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Tech-Driven HRM Framework: Future-Proofing Employee Rights, Blockchain Streamlined Compliance, SSD assembled Data Integrity securing Entrepreneurial Workforce

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Abstract

This research investigates how using blockchain technology in HRM combines improved regulatory adherence with worker rights protection. The research employed qualitative methodology within an ontological paradigm by conducting a Systematic Literature Review together with case study investigations of eighty-seven (87) large-scale manufacturing companies' respondents in twelve (12) organizations. NVivo coding revealed important themes, including organizational adjustments towards entrepreneurship, HRM compliance standards, and technical advancements. Soft systems methodology underpinned the creation of a Tech-driven HRM framework, which received validation by means of triangulation. Standards derived from UDHR, ILO conventions and Bangladesh Labour Act (BDL 2006) form the basis of the framework that drives continuous workforce growth while enhancing entrepreneurial development and employee involvement throughout different business sites.

Keywords: Tech-Driven HRM Framework, Blockchain, Human Resources, Soft Systems Design, Framework, Employee Rights, Entrepreneurship, Entrepreneurial Minds.

Introduction

Researchers in this paper have assembled some significant components to develop the HRM framework for the manufacturing companies, which are of different sizes large, small and medium, as well, where Blockchain integration has added another dimension. In addition, the initial integration occurred between the human resource management functions with employee rights protocols, as well as consecutively with entrepreneurial innovations. However, there are certain challenges and benefits while completing each phase of integration as well. In Bangladesh, both manufacturing companies and manufacturing SMEs typically uphold distinct regulations and policies governing compliance, human resource management, government mandates, and international standards about employee rights within the same organization.

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Moreover, this paper endeavours to consolidate these diverse aspects into a unified platform to address various cumbersome and conflicting issues. The researchers aim to integrate these elements into a cohesive framework, treating each unique function as a separate module. According to Andalib, Darun, and their co-authors, 2018 and 2019 discourse points towards the need to integrate these different modules—precisely indicating how embedding employee rights agreements within the organizational structure is an entrepreneurial reorganization that settles most complexities. The researchers are motivated to find the possibilities of using blockchain technology in the functions of HRM, examining blockchain-oriented solutions for processes like job applicants' information verification, job search, record-keeping, overseas payroll payments, and data privacy. This integration can change a lot of dynamics; therefore, researchers believe this is an important dynamic as well as a significant topic. Hence, blockchain technology offers opportunities for secure data storage and sharing as well as enhanced privacy and accuracy in employee data (Salah, 2020; Rashmi, 2023). It can also automate the selection of human resources functional tasks, leading to faster and more effective planning (Balon, 2022). Furthermore, blockchain can reduce costs and delays in the verification of credentials, increase confidence, and enhance hiring automation (Yi, 2020). Nevertheless, applications of blockchain technique need thorough and prudent probing as well as consideration to adapt with the challenges, such as data security and privacy (Salah, 2020; Rashmi, 2023). Besides, blockchain technology enhances data privacy in human resource management, allowing secure access to sensitive information and accurate tracking of employee data, but requires proper implementation as well as maintenance for data protection (Rashmi, 2023). The use of blockchain technology is being explored to enhance data privacy in human resource management, with Soft Systems Design (SSD) applied to assess its implementation.

The qualitative approach has been the main approach followed by the researchers for this paper to collect and deal with real-time detailed data. Further, the researchers followed the ontological and methodological philosophical paradigms by being Interpretivists (Creswell, 2013). This article focuses on the assembled HRM framework assimilated with blockchain technology in these companies. Meanwhile, there are some global podiums named 'Universal Declaration of Human Rights' along with 'International Labour Organization' that mention employees' rights in innumerable incorporated articles and covenants, which are provided as a regulation for the organizations of the world. Bangladesh Govt. has also affirmed the Bangladesh Labour Act in 2006 (BDL), where employees' rights are significantly described in the assorted sections. These covenants are essentially established to guard the employees' rights, through the establishment of security at workstations as well as with accreditation for the basic human rights that specify that employees are not only mere apparatuses at the workplace, but also flesh and blood human beings with emotions. This attempt also assists in reducing stress and frustrations at work (González-Gómez and Hudson, 2023; Fox and Spector, 1999). According to the United Nations (1945), various issues of workers are discussed in Articles 3, 4, 21 and 23 of the UDHR platform. Importantly, the ILO became an important dedicated organization, which was created in 1945 at the United Nations to protect the rights of workers (United Nations, 1945). The International Labour Organization is more meticulous and has termed various forms of rights in several conventions and covenants. The covenants like 'P155', 'P147', 'P110', 'P089', 'P081', and 'P029' etc. have linkages with several discrete conventions. These covenants need to be explicitly included in the Bangladesh Labour Act, 2006's guidelines.

According to the United Nations (1945), Articles 3, 4, 21, and 23, which are embedded in the Universal Declaration of Human Rights, address diverse issues concerning employees. The

International Labour Organization (ILO) emerged as a crucial entity dedicated to safeguarding employee rights under the UN in 1945 (UN, 1945). The International Labour Organization meticulously delineates various rights through numerous conventions and agreements. These agreements, such as 'P155', 'P147', 'P110', 'P089', 'P081', and 'P029', are interconnected with various specific conventions. These agreements must be explicitly incorporated into the guidelines declared and published in the Bangladesh Labour Act, 2006. For instance, the ILO Convention titled Employment and Occupation, 1958 (No. 111), outlines employee rights concerning the articles 1 to 14 which talked about equal remuneration. However, the Bangladesh Labour Act 2006 declared by Bangladesh Govt. includes 25 necessary labour laws along with a series of tripartite negotiations. Bangladesh Employee Federation in 2009 and Hoonlee et al., (2013) have discussed about certain laws which have talked about wages, compensation packages for the disabled people, provident fund, retirement schemes and punishment due to sexual assault and etc. Technology Road mapping (TRM) as a measurement instrument directly reflects and reveals that this entrepreneurial re-orientation and entire venture is a sustainable way to build or rebuild organizations of any kind (Etemad, 2024; Adam & Heikkila, 2009; Andalib et al.,2020).

Employees have been exploited all over the world for decades, and while certain companies have come up with individual policies aimed at supporting employees' rights under various covenants, they are typically not integrated into the organizational policy (Andalib, 2018). Such cases with a strong literature gap have motivated the researchers to assimilate employees' rights modules. Officially, 1,127 workers were killed when a massive complex in the Bangladeshi city of Savar collapsed in April 2013. In order to protect the workers, the audit engineers were previously instructed to promptly cease any movements and manoeuvres within the compound. However, nobody took any notice, including the owners and the board members of upper management, instead of carrying on as usual without even thinking that the action was dangerous for the lives and health of the workers (ILO, 2012). The company took employees' rights for granted and appointed staff as they liked without following the mandatory BDL regulations. Following the United Nations' Universal Declaration of Human Rights - specifically Article 3 (right to life, liberty, and security), Article 4 (no slavery), and Article 23 (workplace rights)—and Sections 3 and 4 of the BDL, all of these appeared to have been violated in the present case, as analyzed in Andalib's 2018 framework. These divulge the gap in practical scenarios. On the other hand, previous scholars' studies didn't talk about connections between 'manufacturing companies' compliance framework' and 'employees' rights'. These are the consecutive issues that raise the questions to the thoughtful minds, which are "why linkages are needed?", "how linkages can be established?" and "what are the reasons for these linkages".

Background

The evolving situation of Human Resource Management (HRM) in production industries, particularly in developing countries like Bangladesh, has made the case for a holistic compliance mechanism that effectively integrates HR functions with employees' rights and entrepreneurial ingenuity. Despite the presence of a number of international and national regulatory systems - such as the Universal Declaration of Human Rights (UDHR) and the Bangladesh Labour Act (BDL, 2006) - practical incorporation of such rights into organizational policies is disjointed (United Nations, 1945; BDL, 2006). This is most clearly seen in Bangladesh's manufacturing industry, where policies systematically vary significantly between large companies and SMEs, leading to the fragmentation of governance structures (Andalib *et al.*, 2018).

One of the main drivers for this study is the past disregard for employee rights in corporate governance, best exemplified by the Rana Plaza disaster in 2013, where more than 1,100 workers lost their lives as a result of systemic failures in the enforcement of labor laws and corporate responsibility (ILO, 2012). Though international covenants such as ILO conventions (e.g., P155, P147, P110) have been ratified worldwide to guarantee workers' rights, their incorporation into national policies such as the BDL is not implemented, leading to ongoing exploitation in workplace safety and dignity (United Nations, 1945; ILO, 2012). Besides, there has been no holistic examination of HRM, employee rights, and compliance procedures' alignment within the realm of technological innovations. While there are innovations in HRM, they are fragmented practices with no integrated frameworks that can adapt agilely in turbulent organizational environments (Dany *et al.*, 2009; Yogesh *et al.*, 2022; Gupta *et al.*, 2024).

The entrepreneurial re-orientation theory, proposed by Andalib *et al.*, (2018, 2020), is a promising framework for the balancing of these aspects by considering the rights of employees as integral organizational modules. These models have not, however, been sufficiently tested and implemented with the assistance of emerging technologies such as blockchain. Blockchain technology, in particular, has been hyped to transform HRM functions - enhancing data privacy, process automation, and transparency in job applications, record keeping, and payroll systems (Salah, 2020; Rashmi, 2023; Balon, 2022).

However, its adoption is constrained, fueled in part by apprehensions regarding implementation complexity, data safety, and system maintenance (Yi, 2020; Rashmi, 2023). Soft Systems Design (SSD) application in this study offers a methodological context for feasibility and viability estimation for blockchain implementation within HRM frameworks. The background of this study thus lies at the intersection of three general areas: the regulatory gap and past oversight of employees' rights, the deficiencies of existing HRM systems, and the untapped potential of blockchain as an integrated and open technological application.

Research Problem

Gupta and colleagues in 2024 mentioned that even though there are advancements in integrations, where various dimensions of HRM oriented philosophies, policies as well as practices are merged, they remain to face challenges as well as insufficiency to create a standalone framework. Dany et al., in 2009 and Yogesh et al. in 2022 also talked about it in their works in different times. The researchers in this paper have applied the entrepreneurial reorientation process and significantly identified the segregated modules of HRP, compliances with regulations of the company, and also their relevant themes to join with employee rights' covenants with a further notion to propose an assembled framework by maneuverings with blockchain technology. Therefore, the scholars have certain research questions, which are mentioned below.

Research Questions

RQ - 01: What are the main organizational themes and the HRM themes necessary for the framework?

RQ - 02: What are the sub-themes of employees' rights from various standards?

RQ - 03: Why is blockchain technology integration required?

RQ - 04: How to use SSD to develop the conceptual compliance framework?

1774 Tech-Driven HRM Framework: Future-Proofing Employee Rights Therefore, the three (03) main research objectives of this study are:

Research Objectives

RObj - 01: To identify the main organizational themes along with HRM themes, which are mandatory for the organizational compliance framework.

RObj - 02: To identify the sub-themes of employees' rights from international and local standardized guidelines of employees' rights.

RObj - 03: To integrate with blockchain technology.

RObj - 04: To develop a conceptual compliance framework by using SSD.

Literature Review

In this study, the scholarly articles are reviewed thoroughly. Discrete scholars have scrutinized and found some core elements of compliance framework in their studies, which can be mixed and matched when needed as per Nicmanis, M. (2024). This study searched for scholarly works in WoS, Scopus, Proquest, Emerald, Elsevier and other scholarly databases using the following keywords: manufacturing companies, blockchain technology, consent framework, integration and assimilation, connection to HRM components, analysis using NVivo, and agreements regarding employee rights. Therefore, some necessary components for the compliance framework as per various scholars are mentioned below:



Figure - 01: SLR Steps (Procedures) (Source: Kim, H.-D.; Cruz, A.B., 2022)

The above-mentioned figure shows the five (05) SLR steps, which can be named as procedures where the steps are named as verify keywords, search and retrieve, review content, search essential data and synthesis as well as analysis data.



Figure - 02: LR in Prisma Diagram

Above Figure - 02 shows the Prisma Diagram, where Identification of studies via Database have occurred through various segments. The consecutive three (03) segments are 'Identification', 'Screening' and 'Inclusion'. In the Identification segment, the initial records are n = 96700, from which several articles are removed after screening in different layers because of duplications. Here, \mathbf{n}_1 determines the records with no open access files and duplicated articles, \mathbf{n}_2 shows duplicated articles but having open access files, n_3 notes data for irrelevance and insignificance, \mathbf{n}_4 reveals records with for not similar meaning of keywords. The second segment named, Screening has three (03) layers. In the first screening layer, records that are screened after removal are n = 15,100. Nevertheless, excluded records are $n_5 = 14,200$. In the second screening layer, articles sought for retrievals are n = 900, but articles not sought for retrievals are $n_6 = 488$. In the third layer of screening, articles assessed for eligibility become only n = 412 after all removals. However, certain articles from here needed to be removed as well, which are ineligible $n_7 = 220$, small sample size $n_8 = 96$ and ineligible dosage amount n = 20. Finally, in the third segment named Inclusion, the final number of articles chosen to use for this paper are n = 80, the most relevant and eligible ones. The table below presents the number of articles included from each year for this research paper, followed by a discussion of the key factors identified

1776 Tech-Driven HRM Framework: Future-Proofing Employee Rights through the literature review.

Articles Included (n = number of articles)	2025-21	2020-2016	2015-2011	2010-2005	2004-1945
80					
	36				
		16			
			13		
				08	
					1945 : 1 1992 : 1 1995 : 2 1997 : 1 1999 : 1 2003 : 1

Table - 01: Included Articles from Various Years

Entrepreneurial Re-orientation

To resolve the dissemination and inflexibility, the researchers have proposed a framework for entrepreneurial reorientation that brings together three (03) emerging streams of HRM Compliances, employees' rights, and blockchain technology. Inflexibility and dissemination of several policies, and regulations along with the human resource management in the manufacturing organizations of Bangladesh is a critical issue. This situation is not affable or desired at all by the top managers of various organizations in Bangladesh, because it creates a lot of hassle whenever any slight regulatory modification is done at any crisis hour as well as managers need to make a decision right away. This also hampers the industrial management and relationships among the organization's employers, top management executives, and employees to some extent. Besides, entrepreneurial re-orientation and cohesion of bringing all core modules in one place is just the beginning of resolving issues.

A Structured Assembly Approach by Soft Systems Design

The chosen firms are required to comply with distinct compliance acts, standardizations, complicated architectures, procedural mechanisms along with SOP, regulations and laws. Since the last decade, scholars have been trying to produce several frameworks with various incorporated modules. Eisenhardt & Graeber talked about the assemblage through research steps in 2007 to build the framework. However, the researchers here have tried to combine the human resource management policies, acts, guidelines, and actions of the manufacturing organizations with employees' rights covenants ratified by per UDHR, ILO, and BDL Act in a framework by exerting soft systems design by Denai discussed in 2007. Furthermore, have introduced blockchain technology to keep records of traceability, default detection, entrepreneurial employees, investment records, leadership capabilities, employees' role matrix, etc (W. A. R. W. M., & Amin, I. M. 2022; Checkland, & Poulter, 2020).

Technological Up-gradation with Blockchain Platform

Blockchain is professed as a ground-breaking technology proposing significant influence on an **Journal of Posthumanism**

immense degree of segments in any private company as well as in the government ministry and also its functions (Yi, 2020). Moreover, blockchain can be applied in the HRM module and in the compliance tactics arena as well to reduce the projected challenges and also to make the process smooth (Munoz *et al.*, 2020; Onwuegbuzie *et al.*, 2009; Salah *et al.*,2020; Spencer, 2018).

According to Baker (2021), blockchain in HRM can bridge the knowledge, skills, and ability (KSA) gaps between employees by enabling open data to be utilized both by trainers and organizations to meet compliance needs. It also helps policymakers regulate competence standards and facilitates consensus-making among stakeholders. Blockchain heightens the worth of the employment relationship by allowing workers to own and control a secure record of their training, competencies, and performance—gaining a 'value passport' to enhance employability. As an ever-evolving employment market emerges due to the concept of 'gig economy' and the 4th (Fourth) Industrial Revolution i.e Industry 4.0, where career trajectories are in flux and data sharing is in fashion, blockchain is crucial. It provides instant skill verification, enables better job matching via analytics, and establishes a platform of trust, transparency, and also reliability between the employer as well as the employees.

In 2021, Bedi and Aggarwal discussed the automated steps to outstretch the desired consensus involved within the group of people. Moreover, blockchain holds immense potential for both employees and employers by allowing individuals to store and also control access to a secure, verifiable record of their education, skills, as well as work performance—often described as a "value passport" (Grech & Camilleri, 2017). Such a system would enable job applicants to translate their qualifications, training, and experience into real value in the labour market. Employers can leverage data analytics to more accurately and efficiently align candidates with roles—an essential strategy as skill requirements continue to shift in response to the Fourth Industrial Revolution i.e Industry 4.0 (World Economic Forum, 2019).

Blockchain's potential to underwrite and verify workforce skills will become increasingly essential. The advantages of a highly portable and continually updated "education passport" will be particularly useful as the gig economy expands and younger workers switch jobs or build portfolio careers more frequently (Grech & Camilleri, 2017). Regardless, since the younger generations are more open to sharing personal data, blockchain offers them a more secure and trustworthy means of doing so (Zheng *et al.*, 2018). As blockchain technology is increasingly adopted in business practices, it will have a profound impact on how educational credentials are processed and stored. A blockchain-based HR system can enhance trust, reliability, and transparency in workforce credentialing (Bedi & Aggarwal, 2021).

The accuracy, effectiveness, and openness of human resource management might be greatly enhanced by blockchain technology, particularly in small and medium-sized enterprises (SMEs). Conventional recruitment processes fail to match talent and organizational needs, but blockchain fills in the gaps by enabling real-time verification of qualifications and also skill matching— essential for enhancing productivity as well as competitiveness (Baker, 2021). Blockchain also reduces administrative loads by streamlining tax computations, compliance activities, and payroll, allowing SMEs to focus on business development and also customer engagement (Andalib, 2018). With its secure, tamper-proof structure, blockchain-based HR systems not only create trust, but also yield a massive advantage in the modern fast-paced employment environment.

Beyond HR, blockchain is revolutionizing supply chain networks through increased traceability, elimination of intermediaries, and ensuring authenticity in product movement (Khan, 2023). It enables faster, more secure transactions and can identify counterfeit products while reducing paperwork. Its decentralized character improves data integrity and transparency across the value chain. Furthermore, blockchain is closing security vulnerabilities in the Internet of Things (IoT) and accelerating innovation in use cases like food tracing and also energy decentralization— both crucial for sustainability as well as consumer trust (Rahman, 2023). As industries evolve, blockchain adoption is no longer a concept of the future but a present necessity for facilitating smarter, leaner, and more resilient operations.

Evaluating blockchain's contribution to increased efficiency and effectiveness must be considered alongside its general impact on the future of work (Tapscott & Tapscott, 2016). The material now available emphasizes how blockchain technology can be used in various HR tasks, and its broad implications make it impossible to ignore (World Economic Forum, 2019). The competition to leverage blockchain for competitive gain has already begun, and HR functions must get up to speed fast or be left behind (Bedi & Aggarwal, 2021). Among the many significant benefits of HR blockchain is its ability to increase productivity. By more effectively aligning employees' competencies with job roles, organizations can realize significant productivity gains (Grech & Camilleri, 2017). This will be very helpful for small and medium-sized businesses (SMEs), who have difficulty finding and hiring the best applicants. Tools that streamline this process can significantly improve performance and overall business results (Tapscott & Tapscott, 2016).

Further, blockchain also stands an excellent chance to be implemented in payroll administration and VAT settlements, where the mitigation of administrative burden can allow SMEs to concentrate on customer services and business development (Zheng *et al.*, 2018). The technology is also bound to heighten transparency and accountability in value chain networks, which means more agile and also efficient supply chains (Casino *et al.*, 2019). Specifically, blockchain solutions can spur evolution in supply chain management by allowing improved visibility, optimization, and demand forecasting (Saberi *et al.*, 2019). It can be utilized in logistics tracking, counterfeit detection, paperwork reduction, origin verification, and allowing buyers and also sellers to conduct transactions directly without the involvement of intermediaries (Kshetri, 2018).

According to study, supply chain networks may improve contract management tools between third- and fourth-party logistics (4PL, 3PL) and lock in security to solve information asymmetries by implementing blockchain applications. The apps improve overall supply chain information management, tracking systems, and traceability assurance. In addition, blockchain enables improved customer service through innovative recommender systems and sophisticated data analytics (such as encrypted client data). Blockchain improves inventory and performance management in advanced supply chains and facilitates smarter transport systems and new decentralized manufacturing topologies (Francisco & Swanson, 2018).

Therefore, in light of the ongoing skill set oriented differences in most sectors and countries, blockchain appears as a revolutionary enabler which has the ability to address this challenge. Existing literature supports blockchain's capability to bridge competency gaps between accessible and required competencies by providing precise job-skill matching through decentralized as well as verifiable data (Baker, 2021; Khan, 2023).

Blockchain technology, aside from recruitment, is multidimensional in its usage across sectors, guaranteeing enhanced clarity in operations, traceability, and also decision-making. However, no industry-wide consensus has been established on a blockchain-based system that provides solutions to specific sector-specific skill requirements (Rahman, 2023).

Blockchain offers a handsome solution by aggregating data among different industry partners, allowing centralized training schools access to a ''value passport''—an up-to-date profile of verified competencies—for workforce planning (Grech & Camilleri, 2017). Through consensus processes, industries can together determine the most required competencies and allow education institutions to construct micro-credentials based on such determinations (World Economic Forum, 2020). Each learner and professional can be given a pseudonymous blockchain identity to offer privacy and traceability in contributing to feedback loops and also skills forecasting (Sharples & Domingue, 2016). This identity allows secure participation in polls, voting, and forums, so that people can give real-time needs and insights based on their organizational roles (Zheng *et al.*, 2018). Through this, blockchain not only enhances the agility of the workforce, but also democratizes industry-aligned education's evolution (Tapscott & Tapscott, 2016).

New studies highlight the blockchain oriented applications in several segments of the companies. In 2017, Dorri et al, mentioned that while talking about security, blockchain technology proves to mend flaws inherent in existing Internet of Things (IoT) technology, hence enhancing security and trustworthiness. The application of blockchain could also boost efficiency, reduce IT operations costs, and provide increased protection for information (Casino *et al.*, 2019). In 2017, Tian talked about several usage regarding food traceability by using blockchain that demonstrated the mechanism of integrated IoT-based blockchain technology is beneficial for consumers and supply chain stakeholders by enabling them to make efficient decisions (Tian, 2017). Further, research on blockchain in the energy sector reveals that it can offer an ideal solution for energy decentralization to achieve long-term sustainability (Andoni *et al.*, 2019).

Since the shortage of skills is prevalent in many industries and even countries, blockchain can be a force that helps solve this issue (Grech & Camilleri, 2017). While various applications of blockchain in different industries have been identified through past research, no blockchainbased solution is available to create a consensus among industry players regarding the specific skills required within an industry (Sharples & Domingue, 2016). Blockchain can be used as a shared platform for collecting and verifying skill-related data from industry stakeholders, which Corporate Training Centers can utilize to identify necessary competencies (Tapscott & Tapscott, 2016). By applying blockchain for data collection and consensus, industries can define the most critical essential skills for their sector. Based on these results, education providers can develop targeted micro-credentials or training courses. They would possess a pseudonymous blockchain identity and can anonymously contribute to forums, provide information about the expertise their companies need, as well as participate in a decentralized decision-making process. Data safety and transparency of the voting and feedback process is ensured through blockchain technology, and this ultimately leads to a formal and also industry-specific method of workforce development (Zheng *et al.*, 2018).

Baker (2021) suggests that blockchain technology integrated into HRM activities can effectively address the Knowledge, Skills, and Abilities (KSA) gap among employees. Through blockchain data, both the organization and trainers can ascertain what needs to be done to meet the organization's compliance requirements. Additionally, blockchain data provides policymakers

with valuable insights to regulate standardized competencies within companies. However, HR blockchain makes it easier for all parties involved to come to an automated consensus.Furthermore, blockchain holds great promise for both employers and employees, enabling people to store and manage a comprehensive, reliable blockchain-based record of their training, skills, and workplace performance. With the help of this "value passport," people may convert their education, experience, and abilities into real market worth. Businesses can better match people to positions by utilising analytics, which is crucial as the fourth industrial revolution changes the skills needed. Particularly in light of the gig economy and the growing popularity of portfolio careers among younger generations, blockchain's ability to enhance worker skills and abilities is essential. Additionally, blockchain offers a secure and trustworthy means for younger generations to share personal information.

As blockchain becomes more pervasive in business, its implications for maintaining educational qualifications are profound. The HR management field now has a transparent, dependable, and trustworthy way to carry out a variety of HR tasks thanks to blockchain-based employee lifecycle management techniques (Fachrunnisa & Hussain, 2021; Yang *et al.*, 2020). Blockchain's promise to improve efficacy and efficiency must be weighed against its wider implications for the nature of labour in the future. The material now in publication makes it clear that blockchain technology can be used in several HR-related contexts, and its size and reach make it impossible to ignore. Adopting blockchain technology gives businesses a competitive edge, especially when it comes to increased efficiency.

Productivity is increased when people's abilities and performance are better matched to occupations, which is especially advantageous for small and medium-sized businesses (SMEs). Additionally, blockchain is expected to increase the openness and accountability of value chain networks, enabling more flexible value chains. Its uses in supply chain management, logistics, and the detection of counterfeit goods have the potential to completely transform these industries (Baker, 2021; Fachrunnisa & Hussain, 2021; Yang *et al.*, 2014). The following Table - 02 shows has followed Miles *et al.*, (2014).

		Inddito et di.
Issue	Factors and Interpretation	Reference
Entrepreneurial	Entrepreneurial minds, out of the box	Munoz et al. (2020);
Re-orientation	solutions, venture creation	Brick et al. (2013);
		Huggins & Thomspon
		(2017); Williams &
		Vorley (2019)
Assembly,	Assimilated designs, soft-systems	Denai et al., (2007);
technological up-	design, linked components	Sotiris (2014); Hoonlee
gradation and		(2013);
Assimilation of		
components in the		
frameworks		
Employee' rights	The articles, sections and provisions	Andalib (2018); United
covenants (ERC)	related to employees in a	Nations (1945), ILO
	manufacturing company	handbook (2012), BEF
		(2009)
HRM Compliances	Compliance Acts, Frameworks	Foorthuis and Bos
and	Policies, procedures, guidelines, action	(2011); Andalib (2018);
Organizational	plans of the employees, HRM	Andalib et al. (2019 and
HRM Functions	frameworks or frameworks of the	2020);
(R&S, CB, RLE)	manufacturing company, assimilated	
	and linked frameworks	
Blockchain	Traceability, default detection,	Salah <i>et al.</i> (2020), Xu
Technology	productivity, resource capabilities,	et al. (2020); Spencer
80	innovative and entrepreneurial	(2018): Andalib <i>et al.</i>
	employees, humane leadership.	(2020) ; Fachrunnisa &
	technology market, waste reduction,	Hussain (2020); Baker
	investment record, employee data,	(2021); Yogesh et al.,
	recruitment	(2024)

Table - 02: Scholarly works

Research Methodology

Researchers applied a qualitative approach with in-depth interviews exerting ontological philosophical paradigm being interpretivist here. The researchers applied Multiple Case Studies (MCS) in the large manufacturing companies in Bangladesh. Data has been collected from eighty (80) articles, from eighty-seven (87) participants with Open-Ended Questionnaire through in-depth interviews as well as from thirty (30) participants through focused group discussion by applying the Case Study protocol of Miles and Huberman (2014). After the collection, the researchers conducted 'content analysis' and 'thematic analysis' as per Creswell and Cresswell (2022) by operating the NVivo tool.

Since, according to Yin (2009) and Eisenhardt & Graebner (2007), twelve (12) cases are examined in order to analyse and comprehend the cases' essential elements, Eisenhardt and Andalib have at various points described this procedure as a systematic qualitative analysis in which the interpretative technique has been used to summarise (Candy *et al.*, 2020; Foorthuis & Rik,2011). Additionally, according to Andalib and colleagues in 2019 and 2020, many examples are used to gather data that offers deeper places to combine the coordinates appropriately in the final assimilated framework. According to Yin and Merriam, the many case studies make use of

the logic of replication, in which each case's meaning is analysed with rich context and actions are recreated for each example. MCS uses a critical approach to uncover issues and to find and validate recurring patterns (Mccavish, 2012; Merriam, 1995; Sotirios, 2014).

In order to find the common themes in the HRM framework that has been put up for the workers, these approaches are repeated for each instance. Then, thematic analysis is performed to bring these themes into line with the covenants pertaining to employee rights and redesign it with appropriate integration. Finally, integrate this compliance framework with blockchain technology for manufacturing companies' by following Miles, Huberman, and Saldana (2014). There are four (04) major steps in the research methodology for this study, which are discussed below.





Selecting Cases and Participants: Combination of Purposive and Snowball

In accordance with the Company Act of Bangladesh, a purposive sampling approach was used to choose cases and participants for this study from among the major, publicly traded manufacturing enterprises with more than **500 workers**. The main idea here is also influenced by participants' perceptions of the main issue. Consequently, because the qualitative study involves many layers of sampling and thorough scrutiny, **twelve (12)** instances and **eighty-seven (87)** people were chosen for this investigation (Obilor, 2023; Rai & Thapa, 2015; Andalib *et al.*, 2022) Meanwhile, focused group discussion took place by snowball sampling, where thirty (**30**) **participants** from the manufacturing SMEs partaken and argued about their experiences, opinions and entrepreneurial re-orientation of policies and frameworks. The company and participants' information is mentioned in the following Table - 03.

Company /	Established	Participa	Age	Position
Industry	Year,	nt'	Group	
-	Listed Yr	Number	_	
C1: Chemicals	1973, 1995	8	30 to 55	SenHM, HM, EHR, MktM, HRD
C2: Chemicals	20,042,009	5	40 to 59	GMHR, HH, AHM1, AHM2,
				EHR
C3: Electronics	19,601,981	10	28 to 55	HM, ExCorpAf, HRH,
				UL1(Store), UL2 (Machineries),
				UL3 (Production), UL2
				(Distribution), UL5 (Manpower),
				UL6 (Health & Cleanliness), CSt
C4: Ceramics	19,982,010	9	28 to 65	Chair, CEO, HR Director, HM,
				Payroll HM, DepHM, EHR,
				FHRM, ProdM, L, Ex
C5:	19,831,989	10	28 to 65	HRD, CSt, AHM, ProdH,, DepM,
Pharmaceuticals				FHR, ProdEx (Factory), LS
				(Factory), Labour (Factory)
C6: Tobacco	19,721,977	7	35 to 55	HIT, Former HRH, Acting HRH,
				EHR, Ex ProdH, HM, Talent M,
				IndustrySec L
C7: Bio health	20,102,014	4	45 to 60	AHM, HRC, HRE1, HRE2
Chemicals				
C8: Cosmetics &	1956, 1988	5	28 to 45	EHR, HRH,UL, L, FSv
Chemical Products				
C9: Electronics	19,531,995	6	28 to 55	Chair, HRH, EHR, AHM, L,
				FHRH
C10: Paper mills	1905, 1983	7	28 to 60	HRD, FPH, FHRH, FHRE, FSv,
				L1, L2
C11: Steel &	1964, 1989	9	32 to 50	ACE, Engr, HPD, FM, HS, CMD,
Engineering				HRM, ComM, FH, UL
C12: Chemicals	19,731,995	8	25 to 55	AHM, HC, EHR, ME, HRH, CE,
				AdCE, HPD, HRE, HRMD,

Table - 03: Company Demographics

[The Table - 3 above signifies Assistant HR Manager = AHM, HR Consultant = HC, Executive HR = EHR, Marketing Executive = ME, HR head = HRH, Communications Executive = CE, Additional Chief Engineer = AdCE, Head of Production Dept = HPD, Factory Manager = FM, Head of Store = HStr, Managing Director of any company = MD, HR Manager = HM, Compliance Management = ComM, Factory Head = FH, Union Leader = UL, Company Secretary = CSt, Executive Corporate Affairs = ExCorpAf, Senior HR Manager = SenHM, Marketing Manager=MM, Labour = L, Chairman = Chair, Factory HR Head = FHRH, Factory Supervisor=FSv, HR Director = HRD, Factory Production Head = FPH, Factory HR Executive = FHRE, Deputy HR Manager = DepHM, Production Manager = ProdM, Executive = Ex, Head of IT = HIT, Acting HR Head = Acting HRH, Talent Manager = Talent M, Industry Section Leader = Industry Sec L, HR Director = HRD, General Manager of HRM=GMHR, Deputy

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Collecting and Storing Data

In addition to secondary data from the literature, annual reports, company documents, etc., the researchers have methodically gathered primary data from twelve (12) multiple cases, eightyseven (87) participants through in-depth, detailed interviews, and thirty (30) participants through focused groups. Information in NVivo is stored in the form of transcripts, memoranda, reports, audio-visual materials, and standardized documents, as well as scholarly information (Creswell & Creswell, 2022; Creswell, 2013; Stake, 2010).

Analyzing and Coding Data

In order to examine the data, the researchers used coding techniques. The raw text and the research concern were the two (02) primary difficulties. Understanding data, choosing the right data for coding, and creating coding methods are some coding phases. At different times, Locke *et al.*, (2022), Auerbach and Silverstein (2003), Corbin & Strauss (2008), Miles, Huberman, and Saldana (2014) said that textual testimonials are characterised and translated to research issues, theoretical narrative, theoretical constructions, and themes, repeated ideas, relevant text, and also raw text. They also explained how qualitative coding might occur. The idea of Reyes *et al.* (2024) has recently been applied in this study as well, and they have highlighted that the statements are chosen by determining the recurring data as significant themes.

The researchers here have come up with some themes from primary data like HRM AP, HRM SOP, Compliances, and Govt. Regulations, Employees' Roles, Employees' Rights as per international covenants, leadership style, the relationship status between leaders and employees, employees' recruitment and also selection policies, ISO standards, international guidelines on manufacturing base, production investment records, employees' compensation package, blockchain technology, default detection, traceability and many others. Lastly, the inductive process of coding is applied and replicated logically in each case in the NVivo platform to analyze and narrow down these themes to relevant and also necessary themes for the construction of an assimilated compliance framework, where the employees' subjective experiences and opinions are amassed and described into a coherent, vivid as well as real story (Creswell & Creswell, 2022).

Validating Data

According to Auerbach & Silverstein while validating data in the qualitative method is the most critical phase, the researchers have justified the analysed data, like interview data to transcriptions, voice records, and literature data matching, through justifiability (methodological step-by-step listed processes), conformability (confirmed by the participants), and transferability (code to theme). Meanwhile, various scholars (Creswell & Creswell, 2022; Creswell, 2013; Auerbach & Silverstein, 2013) have highlighted and prioritized themes derived from LR 'keywords' that are also brought and matched through triangulation with real-time themes as well as data.

Constructing Framework

Finally, by applying soft systems design as per Checkland and Poulter (2020), Denaï *et al.*, (2007) the researchers have joined all these themes and sub-themes to construct the compliance framework as per Miles *et al.*, (2014). The framework has significantly two (02) discrete parts, one is : the Entrepreneurial re-orientation of Organization compliance policies and the other one

is the Blockchain assimilation with technological upgradation. Entrepreneurial HRM Compliance has certain sub-themes, like HRM AP, HRM GL, HRM SOP, employees' rights protocols, and Government regulations that directly influence the employees' work-life and also the decision-making capacity of the managerial body (Alam & Mohanty, 2024; Foorthuis & Rik, 2011). The researchers have followed the inductive method here, as a result, the final themes are the variables of the framework, where entrepreneurial re-orientations, as well as blockchain variables, are independent and chase the other dependent variables.

Analysis and Findings

Assimilation of innumerable components in a framework has been a recent popular study area of many scholars these days. This kind of structure, where complicated social interactions, employee rights, and company-specific compliances are all integrated into a single platform, has been promoted by smart city systems. Thus, Andalib *et al.*, (2019) indicated that HRM functions no longer perform in a detached or segregated manner in this framework, rather becoming inherently involved and assimilated with Human Resource management policies and also practices entailing the leadership style, managers' decisions as well as employees' roles matrix amalgamated with acknowledged rights.

As per the first research objective, the main organizational themes and sub-themes have been identified, which are discussed below in section - 4.1 and shown in Table - 04 and Table - 5 from direct excerpts of MCS (Multiple Case Studies) and FGD (Focused Group Discussion). Second research objective was to identify the employees' rights themes from various standards, and that has been done in 4.2 sections. In 4.3 section, it discloses the convergence of the found themes within blockchain and entrepreneurial bricolage that has been done to develop the conceptual compliance framework by using Soft Systems Design (SSD).

Framework Main Themes and Sub-themes

The researchers have found the main themes from primary data that have constructed the HRM framework and then these main themes are connected with the HRM Compliances, HRM policy, Employees' rights, and technological up-gradation, particularly blockchain data mechanism. These themes also have some sub-themes which are 'HRM action plan' (HRM AP), 'HRM standard operating procedures' (HRM SOP), 'HRM guidelines' (HRM GL) derived from Company ACT, 1996 and Public Listed rules, 'Govt. Regulations' (GR), and 'Employee Rights Protocols' (ERP) (BEF, 2009; ILO, 2012; United Nations, 1945).

The following Table - 4, it reveals the sub-themes found from the analysis are 'HRM action plan' (HRM AP), 'HRM standard operating procedures' (HRM SOP), 'HRM guidelines' (HRM GL) derived from Company ACT, 1996 and Public Listed rules, 'Govt. Regulations' (GR), and 'Employee Rights Covenants' (ERC). The sub-themes are rated accordingly, which are identified as Firmly Documented and Applied "++, FDI" and Mildly Documented and Implemented "+, MDI". Distinct components are distinguished as compliant or less compliant for different cases. Evidence shown that the companies/cases C1, C4, C5, C6, and C12 were compliant. Meanwhile, evidence showed that the companies C2, C3, C7, C8, C9, C10, and C11 are less compliant. Furthermore, it discloses the connectivity. The blockchain elements are connected and assembled with the compliance framework, where ER covenants are assimilated.

Theme	HRM	HRM	HRM	Govt. R	ERC	Outcome	Block Chain
s of OC	AP	GL	SOP				
C1	++	++	++	++, FDI	C154, C173,	Complian t	Traceability, default
C2	+	+	+	+, MDI	Sub	Less-	detection,
					Sec 4, Sub	Complian t	ingenuity, resource
C3	+	+	+	+, MDI	Sec 6,	Less-	capacities,
					R 23	Complian t	Entrepreneuri
C4	++	++	++	++, FDI	(1), 23	Complian	al employees,
					(2), 23 (3), 23	t	transformatio
C5	++	++	++	++, FDI	(3), 23	Complian	Employees'
C6	++	++	++	++ FDI		ι Complian	Rights
CU				· · , 1 D1		t	covenants
C7	+	+	+	+, MDI		Less-	Employees'
						Complian	Record with
C8	+	+	+	+ MDI		t Less-	roles and
CU	I	I	·	, widi		Complian	positions, Turnover
						t	record
C9	+	+	+	+, MDI		Less-	
						t	
C10	+	+	+	+, MDI		Less-	
						Complian	
C11	<u>т</u>	1	Т	⊥ MDI		t	
CII	T	T	Т	+, ₩DI		Complian	
						t	
C12	++	++	++	++, FDI		Complian	
						t	

Table - 4: Case Matrix with Themes and Sub-themes from MCS

In table - 5, 'P' refers to the participant of this study. The themes are found from the sub-themes, which are coded in the NVivo tool by applying the categorizing method of the meaningful nodes. Sub-themes are the categorized codes found from the nodes.

Interestingly, more than seventeen (17) participants out of thirty 30 participants at FGD have given opinions about blockchain inclusion and its positive impacts on the HRM framework during this discussion. Participants placed strong emphasis on traceability, data transparency, and blockchain-secured payroll and personnel data like knowledge, skills, ability (KSA), and work experience records. Leadership ability data for the employees, entrepreneurial mindsets, turnover rates, and the projects where leadership problems had occurred were also considered. Employee career development as an investment was also mentioned as a key area of interest in

the blockchain-supported data system. These sub-themes of blockchain needed to be incorporated into the blockchain framework that eventually gets connected to the HRM framework in this study.

Name	^ Files	References	
> OBlockChain		1	35
> O ER Covenants		6	28
> 🔘 Govt. Reg.		6	30
> O HRM CB		2	26
> O HRM CP		5	63
> OHRM R&S		3	27
> O HRM RLE		3	15
> 🔘 Org. Culture		2	24

Figure - 4: NVivo Codes from files and References

The above figure shows the NVivo Codes for the Assembled Framework, where the files represent the datasets and documents used for these codes and also the references disclose the frequencies of the relevant codes discussed overall.

Entrepreneurial Re-orientation and Connectivity of the Conceptual Compliance Framework

As per Williams and Vorley (2015) and Huggins and Thompson (2017), the researchers exerted entrepreneurial re-orientation for the resilient and sustainable conceptual compliance framework in the long run for all the manufacturing large companies as well as the manufacturing SMEs. For this purpose, organizations' core functional themes, which are related to components as well as to the employees, are also brought under the scrutiny to assimilate for entrepreneurial ventures (Kim & Burton, 2022; Brick, 2013). These core themes of the manufacturing organizations are:

1) Organizational Culture (OC) along with the sub-themes like values, philosophies, objectives, and strategies,

2) Relationship between Supervisors as Leaders and Subordinates as Employees (RLE) having sub-themes like leadership style, administration of trust and also org. commitment, entrepreneurial minds, decision-matrix,

3) Recruitment and Selection (R&S) having sub-themes like recruit, interview session, select, contract, code of conduct,

4) Compensation Bundle (CB) having benefits, remuneration, increment, performance oriented bonus,

5) Employee Oriented compliances (EC) by Government regulations and standards (Govt. R), and

6) HRM policies (HRP).

Moreover, these main themes have sub-themes like HRM action plans, guidelines, standard operating procedures, tools, employees' role matrix and etc. found from the primary data after analyzing by using coding methods. These core themes are incorporated into Employee Rights Covenants (ERC), which are a distinctive and significant component of the framework. The ERC also sub-themes that refer to international labour and human rights norms such as Article 23 of the Universal Declaration of Human Rights (UDHR), Conventions **C154** (Collective Bargaining Convention) and **C173** (Protection of Workers' Claims in the Event of the Employer's Insolvency Convention) of the International Labour Organisation, as well as the Bangladesh Labour (BDL) Acts. These are such themes as registration of trade unions, freedom of choice of employment, discrimination-free work environments, equal remuneration, human and family dignity, and right to work — all systematically incorporated according to soft-systems design methodology (Andalib & Darun, 2019; Denai *et al.*, 2007; Eisenhardt & Graebner, 2007).

The second-level assemblage was carried out with the integration of blockchain technology as a prominent theme, which enables efficient data management and handling. The integration includes sub-themes and codes such as traceability, default detection, employee records, role matrices, turnover data, promotion and increment records, and performance appraisal records. It further comprises regulatory papers like government acts, articles of UDHR, ILO conventions, Bangladesh Labour Act 2006 provisions, financial investment reports, and employee roll with entrepreneurial ideas and leadership potential. This assemblage has integrated and brought blockchain with the Organizational Compliances in a standalone framework.

Soft- Systems Design (SSD) Assembled HRM Framework

There are various multidimensional components beneath the concept of a smart organizations' philosophy when technological up-gradation takes place (Ogbeibu *et al.*, 2024; Mohanty, 2024; Hoonlee *et al.*, 2013). Previous scholars have ascertained, through research and study, that there are certain major factors required for the success of smart initiatives and integrations within organizations.

Therefore, researchers like Nam and others have developed conceptual frameworks to address these needs. Under a single shared platform, their frameworks bring together three key domains: people, institutions, and technology. For instance, social learning is used to develop human infrastructure, governance is used to improve institutions and involve citizens, and infrastructures and technology-mediated services are integrated in smart cities (Guest, 1997; Spencer, 2018).

Direct Relevant Excerpts (Raw Codes)	NVivo Themes	DataSet s
Our top management also follows formal, systematic procedures. As a general rule, we also request the headhunters to give us a list of top management prospects before we initiate anything.	HRM R&S	3
We have started this strict recruitment and selection process in Bangladesh.	HRM R&S	3
Yes, this method applies to all employees; but since we have many offices, only those offices that are needed to conduct audits are used.	HRM R&S	3
Gratuity is awarded after ten (10) years, and the provident fund following five (05) years of service. I feel that is too lengthy.	HRM CB	2
As he was no longer in a position to work, his wife was hired in another sector by way of compensation.	HRM CB	2
Our company is facing a lot of pressure from the Bangladesh audit team and is facing minor compliance issues. Although we are compliant, we do have a legal counselor who deals with those things.	HRM CP	5
We follow a regular work routine that has been the same all these years unless there are some new additions by the government.	Govt. Reg.	6
Our employees can come to us with any issues, and we will do our best to resolve them without involving management.	HRM RLE	3
Workers complain when SOPs are not running smoothly. All the steps of the factory are given in the SOP. Nevertheless, we are doing our best to resolve all the issues through more effective SOPs.	HRM RLE	3
Yes, we do have thirteen HRM action plans, which we have applied to our company.	Org. Culture	2
The salary payment time is not certain, because of which sometimes issues are created.	HRM R&S	3
Yes, all employees must follow the standards, but because we have so many offices, the ones that are truly necessary to conduct audits are usually the ones that are most enforced.	HRM CP	5

 Table - 5: Few Relevant Direct Excerpts deriving NVIVO Themes from DataSets

According to Saif and Islam (2022) and Tyagi et al. (2024), two (02) theoretical themes—the posthumanism.co.uk

Blockchain Framework (BcF) and Employee-Systems' Interaction (ESI)-were derived from four thematic clusters, which became the prime movers of strategic HRM incorporating blockchain technology. The researchers of this study have incorporated the blockchain technology's sub-theme traceability, which is a wide-arrayed employees' data storage as well as tamper-proof authorized personnel data like resume, curriculum vitae, sensitive data, KSA (knowledge, skills, attributes) capabilities. Other sub-themes like employees' turnover records of the organization, employees'-oriented trainings and investment records, employees' work performance, efficiency and also productivity records, employees' leadership track records, employees' entrepreneurial minds as well as employment history are incorporated in the blockchain technology theme (Fachrunnisa & Hussain, 2020). These sub-themes are found in these research articles that indicate a coalition with the HRM framework but also mention the importance of integration by the participants in their interviews. The researchers' focus in this article is on people and manufacturing organisations, where the machines are utilised by employees, who have fundamental rights and functions that comply with the organization's regulations. The following figure - 06 below reveals the designed conceptual compliance framework.



Figure - 05: High-Level Compliance Framework Through Entrepreneurial Re-Orientation Under Transpired Blockchain

In Figure - 6, certain themes are addressed and mapped to re-design Entrepreneurial Reorientation. R&S indicates Recruitment and Selection, CB dictates Compensation bundle, RLE means Relationship between Leaders and Employees, Govt. R. means Government Regulations,

OC discloses Organizational Culture, ER Covenants (ERCovenants) indicates Employees' Rights Covenants and HRM Compliances. These themes are also mapped with Blockchain Technology, where Traceability, Investment record, employee record with roles-positions, innovative and entrepreneurial employees' list, productivity and performance record as well as employees' capabilities along with leadership records.

The Below Figure - 06, shows the detailed connections of the conceptual compliance frameworks among the main themes, sub-themes and nodes in a detailed manner by using soft systems technology.





Discussion and Future Directions

Ramachandran *et al.*, (2023) emphasized the inclusion of blockchain in the HRM framework, whereas Pipino *et al.*, (2024) mentioned that traceable relationship management functions work very well too. Kim & Duffy (2022) also talked about the human-automation interaction, which becomes much easier for the blockchain technologies' inclusion in the human resource management framework. Moreover, production scheduling can smoothly occur for blockchain

inclusion too, which is highlighted by Balon *et al.* in 2022. Eventually, smart technology like blockchain accelerates the HR competencies as well it leads towards Industry 4.0 (Srivastava *et al.*, 2022). Nevertheless, Andalib in her PhD studies in 2018 highlighted the integration and a standalone HRM framework that is embedded within any organization but the organisational regulations and compliances are always considered detached. She came up with the HRM framework where the most significant components, like recruitment and selection (R&S), the relationship between leaders and employees (RLE), compensation bundle (CB), Govt. regulations, Employee Rights Covenants (ERC) and Organizational Culture (OC), Human resources' compliances of the organization (HRM Comp.) are included.

The initial step of integration was to integrate these mandatory themes of the manufacturing organizations (both found from MCS and FGD) of Bangladesh with employee rights covenants (ERC) in the new conceptual framework. The themes found in the LR also must be addressed, which assists in coming to a clearer vision as per Alt *et al.*, (2015). Then, the final stage was to introduce and connect this entire huge framework in an end-to-end basis with blockchain technology as Adel *et al.*, 2022 have talked about in their work. Andalib's 2018 framework also demonstrates the ongoing research on how to integrate employee rights with other HRM components. The soft systems technique is used to extract, code, and assimilate data in this paper's discrete company-wise case-analysis and integration of manufacturing enterprises' compliance with the human resources method and the 'employees' right' codes. As a result, the assimilated conceptual compliance framework has been an effective entrepreneurial venture.

Discrete researchers at different times have the opportunity to focus on specific industries of any country and can conduct other qualitative studies to view the compliance situation of the organisation. Moreover, scholars can do surveys after the implementation of this conceptual compliance framework in any organisation to find out the percentage of assistance through implementation of it in the organisation (Abrishami et al., 2024; Rathi & Kaswan, 2024; Guest, 2007). Additionally, managers might be surveyed to find out if they have greater room and decision-making power as a result of this assimilation. Numerous case studies and studies conducted by particular businesses may be used to observe the current state of affairs in industrial groups. Numerous state laws, regulations, and policies regulate the employment relationship as well as HR activities. HR practitioners must correctly comprehend these regulations so that they can effectively manage legal compliance as well as avoid costly fines that would damage the organization, especially its reputation. Therefore, these days it is clear that human resources (HR) compliance is indispensable to be prosperous in today's legal environment. Nevertheless, achieving and maintaining compliance is another elusive goal for any organization that needs to recognize the loopholes and challenges and also make effective strategic plans to reach the goals. HR compliance is a progression, being one significant component of the HRM model that describes the individual and groups' behaviors, confirming that the organization's applicable regulations, laws, rules, and also policies are comprehended as well as applied (Trong et al., 2002; Trong, 2020).

It means employees' recognition of the laws is a mandatory mandate, they acquire suitable policies to these laws. According to Alt and Spitzeck, (2016), integrating the Fair Labour Standards Act (FLSA), OSHA, sexual harassment, and anti-discrimination regulations into HR may greatly increase self-awareness and entrepreneurial impulses, which in turn can reduce employee annoyance. Compliance also includes effective communication and dialogue between employees and managers as well as organization policy discussions. It helps bridge individual and organizational expectations and inculcate entrepreneurial motivation to adhere. Moreover,

it emphasizes the need to understand the consequences of noncompliance, as advocated by Alt and Craig (2016).

Meanwhile, in 2024 Ogbeibu and colleagues along with Salvadorinho and peers have focused on the convergence of smart technologies' for green human resource management, which will eventually lead to sustainability. The latter calls for certain methods of investigation and discipline. Every business plan must incorporate HR compliance initiatives that work. The topdown strategy of compliance always makes sense to all employees, who understand that there must be no discrimination and that the workplace must be safe. Future studies should explore the real-world impact of this framework across different industries and regions, particularly in assessing long-term effects on performance, compliance costs, as well as employee engagement. The research on scalability and the convergence of additional technologies, like AI along with machine learning, with blockchain could further enhance HRM functions.

Conclusion

This study presents a blockchain-driven HRM framework designed to address key challenges in employee rights, organizational compliance, and data security. The integration of blockchain technology into HR functions, such as recruitment, payroll, and performance tracking, enhances transparency, data privacy, and also operational efficiency. By aligning organizational HRM practices with international standards, like the UDHR, ILO conventions, and the Bangladesh Labour Act, this framework ensures both legal compliance and employee welfare. The research objectives (RObj) were successfully met by identifying core themes such as recruitment, compensation, leadership, and employee rights. These themes were integrated into a comprehensive HRM compliance framework, validated through rigorous textual data analysis. The use of generalizability, transferability, and confirmability ensures the robustness and applicability of the framework across various organizational contexts.

For the policymakers, this model offers a pathway to modernize HR regulations, improving organizational accountability and compliance with global standards. Economically, it helps businesses streamline operations, reduce compliance costs, and enhance employee satisfaction. For industries, particularly in the manufacturing sector, blockchain integration can improve data security, ensure regulatory adherence, and foster a culture of transparency.

Despite its promising potential, the study's focus on large manufacturing companies and SMEs in Bangladesh limits its generalizability. In addition, the challenges regarding the adoption capacity of blockchain as for example the higher initial expenses as well as technological complexities might create obstacles to its application on a larger scale. However, this blockchain-driven HRM framework offers a transformative approach to integrating employee rights and organizational compliance. By ensuring transparency, security, and efficiency, it presents a sustainable solution for HRM practices in the digital era. So, further research is needed to refine its application and assess its broader implications across diverse sectors.

Declaration regarding Conflict of Interest and Author's Contribution

Authors have no conflicting interests and have contributed as required in this manuscript.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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