance with the pertinent requirements of the indicator system; professional indicators are sorted out; their properties, such as name, definition, calculation formula, statistical caliber, dimension, and metric, are clarified; the indicators are categorized and their classified documents are formed in accordance with the business requirements. Information technology, information management, and information coding standards make up the majority of standardization construction. The information technology standard covers basic and professional terms, structured data, data interchange, and interconnects; the information management standard covers business process standardization, management and maintenance

procedures, and a standard template used to standardize the industry and company's external reports; the management code standard covers the compilation of rules, methods, and technology, classified code, the issuance and upkeep of standard code, etc. The standard includes both the soft process standard and the hard data criteria. According to the hard data criteria, the system only supports a single unified information code that has been assembled in accordance with the pertinent industry, state, and corporate standards. If there is a difference between standards, the highest standard should be adhered to. Future connections with the production management and control platform and the financial management and control platform will benefit from the use of the unified standard. In order to maintain the vitality, stability, and expansibility as well as the consistency of the hard data standard, it is necessary to take into account both the current situation and the development requirements in the future while being firmly anchored in the present.Regarding the soft process standard, businesses should hold unplanned meetings, uphold the unified standard level, create and enhance the "establishment-using-feedback-maintenance and upgrading" work process, incorporate standardization concepts into daily operations, give professional staff a unified code of conduct and common value concepts, and genuinely realize the unification of process and standard.

4.4 Properly Solving the Practical Problems of System Optimization

According to user feedback, the most common issues are the unfriendly system operation interface and the inadequate function of statement formulation and inquiry, which are also the primary factors that limit the system application. These are the main causes of the poor application situation in companies. Additionally, a team has been assembled to thoroughly investigate and appropriately resolve the issues of system optimization in order to guarantee the operational efficiency of the system, as the general system data and the number of users of the HRM information system in companies' branches and subsidiaries will be enormous.The best solution for integration has been developed by thorough demonstration and sensible design in order to optimize the sharing of different types of information resources, address the issue of data interaction, and organically integrate the pertinent information inside the system.

CONCLUSION

In the process of HRM digitization and standardization transformation, we must adhere to the overall strategy of unified planning, top-level design, step-by-step implementation and constant improvement, emphasize the value and refine the procedure of relevant business, and eliminate the individual Information Island through business integration in order to fully upgrade the HRM quality and successfully realize the final purpose of HRM digitization and standardization. In order to achieve the ultimate goal, we need also standardize the "weighting system" of management, implement high-level resource sharing, and progressively expand the application range.

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