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ADJUSTMENTS OF THE SOCIAL DEMOCRATIC MODEL UNDER THE IMPACT OF THE FOURTH INDUSTRIAL REVOLUTION

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INTRODUCTION

1. Rationale

Social democracy (SD) is an ideology and political practice that emerged in the context of the transition from agrarian to industrial society, when capitalist relations of production developed rapidly, leading to class stratification, income inequality, unemployment risks, and new social issues associated with urbanization. At its core, the SD model is characterized by the reconciliation of three simultaneous objectives: economic growth and efficiency within a market economy; the assurance of social equity through redistribution and public services; and the consolidation of representative and participatory democracy based on the rule of law, peaceful political competition, social dialogue, and institutionalized compromise.

Since the late twentieth century, the traditional foundations of SD have been simultaneously affected by globalization, financial liberalization, transformations in the structure of employment, population aging, migration flows, climate change, and geopolitical volatility. In this context, SD has undertaken various adjustments, ranging from labor market reforms and welfare modernization to innovations in public governance, in order to maintain equity objectives under conditions of fiscal constraint and intensified international competition. Nevertheless, persistent debates remain: to what extent adjustments can be made without eroding the core values of equity and solidarity; how labor market reforms can both generate employment and avoid exacerbating inequality; and how welfare modernization can ensure fiscal sustainability without producing new forms of exclusion. These debates indicate that the SD model is continuously evolving within the dynamic relationship between normative values and material conditions, between normative objectives and practical constraints.

With the advent of the Fourth Industrial Revolution (4IR), this evolution has accelerated dramatically. The 4IR represents a transformative wave that simultaneously reshapes production technologies, business models, social behaviors, and governance mechanisms. It is characterized by convergence and systemic integration: data becomes a central resource; artificial intelligence (AI) and intelligent automation transform productivity; the Internet of Things (IoT) and sensor networks enable real-time monitoring; cloud computing and digital platforms facilitate rapid scalability; blockchain technologies and digital finance create new transactional modalities; and biotechnology and advanced materials expand the frontiers of innovation. More importantly, the 4IR transforms not only the “tools” but also the “structures” of society, including market structures, power configurations, distributive mechanisms, and modes of political participation. Consequently, the 4IR raises not only questions of growth and innovation but also fundamental questions concerning which social models can absorb innovation while maintaining equity, cohesion, and democratic governance.

Notably, the relationship between the 4IR and the SD model is not unidirectional, whereby technology deterministically shapes political institutions. Rather, it is characterized by mutual interaction. While technology creates both opportunities and risks, its implementation depends on institutional frameworks, value systems, and

policy choices. Therefore, “model adjustment” in the context of the 4IR should be understood as a comprehensive reconfiguration of operational mechanisms aimed at maintaining a balance between innovation and equity, efficiency and democracy, as well as state capacity and individual freedom.

International practice shows that countries adhering to SD models have pursued diverse adjustment strategies, reflecting institutional variations and strategic choices. Some prioritize the development of digital infrastructures for the welfare state, focusing on digital identity systems, data interoperability, and one-stop public services to enhance governance quality and reduce administrative costs. Others emphasize labor market adjustments through vocational training, lifelong learning, and transition support policies to mitigate the impacts of automation. Still others focus on regulating digital platforms, safeguarding labor rights within the gig economy, and reforming taxation systems to expand fiscal capacity. These trade-offs suggest the necessity of a robust analytical framework capable of conceptualizing “adjustment” not merely as a set of policy measures but as a process of restructuring the social contract under technological pressures.

In academic research, SD and the 4IR have been addressed across multiple disciplines; however, existing studies remain fragmented and lack an integrated analytical perspective. Research on SD often focuses on its historical development, core values, and welfare state typologies, whereas studies on the 4IR tend to concentrate on technological innovation, productivity, labor transformation, digital governance, algorithmic regulation, data law, ethics, and digital democracy. What remains insufficient is a comprehensive framework that integrates these components within a coherent analytical logic. Specifically, several gaps can be identified: first, conceptualization and operationalization-“adjustment” may refer to short-term policy changes, long-term institutional transformations, shifts in power relations, or reconfigurations of the social contract, yet its scope, criteria, and levels remain insufficiently clarified; second, mechanisms while many studies identify challenges posed by automation, platforms, and data, they often fail to explicate how technological changes influence distributive mechanisms, social trust, and the legitimacy of the model; third, comparative analysis-there is a lack of systematic comparative studies across SD variants to identify patterns of success, failure, and inevitable trade-offs; fourth, evaluation-existing assessments tend to describe outcomes without applying comprehensive criteria encompassing efficiency, equity, fiscal sustainability, and democratic quality in the digital era; fifth, applicability to developing countries-most research is Eurocentric and rarely translated into context-sensitive insights for countries with differing institutional capacities and social structures. These gaps underscore the necessity of a systematic study of SD model adjustments under the impact of the 4IR, both to enrich academic knowledge and to provide policy-relevant insights for balanced and sustainable development in the digital age.

In the context of contemporary Vietnam, the need to integrate theoretical insights, expand democratic practices, and enhance political legitimacy has become increasingly pressing. As the sole ruling party, the Communist Party of Vietnam faces

the challenge of overcoming theoretical rigidity and advancing intellectual renewal. This requires fostering intra-party democracy as the foundation for broader social democracy, engaging with global intellectual achievements, embracing diversity, and promoting political culture. The Party has affirmed that socialist democracy in Vietnam must simultaneously embody universal democratic values and reflect national cultural characteristics and traditions. Moreover, socialism and the path toward it in Vietnam remain unprecedented, necessitating continuous exploration, supplementation, and development. Today, socialism must be understood from multiple perspectives: economic, social, cultural, political, and global. In this regard, studying various democratic models, including SD, with its roots in Marxist thought, holds both theoretical and practical significance. By examining the successes and limitations of SD models, particularly under the impact of the 4IR, Vietnam can derive valuable lessons and formulate appropriate strategies for socialist construction.

Against this backdrop, the practical relevance of this research becomes particularly evident in the context of Vietnam's ongoing digital transformation and pursuit of rapid, sustainable development coupled with social equity. Recent debates have also emerged regarding the concept of digital capitalism, characterized by the concentration of power in private corporations, and digital socialism, which emphasizes data and knowledge as collective social assets.

Based on these considerations, the author has selected the topic: *"**Adjustments of the social democratic model under the impact of the Fourth industrial revolution**"* as the subject of this doctoral dissertation in Political Science.

2. Research objectives and tasks

2.1. Research objectives

Based on a general theoretical overview of the 4IR and SD model, this dissertation aims to clarify the impacts of the 4IR on the SD model. On that basis, it analyzes the fundamental adjustments of the SD model under the influence of this revolution and proposes several policy implications for Vietnam.

2.2. Research tasks

To achieve the above objectives, the dissertation addresses the following tasks:

First, to review relevant literature, identify research gaps, and define the analytical approach of the dissertation;

Second, to provide a theoretical overview of the Fourth Industrial Revolution, including its historical development, key technological clusters, and major impacts; to systematize the theoretical foundations of the SD model, clarify its core pillars, and propose an analytical framework and criteria for identifying "adjustments" of the model in the context of the 4IR;

Third, to analyze the impacts of the 4IR on the pillars of the SD model, identify emerging challenges and issues, and outline the requirements for redesigning these pillars;

Fourth, to examine and identify the main adjustments of the SD model under the influence of the 4IR, assess their achievements and limitations, and provide policy implications for Vietnam.

3. Research object and scope

3.1. Research object

The object of this dissertation is the SD model and the 4IR.

3.2. Research scope

Content scope: The dissertation focuses on analyzing the impacts of the 4IR and the adjustments of the SD model across its three core institutional pillars. It does not delve into the technical aspects of technology but emphasizes political-social consequences and policy-institutional choices.

Temporal scope: The dissertation uses the historical development of SD (from the late nineteenth century) as a theoretical background, while the main empirical analysis concentrates on the period of accelerated digital transformation and the 4IR (from the aftermath of the 2008 global financial crisis to the present).

Spatial scope: Empirical data on the SD model are primarily drawn from representative case studies (selected Nordic countries and Germany), with additional references to broader policy trends in Europe to enhance comparative and generalizable insights.

4. Theoretical framework and research methodology

The dissertation is conducted on the methodological foundation of Marxism-Leninism, Ho Chi Minh Thought, and the viewpoints of the Communist Party of Vietnam on socialist construction and the promotion of social progress and equity. On this basis, the study selectively incorporates theoretical approaches to social democracy (as a value system and welfare model), welfare state theory and social investment approaches, institutional and social dialogue perspectives, as well as approaches to digital governance and data governance.

The dissertation identifies its primary analytical level as political-institutional analysis. In this sense, the SD model is understood primarily as a model of organizing and exercising public power to reconcile economic growth, social equity, and democracy under specific historical conditions. Accordingly, the 4IR is approached not merely as a technological phenomenon but as a "systemic variable" that simultaneously transforms economic structures, social relations, and governance mechanisms.

Thus, the analytical framework of the dissertation is structured around political institutions and public policy choices as the central axis. Economic, social, and technological dimensions are treated as interrelated layers that provide contextual explanation and causal mechanisms, but they do not replace the central analytical focus of political science. In this framework, "adjustment" of the SD model is not limited to changes in policy instruments but extends to a deeper rebalancing between the state, the market, and society; between efficiency, equity, and accountability; and between innovation and democratic control in the digital environment.

The specific research methods employed include:

- Analytical-synthetic method: to examine the nature, content, and structure of the SD model, and clarify its conceptual components;
- Logical-historical method: to trace the formation and development of the SD model and past industrial revolutions, thereby providing a comprehensive assessment of the evolution of SD and the impacts of the 4IR;

- Comparative empirical method: to identify differences between the SD model before and after the 4IR and to highlight its enduring and evolving values;

- Document analysis method: to review and synthesize existing research, reports, and official data from relevant organizations and institutions.

5. Scientific contributions of the dissertation

The dissertation makes several contributions:

First, it systematically presents the fundamental theoretical issues of social democracy, industrial revolutions, the impacts of the 4IR on the SD model, and the model's subsequent adjustments, thereby identifying key values and anticipating emerging challenges;

Second, it synthesizes practical experiences of SD model adjustments in selected countries under the impact of the 4IR, providing valuable reference insights for Vietnam's reform and development process;

Third, it proposes an integrated analytical framework for identifying "adjustments" of the SD model under the 4IR based on three pillars: the welfare state; the mixed economy; and political democracy and social consensus. This represents a novel perspective in assessing the model;

Fourth, based on contextualized evaluation, it derives reference values and policy-institutional implications for Vietnam's digital transformation, emphasizing the principle of selective adaptation rather than imitation, with a focus on human-centered development, social investment, transparent data governance, and accountability.

6. Scientific and practical significance of the dissertation

Scientific significance: First, the dissertation systematizes key theories, approaches, and perspectives related to social democracy, and identifies the elements through which the 4IR impacts the ideological content and values of SD models in various countries;

Second, it highlights the necessity of empirical and comparative case studies in SD research, analyzing the strengths and limitations of SD models in selected countries within the context of the digital age;

Third, it provides reference values that contribute to enhancing theoretical understanding of social democracy in Vietnam, particularly in adapting to the ongoing impacts of the 4IR.

Practical significance:

First, the dissertation can serve as a reference for research and teaching in Political Science and related disciplines within the social sciences and humanities;

Second, its findings provide scientific arguments and evidence to support policymakers and governing bodies in Vietnam, drawing on international experiences, both successes and limitations, of SD models.

7. Structure of the dissertation

In addition to the Introduction, Conclusion, References, and Appendices, the dissertation is structured into four chapters comprising eleven sections.

CHAPTER 1
LITERATURE REVIEW ON RESEARCH RELATED TO THE TOPIC

1.1. Studies on social democracy and the social democratic model

Research on SD and the social democratic model can generally be categorized into three main approaches.

The first approach focuses on the ideological and value foundations, viewing SD as a "political - social project" aimed at realizing substantive freedom, equity/equality, and solidarity through parliamentary democracy and the rule of law. The research and political education publications of Friedrich-Ebert-Stiftung (FES), along with the works of Thomas Meyer and Anthony Giddens, have contributed significantly to clarifying the value content, operational mechanisms, and ideological variations in the historical development of SD. FES studies such as *History of Social Democracy*, *Basics on Social Democracy*, *Social Democratic Politics and Values*, *Europe and Social Democracy*, and *Welfare State and Social Democracy*, together with documents from the Socialist International (SI) across different periods, exemplify this approach.

The second approach delves into institutional analysis and the strategic positioning of social democratic parties in the context of globalization and electoral competition. Studies on the "Third Way" and the restructuring of SD in Europe emphasize efforts to balance economic modernization, fiscal discipline, and welfare provision, while also highlighting risks such as erosion of ideological identity, fragmentation of social coalitions, and crises of political representation if SD leans excessively toward market-oriented policies. Representative works include Anthony Giddens' *The Third Way* and *The Third Way: The Renewal of Social Democracy*.

The third approach focuses on the Nordic model and the welfare state as "instruments for realizing" SD values. Research on Sweden and the broader Scandinavian model analyzes the relationship between universal welfare, social dialogue, collective bargaining, and high levels of social capital. It also generates academic debates regarding the degree of "Nordic exceptionalism," particularly concerning the roles of institutions, culture, market structures, and fiscal sustainability. These debates suggest that the SD model is not a uniform template but is contingent upon historical-institutional conditions and reform capacity.

1.2. Studies on the Fourth industrial revolution

From a review of domestic and international research, it can be observed that Vietnam has produced numerous in-depth studies on both the 4IR and the SD model. However, there remains a lack of research that directly analyzes the relationship and adjustments of the SD model under the impact of the 4IR.

The 4IR, characterized by the rapid expansion of digital technologies, artificial intelligence, and automation, not only profoundly transforms economic structures but also significantly affects social dynamics and political models, including the SD model. In the context of globalization and international integration, these transformations have the potential to reshape modes of social organization, political participation, and state governance, while also influencing citizens' rights and participation.

Therefore, the absence of comprehensive and systematic research on the interactive relationship between the 4IR and the SD model represents not only a gap in the scientific

knowledge system but also a challenge in building a robust theoretical foundation to meet the demands of sustainable national development in the new era. Consequently, conducting detailed studies to clarify this relationship has become increasingly urgent, enabling Vietnam to develop a more holistic and contextually appropriate approach to policy orientation and national development in the era of the 4IR.

1.3. Studies on the relationship between the Fourth industrial revolution and the social democratic model

Studies on the relationship between the 4IR and SD primarily focus on the intersection between digital transformation and the welfare state, labor markets, and democracy. One prominent approach examines the concept of the "digital welfare state" and welfare reform based on the logic of social investment, including digital public services, citizen data systems, personalized taxation and benefits, and skill-upgrading programs to adapt to automation.

Another strand of research analyzes transformations in social coalitions and labor relations under the influence of platform economies, encompassing debates on universal basic income, the protection of platform workers, and the redesign of contribution-benefit mechanisms in traditional social insurance systems.

At the same time, studies in political science and public policy raise critical issues related to technological sovereignty, platform regulation, and competition in digital markets as necessary conditions for ensuring equity and innovation capacity.

1.4. Issues for further research

1.4.1. Issues already addressed in existing studies

The SD theory and the SD model. Classical and contemporary studies generally conceptualize SD as a "political-social project" rather than a closed doctrine. It simultaneously inherits the egalitarian objectives of socialist traditions while accepting the market economy and electoral competition within a parliamentary democratic framework. Academic discussions typically revolve around three clusters of issues: (1) value systems (freedom linked to substantive capabilities, equality of opportunity, solidarity, and distributive justice); (2) institutional arrangements (rule of law, representative democracy combined with social dialogue, collective bargaining, and intermediary institutions); and (3) welfare models (universal public services, redistribution through taxation and expenditure, employment policies, and social investment).

Many studies highlight internal diversity within SD: Nordic SD emphasizes universalism and a strong welfare state; continental SD is associated with social insurance systems and organized labor relations; and "Third Way" variants stress welfare modernization and individual responsibility in the context of globalization. Overall, SD functions effectively when it maintains the "triangle" of growth, equity, and social consensus, yet it must continuously adapt to structural economic changes and shifts in social trust.

The Fourth industrial revolution. Research on the 4IR consistently identifies it not as an isolated technological wave but as a convergence of digitalization (AI, big data, IoT, platforms), intelligent automation (robotics, cyber-physical systems), and comprehensive connectivity (cloud computing, 5G/6G), resulting in simultaneous

transformations in production, services, and governance. Three key arguments recur: (1) productivity gains and value chain restructuring, with data as a production resource and platforms as intermediary infrastructures; (2) labor polarization and new forms of inequality, as low-skilled jobs face displacement while demand for digital and creative skills rises; and (3) governance challenges, including cybersecurity, privacy, algorithmic bias, and the risk of "data technocracy" in the absence of accountability mechanisms.

Policy-oriented approaches suggest that the 4IR requires synchronization across three pillars: flexible institutions (regulatory sandboxes, standards, data protection), social investment (education, skills, adaptive welfare), and digital state capacity (e-government, technology risk governance). Success depends not on superficial digitalization but on the capacity to transform development models toward inclusiveness and sustainability.

Economic, political, cultural, and social aspects in sd countries. Comparative studies of SD-oriented countries (particularly Nordic and continental European cases) emphasize how economic, political, cultural, and social dimensions interact as an integrated institutional ecosystem. Economically, these countries maintain relatively comprehensive market systems regulated by fair competition frameworks, industrial and innovation policies, and effective redistribution mechanisms. Social dialogue and collective bargaining play key roles in mediating interests and reducing distributive conflicts. Politically, parliamentary democracy is complemented by consultation mechanisms and intermediary institutions that enhance the legitimacy of reforms (e.g., taxation, welfare, green transition).

Culturally and socially, high levels of social capital (trust, cooperation, compliance) are both a precondition and an outcome of universal welfare and high-quality public services, creating a virtuous cycle between equality of opportunity and competitiveness. However, recent studies also highlight emerging challenges: population aging, migration, information fragmentation, and platform economies are weakening traditional consensus mechanisms, necessitating the redesign of welfare systems and democratic governance in the digital context.

1.4.2. Issues requiring further research

In the context of globalization and rapid technological development, both the SD model and the 4IR have become central concerns for scholars, policymakers, and society. The SD model represents not only progress in governance but also a commitment to social equity and sustainable development, while the 4IR introduces a new wave of technological innovation that creates both opportunities and challenges.

From the literature review, several key research questions emerge:

First, what structural transformations does the 4IR generate in welfare states, economic foundations, political democracy, and social consensus in SD-oriented countries, particularly through the mechanisms of digitalization, data, platforms, and automation?

Second, what major adjustments have SD countries undertaken, in which directions, and why have these adjustments been chosen in the context of the 4IR?

Third, what outcomes have these adjustments produced, and what trade-offs and limitations have emerged in terms of equity, efficiency, sustainability, and democratic governance?

Fourth, based on international experience, which contextual and institutional factors can be used as reference points for Vietnam in its process of digital transformation and inclusive development?

At present, addressing these questions in the context of SD countries under the 4IR remains an important scientific issue requiring further in-depth research. Although some studies in Vietnam have addressed democracy and social democracy, there is still a lack of research examining the transformations of SD under the impact of the 4IR.

Accordingly, this dissertation focuses on the following issues:

First, to clarify the concept of the "SD model" from the perspective of a development-governance model, avoiding its conflation with ideology or fragmented welfare policies. This requires operationalizing its core pillars (economic, political, social) and identifying relevant indicators in the context of the 4IR.

Second, to narrow the research scope through a clear case selection logic and comparative criteria, rather than conducting overly broad cross-national surveys. Future studies, including this dissertation, must justify case selection, data usage, and comparative evaluation.

Third, to incorporate analysis of the "social costs" of digital transformation for SD, including data inequality, skill polarization, digital exclusion, changing labor relations, and issues of privacy and surveillance, thereby avoiding an overly optimistic bias toward technology.

Fourth, to strengthen empirical analysis by utilizing official sources and appropriate statistical/quantitative data to substantiate arguments regarding achievements and challenges, while clearly articulating methodological procedures to bridge the gap between stated methods and actual implementation.

Fifth, to analyze reference conditions for Vietnam based on the principle of "selective adaptation," evaluating both strengths and weaknesses of SD models, identifying transferable elements (principles, institutions, processes), and distinguishing context-dependent factors that are difficult to replicate (interest structures, social capital, fiscal capacity).

CHAPTER 2
THEORETICAL OVERVIEW OF THE FOURTH INDUSTRIAL REVOLUTION AND THE SOCIAL DEMOCRATIC MODEL

2.1. Theoretical overview of the Fourth industrial revolution

2.1.1. The history of the formation of the Fourth Industrial Revolution

The historical formation of the 4IR is fundamentally characterized by convergence. Unlike previous industrial revolutions, which were associated with relatively linear technological "anchor points," the 4IR is described as a breakthrough moment when three foundational axes simultaneously reached maturity: significantly enhanced computational capacity, the explosive growth of digital data, and the widespread availability of real-time connectivity.

Along the data and computation axis, cloud computing is cited as a foundational infrastructure enabling on-demand access and scalable resource allocation. Along the

connectivity axis, the deployment of 5G networks under the IMT-2020 standard, with high bandwidth, low latency, and high connection density, facilitates real-time systems. When these conditions are integrated with cyber-physical systems (CPS), a new industrial and social paradigm emerges in which data becomes a strategic resource and AI functions as a "general-purpose technology" capable of diffusing across all sectors.

Beginning with the term *Industrie 4.0* in Germany and its global popularization by the World Economic Forum (WEF) since 2016, this chapter outlines the institutionalization of the 4IR concept through industrial digitalization initiatives, standardization processes, and national and regional digital transformation programs.

2.1.2. Key scientific and technological domains

From a systemic perspective, the technologies of the 4IR do not exist as isolated components but operate within a convergent structure, creating data-driven ecosystems of production, services, and governance. Broadly, three technological domains of the 4IR can be identified: the digital domain, the physical domain, and the biological domain. The novelty of the 4IR lies in the integration and hybridization of these domains through connectivity and intelligent automation.

The digital domain constitutes the core infrastructure, centered on data, algorithms, and connectivity, including AI, big data, cloud and edge computing, IoT, and digital platforms. These technologies enable real-time data collection, processing, and decision-making, while simultaneously raising new issues related to data rights, algorithmic transparency, and accountability in both public and private sectors.

The physical domain encompasses robotics and automation, smart sensors, additive manufacturing, advanced materials, and autonomous systems. Developments in this domain generate significant gains in productivity and quality but also lead to labor market restructuring and increased risks of job displacement in labor-intensive sectors.

The biological domain includes genetic and genomic technologies, synthetic biology, bioinformatics, biomedical technologies, and brain-machine interfaces. This domain holds great potential for improving healthcare and quality of life, yet it also raises critical concerns regarding ethics, biosafety, and unequal access to technology.

In practice, most 4IR applications result from the convergence of these three domains (e.g., cyber-physical systems, digital twins, digital healthcare, and biotechnologies). Therefore, this classification serves to identify the technological structure for subsequent analysis of political-social impacts.

2.1.3. Major impacts

The analysis of the major impacts of the 4IR emphasizes its economic and productivity effects. The dissertation argues that the 4IR reduces search, coordination, and transaction costs through digitalization and connectivity, accelerates innovation, and shifts value creation from tangible assets to intangible assets, data, and platform-based business models.

The digital economy is characterized by low marginal costs and strong network effects, leading to the concentration of market power among actors controlling data, infrastructure, and standards. This transformation alters the logic of competition and necessitates adjustments in competition policy, innovation policy, and data

governance to prevent monopolization, ensure fair distribution of benefits, and sustain inclusive growth.

Beyond productivity, the dissertation highlights the impacts of the 4IR on employment, governance, and the environment. In terms of labor, automation primarily restructures tasks rather than eliminating jobs entirely: demand for digital and adaptive skills increases, while routine work becomes more vulnerable to substitution. Consequently, labor markets may become more polarized and income inequality may widen in the absence of reskilling, lifelong learning, and adaptive social protection systems.

In terms of public governance, the 4IR promotes a shift toward data-driven government, characterized by lifecycle-based public services, system interoperability, and real-time responsiveness. However, this transformation also introduces risks related to personal data protection, algorithmic transparency, cybersecurity, and data fragmentation. The E-Government Development Index (EGDI) of UNDESA is referenced as an indicator of such capacity.

Regarding environmental and developmental order, the chapter introduces the concept of a "twin transition" (digital and green). Digital technologies can optimize energy use, urban systems, and industrial processes, thereby contributing to emission reductions. However, data centers and network infrastructures consume significant energy and expand the attack surface, requiring performance and security standards to be embedded at the design stage.

2.2. Theoretical Overview of the Social Democratic Model

In the context of the 4IR, it is necessary to clarify the theoretical foundations of the SD model in order to identify the object of impact and the criteria for evaluating adjustments.

Conceptually, SD is presented as a historically evolving concept that functions simultaneously as an ideology, a political movement, and a normative project aimed at reconciling freedom and equity, while being associated with the welfare state model. The chapter revisits key turning points in SD thought, from its initial conception as a peaceful evolutionary transition toward socialism to its modern interpretation emphasizing the continuous improvement of living conditions for the majority and the construction of a regulated market economy to ensure equity.

Thinkers such as Bernstein are cited as foundational figures of revisionist reformism, while Marshall is invoked to emphasize the expansion of citizenship rights from political rights to social rights, thereby institutionalizing welfare as an enforceable entitlement. Contemporary interpretations, represented by Giddens and Meyer, conceptualize SD as a political-social strategy that accepts the market while requiring the state to safeguard equity, solidarity, and social inclusion.

SD can be understood in multiple ways: as a welfare and redistributive model; as a political philosophy grounded in human dignity and equality; or as concrete political parties and social coalitions (e.g., SPD in Germany, the Labour Party in the UK, and Nordic parties). Given these multiple meanings, the chapter emphasizes the need to distinguish SD as a value system from SD as an institutional model and from individual policy measures. Accordingly, the dissertation adopts an

approach that conceptualizes SD as a development-governance model, defined as a relatively stable institutional configuration identifiable through its economic, welfare, and democratic pillars.

SD is also distinguished from other doctrines. Compared to Marxist communism, which advocates revolutionary overthrow and the abolition of private property, SD rejects revolutionary violence, accepts market mechanisms and private ownership, but requires state regulation to ensure social equity. Compared to classical liberalism and neoliberalism, which prioritize markets and treat social rights as secondary, SD emphasizes positive freedom and argues that political rights can only be meaningful when citizens possess minimum social conditions such as education, healthcare, social protection, and employment. Compared to conservative doctrines that prioritize order and tradition, SD emphasizes equality of opportunity and the reduction of inequality through redistribution and public services, while maintaining distance from extreme collectivist models that sacrifice individual freedom. These distinctions highlight the "dual character" of SD: aligned with socialist aspirations for equity, yet operating within the framework of parliamentary democracy and a market economy.

The historical development of the SD model is traced through several stages. The nineteenth-century labor movement, associated with the First International (1864), witnessed debates between Marx and Bakunin and eventual fragmentation due to strategic divisions. The Second International (1889) consolidated the parliamentary path. The emergence of SD parties is illustrated by the German SPD, officially established in 1875 (Gotha Program), which survived repression under anti-socialist laws (1878-1890) and later became a major parliamentary force. Prior to World War I, the labor movement expanded significantly, with the British Labour Party securing 42 seats in 1910 and the SPD surpassing one million members by 1912.

In the twentieth century, the expansion of suffrage (e.g., universal male suffrage in 1918 and female suffrage after 1928 in the UK) reduced the appeal of revolutionary violence and enabled SD to consolidate its reformist orientation. After World War II, the experience of center-left governments and the SPD's adoption of the Bad Godesberg Program in 1959, recognizing the market economy and private ownership while maintaining a strong commitment to equity, marked the institutionalization of modern SD.

The welfare state era, particularly in the Nordic countries, is described as the peak of SD. These countries universalized welfare provisions such as education, healthcare, social insurance, pensions, and public services as citizen rights. Welfare was not merely aimed at poverty reduction but at achieving relative equality, enhancing human capabilities, and expanding participation opportunities. This model was supported by high taxation, high-quality public services, labor market policies, and a culture of consensus, in which social dialogue played a key role in balancing interests and maintaining both productivity and equity.

However, the chapter highlights the disruption beginning in the late 1960s and following the 1973 oil crisis: high inflation combined with recession and unemployment undermined Keynesian policy tools and eroded confidence in the post-war welfare model. In this context, neoliberalism emerged with policies of

privatization, tax reduction, deregulation, and market-oriented public management. Consequently, SD faced a dual challenge: preserving achievements in equity while addressing fiscal constraints, globalization, and changing employment structures.

In response, the "Third Way" is presented as an attempt to restructure SD in the post-industrial era. It seeks to reconcile the welfare state and the market by shifting from passive welfare provision to social investment, emphasizing education, training, skills development, active labor market policies, and competitiveness in globalization. The state is redefined from a provider to an enabler and coordinator, combining fiscal discipline with inclusive objectives and promoting public-private partnerships and civil society engagement. While this approach helps maintain SD's legitimacy in a changing context, it also raises debates about the boundary between modernization and the marketization of welfare, particularly when risks are transferred from the state to individuals without adequate safeguards.

Drawing on this historical development, the operational principles of SD are summarized through Thomas Meyer's "triadic framework" of core values, fundamental rights, and implementation instruments. Fundamental rights encompass civil, political, and socio-economic rights; only when social rights are guaranteed can citizens participate equally in democratic processes. Implementation instruments include universal welfare states, mixed economic policies, social dialogue mechanisms, and legal institutions; in the contemporary context, these also extend to digital rights, data governance, climate policy, and just transition strategies.

Finally, three defining elements of the SD model can be identified: a mixed economy guided by the state, balancing market dynamics with public regulation through competition policy, industrial policy, taxation, and redistribution; the welfare state as an instrument for realizing positive freedom by providing education, healthcare, social protection, and public services; and political democracy combined with social consensus, emphasizing representative and participatory democracy, accountability, and checks on power, supported by institutionalized mechanisms of social compromise to ensure stability and legitimacy.

CHAPTER 3
THE IMPACTS OF THE FOURTH INDUSTRIAL REVOLUTION ON THE SOCIAL DEMOCRATIC MODEL: CHALLENGES AND EMERGING ISSUES

Starting from the premise that 4IR is not merely a matter of technological innovation, but rather a systemic restructuring of modes of production, distributive mechanisms, and forms of governance, it shifts power away from administrative public institutions toward multi-actor networks organized around data and digital platforms. Accordingly, the impacts of the 4IR unfold simultaneously across the three pillars of the SD model: the mixed economy under state guidance; the welfare state; and political democracy associated with social consensus.

In subsection 3.1.1, it may be affirmed that the 4IR transforms the growth dynamics of the SD economy by shifting from material production toward an

economy based on intangible capital and data. Software, algorithms, databases, organizational knowledge, brands, and innovative capacity become decisive assets for long-term productivity. As data can be reused and scaled, competitive advantage increasingly depends on the capacity to collect, process, share, and transform data into products, services, and business models. This implies that the traditional economic goals of SD, such as productivity growth, job creation, and the maintenance of relatively equitable distribution, must be reconsidered in conditions where the "means of production" are shifting from material to digital forms.

At the macro level, the chapter argues that the digital economy alters demand structures, consumption patterns, and trade. The expansion of e-commerce, online content, subscription services, and intermediary platforms creates new markets and changes the ways in which economic achievement is measured. Economic achievement, according to the chapter, must be understood more broadly than material output alone; it must also include digital utility and improvements in service quality. On the other hand, digital trade and production increase the cross-border movement of data, knowledge, and intangible assets, making it difficult for national policy instruments to fully encompass these flows in the absence of regional and international coordination, especially within integrated economic spaces. Therefore, the chapter emphasizes the need to upgrade regulatory capacity in order to keep pace with the speed of change in digital markets.

A key emphasis of subsection 3.1.1 concerns platform power and the need to reconstruct competitive institutions. Digital platforms operate according to the logic of low marginal costs, strong network effects, and rapid data accumulation, which easily enables them to assume "gatekeeper" positions, distort competition, engage in self-preferencing, restrict market entry, and extract supernormal profits. The chapter describes policy responses in Europe aimed at expanding regulatory instruments for platforms with systemic power, requiring algorithmic transparency and accountability, while also promoting trusted data-sharing mechanisms linked to privacy and data security. Alongside this, taxation, antitrust, and data regulation are framed within a new institutional context in which the SD state must simultaneously protect fair competition, consumers, workers, and the public interest in an economy increasingly dominated by digital platforms.

In parallel with competition, the chapter situates digital transformation within the strategy of the twin transition digital and green. Real-time data and AI may support energy optimization and emissions monitoring; consequently, in the SD economy, digital investment must be coupled with green objectives and mechanisms to protect vulnerable groups. In conclusion, this subsection argues that the economic objective function of SD in the digital era must simultaneously address three challenges: speed, depth, and inclusiveness.

Subsection 3.1.2 analyzes the impact of the 4IR on the welfare state as a transformation from an administrative and legalistic welfare model toward a digital and adaptive governance model. Data becomes a strategic resource; AI and automation participate in analysis, forecasting, screening, and decision support, causing government to operate as a coordinating hub within a network of multiple

actors. “Data government” changes the policy cycle itself: through open data and predictive analytics, the state can identify in advance risks of unemployment, poverty, illness, aging, and inequality, while designing flexible and evidence-based interventions. However, the chapter also emphasizes the risks of algorithmic bias and “black-box” decision-making, which require the institutionalization of accountability, transparency, and control over digital systems in the public sector.

With regard to organization and decentralization, digital platforms and cloud data infrastructures push the state to shift from the role of “organizer” to that of “coordinator.” Public authorities must coordinate across sectors on the basis of data, while also cooperating with the private sector in the development of digital infrastructure, cybersecurity, and AI applications, yet still maintaining control over the risk of technological dependence. The logic of “digital by default” is used to illustrate an approach to designing public services that are digitized from the outset, thereby shortening procedures, reducing transaction costs, and improving the citizen experience. At the same time, the model of the “anticipatory state” is identified as a new characteristic: the state no longer merely addresses social consequences after they occur, but instead seeks to predict and prevent risks through early warning systems, trend analysis, and near-real-time policy adjustment.

At the institutional level, the rise of transnational platform corporations controlling data and information infrastructures generates the need to extend regulatory capacity into digital space and to construct data sovereignty. The SD state must simultaneously protect public data and digital security, while maintaining democratic norms and human rights.

In terms of public service provision, digitalization allows the “personalization” of welfare, increasing efficiency and coverage through the integration of tax, insurance, health, and education data, while also enhancing the capacity to allocate resources according to risk and need. Yet personalization also raises legal and ethical questions: to what extent data may be used, who has access to it, whether algorithmic criteria are fair, and how complaint and correction mechanisms function when decision-making is partially automated.

Government 4.0, integrating procedures on a unified platform, can increase transparency, shorten processing times, and allow citizens to monitor, provide feedback on, and evaluate services. However, integrated data systems also increase demands for cybersecurity and risk-governance capacity. Under pressure for rapid response, public governance shifts from command-and-compliance models toward adaptive leadership, requiring civil servants to engage in continuous learning, intersectoral cooperation, and co-creation of policy together with citizens and businesses. Built upon the social trust that has long been an advantage in many SD countries, digitalization also transforms state-citizen relations toward more frequent interaction, while at the same time intensifying demands for transparency, data standards, and mechanisms for protecting individual rights.

Subsection 3.1.3 examines the impacts of the 4IR on political democracy and social consensus, emphasizing that SD democracy is an order of values associated with freedom, equality, solidarity, and dignity. Thus, the digitalization of democracy is

not merely a matter of moving procedures online, but of reconstructing the conditions that guarantee rights and political capacity. As administrative procedures, public service provision, and policy consultation shift into digital space, the structures of representative, participatory, and deliberative democracy are transformed in both positive and negative ways: they open opportunities for increased participation due to lower costs and faster feedback, but they also create risks of concentrating data power and algorithmic power in the hands of a limited number of actors. Consequently, the chapter raises constitutional questions about who controls data, infrastructure, and algorithms, and how human rights are protected in a data-driven governance system.

A central concern of subsection 3.1.3 is privacy and data protection as functional conditions of political democracy. As personal data becomes a strategic resource and is used for service personalization, political advertising, or the manipulation of public opinion, the risks of surveillance and manipulation may undermine citizen autonomy and equality of voice. Therefore, the chapter emphasizes the need to establish a human rights framework for the digital environment and mechanisms of algorithmic accountability, regarding this as the point of connection between democracy, the rule of law, and the welfare state. In terms of participation, the chapter describes a spectrum ranging from information provision and electronic consultation to co-creation and co-decision through online petitions, participatory budgeting, and collaborative mechanisms with communities. However, it stresses that these forms have democratic meaning only when they are linked to strong representative institutions, transparent procedures, and guarantees of inclusiveness.

Section 3.1.3 also analyzes electoral integrity in the digital environment. Digital platforms may intervene deeply throughout the electoral cycle, from opinion formation and campaigning to post-election debate; thus, the risks of disinformation, algorithmic manipulation, and “digital populism” become institutional issues. At the same time, digital inequality in terms of infrastructure, skills, and information-processing capacity may be translated into inequality of political opportunity. The chapter concludes that trust and social consensus, soft resources that have long enabled SD to maintain stability, are being restructured: trust no longer depends only on policy outcomes, but also on perceptions of procedural fairness, data transparency, and respect for individual rights in digital governance.

Section 3.2 analyzes the challenges and issues confronting the SD model:

Subsection 3.2.1 emphasizes the decline of the traditional welfare state under economic and demographic pressures.

Subsection 3.2.2 examines new inequalities in the digital era and under globalization.

Subsection 3.2.3 addresses the crisis of trust and the rise of populism and the far right.

Subsection 3.2.4 analyzes the weakening of the foundations of social consensus and social capital in Germany and the Nordic countries, which had previously functioned as “intangible assets” enabling the SD model to operate stably.

Overall, the 4IR simultaneously opens opportunities for the modernization of the SD model and exposes its structural challenges in the digital age. These impacts

converge around critical nodes such as data and intangible capital, platform power, transformations in labor relations, the restructuring of state governance, and the redefinition of the conditions for practicing democracy in algorithmic environments. At the same time, the challenges of welfare sustainability, new inequalities, the crisis of trust, and declining social consensus demonstrate the need to adjust the model in ways that both protect its core values and renew its institutional foundations.

CHAPTER 4
ADJUSTMENTS OF THE SOCIAL DEMOCRATIC MODEL (IN SELECTED TYPICAL NORDIC COUNTRIES/GERMANY) IN ADAPTATION TO THE FOURTH INDUSTRIAL REVOLUTION AND IMPLICATIONS FOR VIETNAM

Starting from the premise that the 4IR is not merely a set of technologies, but also constructs a new architecture of power in which data, algorithms, and digital platforms become the infrastructure organizing production, distribution, and governance, the traditional pillars of the SD model namely, a mixed economy guided by the state, the welfare state, and political democracy associated with social consensus can no longer operate according to their former logic if the model is to preserve its normative identity. Chapter IV therefore identifies the directions of adjustment for each pillar, synthesizes the achievements and limitations of such adaptations, and then "translates" international experience into a framework of reference appropriate to the context of socialist construction and the building of a socialist rule-of-law state in Vietnam in the digital era. The thread running through the chapter is the reinterpretation of the core values of freedom, equality/equity, and solidarity according to a "capabilities logic" appropriate to the data-driven society.

The first adjustment (4.1.1) is presented as a shift from the "mixed economy" to a "platform- and knowledge-based economy." If the mixed economy of the twentieth century reconciled market and state in order to achieve growth alongside redistribution, the 4IR changes the foundations of value creation as data, knowledge, software, and innovative capacity become decisive assets. The platform economy operates according to the logic of low marginal costs and strong network effects, thereby generating new forms of concentrated power among actors controlling digital infrastructures and data, while also producing a "digital diffusion gap" between pioneering firms and the rest. In this context, the adjustment of SD emphasizes the reconstruction of the role of the state-not in order to replace the market, but to create the conditions for the market to function within a framework of fairness: combating data monopolies and the "gatekeeper" position of platforms, protecting competition and consumer rights, and at the same time regulating the adverse impacts on labor markets when automation and platformization increase non-standard forms of employment. At the strategic level, the SD state shifts from prioritizing the management of the economic cycle in a narrow sense to prioritizing social investment and innovative capacity (R&D, digital infrastructure, innovation ecosystems), linking growth to inclusive objectives and emphasizing the redistribution of digital

opportunities: access to infrastructure, data, and knowledge, as well as the capacity for occupational transition in the face of automation.

The second adjustment (4.1.2) is the transition from a distributive welfare state to a digital welfare state. When data becomes a new form of asset and knowledge, the welfare state can no longer sustain social equity if it lacks the capacity for data governance and the provision of inclusive digital public services. According to the dissertation, digital welfare is not confined to the digitization of administrative procedures, but rather entails the reconstruction of the entire policy cycle on the basis of data: forecasting risks, identifying vulnerable groups along the life course, and coordinating taxation, expenditure, insurance, assistance, and social services according to a proactive logic. The capability of "one data source, multiple services" helps reduce governance fragmentation, enhance implementation effectiveness, and minimize both omission and wrongful inclusion in welfare delivery, while also making it possible to design early interventions instead of merely compensating for consequences after the fact. However, digital welfare can retain legitimacy only if it is associated with digital inclusiveness: public services must be multi-channel, with support points at the grassroots level for vulnerable groups; minimum digital capacity must be regarded as part of social policy; and personal data must be protected by legal frameworks, ethical standards, and auditing mechanisms. The dissertation emphasizes the principle of "human beings in the loop": algorithms may assist in screening and prioritization, but decisions affecting rights and entitlements must be subject to accountability and the right to appeal. Thus, the digital welfare state must simultaneously enhance efficiency and procedural fairness; otherwise, it risks eroding trust.

The third adjustment (4.1.3) concerns political democracy and social consensus, with a tendency to move from representative democracy and classical social consultation toward a form of "digital, collaborative, data-based democracy." In the data-driven society, power lies not only in public institutions but also in data systems and algorithms that shape the allocation of resources; therefore, democratic control must be extended to encompass algorithmic transparency, accountability for public data, and citizens' data rights. The dissertation describes a shift from traditional tripartite consultation toward data-based co-governance, in which citizens, experts, businesses, and the state jointly participate in the design, monitoring, and improvement of policy through digital platforms and real-time feedback mechanisms. Democracy is understood as a process of continuous dialogue: legitimacy does not arise only at the moment of elections, but is sustained through information transparency, verifiability, and society's capacity to monitor public power. At the same time, the chapter underscores the paradox of "technical efficiency versus democratic legitimacy": digitization may render government more efficient, but if decisions are delegated to "black-box" systems, or if data is exploited according to a logic of surveillance, autonomy and equality of voice will be diminished. Consequently, democratic adjustment must be accompanied by stronger rule-of-law guarantees, privacy protection, mechanisms of appeal, and independent oversight of automated systems in the public sector. The dissertation also emphasizes that the shift toward digital democracy does not eliminate the role of intermediary institutions such as political

parties, trade unions, and associations; rather, it imposes the requirement that they themselves be digitized and restructured so as to represent new groups of workers, especially platform workers. If intermediary institutions weaken, digital space may easily be dominated by misinformation and emotional polarization; in such a case, social consensus, one of the key resources of SD, will erode, increasing the costs of transition and fueling the spread of digital populism.

Building on these adjustments, Section 4.2 synthesizes the achievements and limitations. The most important achievement is the capacity to reorganize the relationship between growth and equity in the direction of "innovation-based inclusive growth." SD regards technology as a resource that must be directed by institutions: promoting R&D, digital infrastructure, and a competitive environment, while simultaneously investing heavily in education, lifelong learning, and active labor market policies so that workers can adapt to automation. The focus shifts from the redistribution of income to the redistribution of opportunities, thereby sustaining the social legitimacy of digital transformation. In practice, adaptation packages often take a comprehensive form: digital industrial policy linked to innovation and green transition; upgrading digital infrastructure and public data systems; competition regulation to limit data monopolies and excessive platform rents; updating labor standards and representation mechanisms for non-standard workers; and coordinating taxation and public spending to finance social investment. The digital welfare state helps improve the efficiency of service provision, increase transparency, and enable the design of preventive mechanisms; democratizing the process of digitalization through online participation and open data also helps reinforce trust when citizens feel they are being heard. At the level of international integration, SD tends to pursue a form of "fair globalization" by combining openness with labor and environmental standards and with skill-upgrading programs, thereby reducing the sense of being left behind, a major driver of populism and the far right, and thus protecting social capital. However, the dissertation also identifies three structural limitations: (1) digital welfare may slide into surveillance and administrative exclusion if transparency, data protection, and appeals mechanisms are lacking; (2) the data economy creates new forms of inequality beyond income, while traditional welfare instruments struggle to cover platform workers and other non-standard labor; and (3) fiscal pressures and the sustainability of welfare increase as populations age and long-term care costs rise, forcing the model to restructure systems of protection under conditions of globalization and digitization.

On this basis, Section 4.3 turns to implications for Vietnam according to the principle of "compatibility of objectives, congruence of values, and difference of pathways." Regarding the value framework of reference (4.3.1), the dissertation emphasizes the compatibility of the development goal of putting human beings at the center and refusing to trade equity for efficiency; at the same time, it identifies congruence in the value system of freedom, equality, solidarity, democracy, and welfare, but argues that these values must be "translated" into institutional designs appropriate to the Vietnamese context. Here, freedom is understood as the real capacity to choose in the digital environment, linked to educational attainment, skills, and

conditions of access to services; equality is understood more broadly than income, encompassing equality of digital opportunity and equality of access; solidarity is understood as a mechanism for sharing risks and reinforcing trust in the data-driven society. From this value framework, the dissertation derives implications for the completion of institutions and the socialist rule-of-law state in digital transformation (4.3.2) in the spirit of "institutions going first": building predictable rules of the game to encourage innovation, avoiding the mindset that "if it cannot be controlled, it must be prohibited," and combining controlled experimentation with the governance of data risks and cybersecurity. The focus is on upgrading data institutions, rules of transparency and accountability for automated systems; ensuring privacy rights and the right to appeal; and, at the same time, modernizing public governance in the direction of evidence-based, interoperable, and transparent administration.

At the economic level (4.3.3), the dissertation suggests drawing upon the spirit of the SD "social market economy": competition must operate within a sufficiently strong social legal framework so as both to unleash efficiency and to prevent the accumulation of power and the anti-social consequences of an unrestrained market. Vietnam, in developing a socialist-oriented market economy and digital economy, needs to combine encouragement of innovation in the private sector with the protection of competition and the public interest: expanding access to digital infrastructure, data, and finance for enterprises; building anti-monopoly and anti-transfer-pricing mechanisms in digital business; and at the same time promoting public-private cooperation on the basis of avoiding technological lock-in and ensuring auditability. Within this logic, promoting the role of the private economy does not mean marketizing welfare, but rather mobilizing the innovative capacity of enterprises within a framework of social responsibility, toward growth based on knowledge, productivity, and inclusiveness. The state retains the role of creating innovation ecosystems, data standards, and shared infrastructures so that small and medium-sized enterprises are not excluded from the platform economy because of asymmetries in resources.

With regard to social equity and social security (4.3.4), the dissertation regards the value of universal welfare and the model of the social investment state as a frame of reference for Vietnam in building a developmental state and a service-oriented state in the 4IR era. Social protection must operate in a multi-layered, flexible, and modern manner; it must not only expand coverage but also move toward "qualitative upgrading": increasing the real level of protection, reducing the fragmentation of regimes, and investing in key services such as primary healthcare, long-term care, reskilling, and digital upskilling. The dissertation links this to social insurance reform as a foundation for adaptive social protection, and at the same time suggests the digitization of welfare according to the principle of "one data source, multiple services" and multi-channel design in order not to create new forms of administrative inequality. Data governance makes it possible to move from compensation to prevention: forecasting risks, identifying vulnerable groups on the basis of employment fluctuations, and thereby activating timely support, but always ensuring that "human beings remain in control," with accountability and the right of appeal.

Addressing 4IR-induced inequality requires a policy package combining market regulation, social investment, and adaptive redistribution: combating inequality through capabilities (skills), reducing regional inequalities linked to connectivity, and updating protection mechanisms for platform workers.

Finally, Section 4.3.5 emphasizes the mobilization of social resources, the construction of social capital, and social linkages as foundational conditions of digital transformation. In the data-driven society, mobilizing resources means constructing a polycentric architecture of coordinated interests in order to generate consensus; accordingly, social linkages must be restructured, both by consolidating traditional social coalitions and by extending them to new strata of the digital economy (technology entrepreneurs, platform workers, data experts, and local innovation networks). The dissertation proposes that digital infrastructure and shared platforms should be regarded as the "entry point" through which social resources can participate transparently and generate spillover effects; it simultaneously treats social capital and trust as the intangible infrastructure of digital transformation, guaranteed through the rule of law, transparency, and data ethics. Therefore, the strict enforcement of personal data protection, cybersecurity, and access to information is not merely a matter of security, but also a socio-economic condition for reducing the costs of trust. Grassroots democratic mechanisms, if digitized into channels for feedback, petitions, and public disclosure of outcomes, will increase citizens' sense of being heard and reduce the feeling of being left behind in digitalization; in parallel, intermediary institutions such as trade unions and associations need to be digitized so as to represent non-standard workers effectively. The mobilization of knowledge may be implemented through experimental models and community innovation laboratories, in which public authorities pose social and public problems, while enterprises, universities, and research institutes jointly propose, test, evaluate, and scale solutions. All such mobilization mechanisms must be linked to equity, solidarity, and social responsibility so that digital transformation simultaneously promotes innovation and compensates for the new risks of polarization.

CONCLUSION

This dissertation has approached the 4IR as a factor in the comprehensive restructuring of the SD model, in which digitalization, data, artificial intelligence, and automation transform modes of production and shift structures of power, mechanisms of resource distribution, norms of governance, and forms of political-social participation. On the methodological foundations of Marxism-Leninism, Ho Chi Minh Thought, and the Party's viewpoints on development associated with social progress and equity, the dissertation establishes an integrated analytical framework for identifying the "adjustments" of the SD model according to four pillars: foundational values; the welfare state; the mixed economy and regulatory mechanisms; and political democracy and social consensus. This analytical framework makes it possible to regard the 4IR as a "systemic variable" that simultaneously affects both economic structures and the architecture of political institutions, thereby explaining why the

adjustment of SD cannot merely consist of isolated policy changes, but must instead involve a rebalancing of the relationship among the state, the market, and society in the digital environment.

From a theoretical perspective, the dissertation affirms that SD is a distinctive development model insofar as it combines economic efficiency with social equity through three key mechanisms: democracy under the rule of law (which constrains power), social dialogue (which transforms conflicts of interest into policy compromise), and universal welfare (which guarantees social security and opportunity). More importantly, it highlights the historically dynamic character of the SD model: it must continually reconstruct the balance among the state, the market, and civil society in order to adapt to economic and social shocks. Although the 4IR has expanded productivity, innovation, diversified services, and created opportunities to reconstruct welfare in a smart, personalized, and efficient direction, the SD model is nevertheless confronted with new difficulties: increasing risks of structural unemployment, skill stratification, instability among platform workers, shifts in global value chains, and the concentration of data power in technology corporations, all of which challenge the regulatory capacity of the state and "narrow" the room for national policy. Alongside economic and social risks are political risks: information polarization, manipulation of public opinion, declining social consensus, and crises of trust.

The dissertation has clarified the directions of adjustment of the SD model in adapting to the 4IR, as reflected in the following achievements. First, the reorganization of the relationship between growth and equity in the direction of "innovation-based inclusive growth": the state both fosters innovation (through investment in R&D, digital infrastructure, and technological ecosystems) and ensures mechanisms to reduce the risks of stratification caused by automation and the platform economy. Second, the transformation of the welfare state toward a model of "active welfare/social investment": welfare is no longer merely compensatory after risks occur, but becomes an investment in human capabilities (education, skills, preventive healthcare, long-term care), increasing workers' adaptive capacity in the face of technological change. Third, the digitalization of public services and public governance in a data-driven and interoperable direction, reducing transaction costs and improving service quality, while at the same time being embedded in a framework of digital rule of law (data rights, transparency, and independent oversight mechanisms). Fourth, the expansion of political democracy and social consensus in the direction of digital collaboration: citizens participate more actively through platforms, open data, and policy feedback mechanisms, while intermediary institutions are reinforced to sustain consensus throughout the reform process. Fifth, the strengthening of policy responses to platform power, data monopolies, and taxation in the digital economy, reflecting efforts to uphold distributive justice and regulatory sovereignty.

However, the dissertation also identifies the limitations and new challenges of the SD model in the 4IR era. First, "digital welfare" may slide into administrative exclusion and the surveillance of vulnerable groups if databases are incomplete, algorithms lack transparency, or appeals mechanisms are weak; in such circumstances, technical efficiency may conflict with equity and rights. Second, fiscal pressures are

increasing due to population aging and rising long-term care needs, while the productivity gains generated by digitalization are distributed unevenly; without restructuring revenue sources and designing tax systems appropriate to the digital economy, welfare sustainability will be at risk. Third, technological dependence and the transnational character of data flows limit the ability of individual states to control platform monopolies; regional and international coordination becomes a necessary condition, yet this in turn creates bottlenecks arising from divergent interests and unequal negotiating capacities. Fourth, digitally collaborative democracy both expands participation and becomes more vulnerable to manipulation and polarization; in the absence of intermediary institutions and standards of algorithmic transparency, digital space may become a source of declining consensus. Fifth, even in countries with strong traditions of social dialogue, the traditional social coalitions of SD are being fragmented by changes in class structure and forms of labor; designing effective forms of "representation" for platform workers and informal labor remains a difficult issue for which no complete solution has yet been found.

From the foregoing analysis, the dissertation derives several synthetic conclusions of a quasi-general nature. First, in the 4IR era, social equity must be redefined as both equality of opportunity and equality of capability: opportunities to access skills, opportunities for occupational mobility, opportunities to access digital public services, and the right to be protected against algorithmic risks. Second, state capacity is the decisive condition for the quality of adaptation: the state must simultaneously foster innovation, regulate platform-related risks, protect data rights, and establish accountability; otherwise, it will be "outpaced" by technological power and data asymmetries. Third, democracy and welfare in the digital age cannot be separated from digital ethics and digital rule of law: the greater the degree of automation, the greater the need for transparency, checks on power, mechanisms of appeal, and social oversight; otherwise, technical efficiency will erode democratic legitimacy, thereby undermining the consensual foundations of the SD model.

On this basis, the dissertation offers a number of reference implications for Vietnam according to the principle of "absorbing the spirit rather than mechanically copying the form." First, digital transformation should be embedded in an inclusive development strategy: innovation must go hand in hand with inclusive productivity, narrowing digital divides, reducing skill stratification, and ensuring that vulnerable groups are not excluded from digital public services. Second, Vietnam should build a digital rule-of-law state with a comprehensive data regime: protection of personal data, transparency regarding the purposes of data processing, standards of accountability for automated systems, and mechanisms of appeal and independent oversight over decisions that affect citizens' rights and interests. Third, social security policy should be redefined in the direction of "adaptive social protection": prioritizing investment in skills and lifelong learning; designing insurance against transition-related risks; expanding protection for informal workers; improving the quality of basic social services; and enhancing equitable access. Fourth, governance of the digital economy must be linked to combating platform monopolies, preventing transfer pricing, protecting competition, and supporting domestic enterprises in

strengthening their capacity to absorb technology, thereby avoiding technological dependence and platform dependence. Fifth, public governance should be upgraded in a data- and evidence-based direction, with emphasis on integrity, transparency, and accountability, while social trust should be regarded as the "soft infrastructure" of digital transformation.

Alongside these implications, certain limitations drawn from the experience of countries following the SD model are also identified as pitfalls that Vietnam should avoid. First is superficial digitalization: digitizing old procedures without reforming them, thereby increasing compliance costs, reducing service quality, and creating new "digital bottlenecks." Second is data technocracy: treating data as a one-way instrument of management without mechanisms for protecting rights and ensuring accountability, thereby increasing administrative inequality and eroding trust. Third is policy extremism: either egalitarian leveling that suppresses the incentives for innovation, or laissez-faire digital markets that generate stratification and platform monopolies; both undermine the foundations of equity. Fourth is the neglect of intermediary institutions and social dialogue in the digital environment: without mechanisms for consultation, criticism, and the mediation of interests, conflict will intensify in the process of transformation. Fifth is the lack of standards and implementation capacity in cybersecurity, data protection, and algorithmic accountability; in such a case, technological risks may be transformed into social and political risks.

In summary, the adjustment of the SD model under the impact of the 4IR is a process of simultaneously technologizing the welfare state, the mixed economy, and political democracy in the direction of digitalization, while the ultimate goal remains the enhancement of human dignity, the expansion of opportunities, and the protection of social equity within a volatile technological order. The central conclusion is that technology becomes a driver of sustainable development only when it is embedded in a framework of humanistic values, the rule of law, and mechanisms of accountability; conversely, if democratic oversight and the protection of rights are absent, technology will generate inequality and erode social consensus. From a scientific perspective, the dissertation contributes a four-pillar analytical framework for identifying the "adjustments" of SD in the technological era; from a practical perspective, it provides contextually conditioned implications for Vietnam, emphasizing the principle of placing human beings at the center, safeguarding equity in digital transformation, and treating trust and social consensus as criteria for assessing the quality of development.

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