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EDITORIAL

The Positive Side of Conflicts

In the context of a globalised economy and organisational pressure on performance and adaptability, conflicts in management are increasingly emerging as an inevitable phenomenon. Traditionally, conflicts were viewed as dysfunctions of the structure or leadership style, associated with chaos, misunderstandings, and ultimately, at worst, with reduced performance. In modern approaches, based on systems theory and organisational psychology, conflicts are not inherently harmful, but rather how these conflicts are managed.

In Henri Bergson's view, conflicts stimulate change and innovation, and Kenneth Boulding believed that there was an acceptable degree of conflict. Thus, we can say that they become a source of learning, innovation, and strategy if there is mature, flexible, and solution-oriented leadership.

Organisational conflicts arise between individuals or groups, between different hierarchical levels, between departments, or between leaders and their teams, due to differences in objectives, interests, perceptions, or values. An increasingly common example is the conflict generated by digitisation and automation: managers

from different generations may have different views on technology, work flexibility, or performance reporting. Such differences generate tensions that can lead to conflict if not addressed constructively and strategically.

Mary Parker Follett formulated a theory of conflict resolution, proposing methods of domination, integration and compromise. But J. March noted that conflicts are usually quasi-resolved.

Managers need to be aware that while some conflicts may seem minor at first, they can escalate quickly if not identified and managed properly. At the same time, the challenges generated by conflicts can become opportunities if the organisation can learn, transforming conflict into a tool for organisational development.

Thus, to prevent conflicts from escalating and to transform them into opportunities for development, effective managers implement various strategies



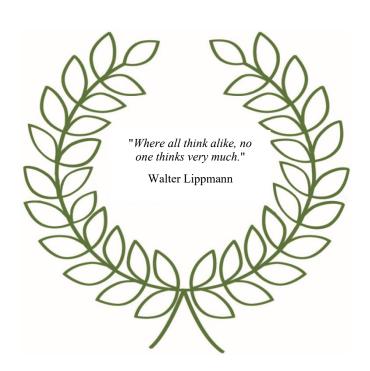
tailored to the specific characteristics of the organisation. Among the strategies most often recommended in the literature, the following stand out:

- ✓ adopting a transformational leadership style that values collaboration, empathy, and collective involvement.
- ✓ using negotiation and mediation techniques to clarify positions and identify common interests.
- ✓ developing the emotional intelligence of leaders and employees to manage emotional reactions and reduce defensive behaviours.
- ✓ consolidating an organisational culture based on continuous feedback, trust, and learning from mistakes
- ✓ organising coaching or professional training sessions to develop interpersonal skills.

Conflicts in management, far from being obstacles, can become landmarks for organisational transformation, innovation, and professional growth. In an unstable economic environment, managerial flexibility, communication skills, and accountability become essential.

In conclusion, conflict management is not just a managerial technique, but an expression of organisational maturity and long-term vision.

Iuliana GRECU Guest Editor



The Efficiency of Expanding Telework in Companies

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This study aims to investigate the perceived efficiency and effectiveness of organisational telework practices. Implementing a quantitative survey of 50 professionals from various sectors, it examines how remote work influences productivity, communication, collaboration, and work-life balance. The results reveal strong positive associations between perceived organisational efficiency and both communication clarity and technological preparedness. An especially important finding, the data underscores that successful teleworking depends not only on digital infrastructure but also on managerial responsiveness and communication protocols. These highlight the importance of developing structured, sector-specific telework strategies supported by strong digital tools and appropriate training programs, to be able to sustain long-term remote working models.

Keywords: telework, efficiency, effectiveness, post-COVID, Romania, correlation matrix

Introduction

In 2025, the Romanian labour market continued to evolve under the long-term influence of the COVID-19 pandemic, being called a post-pandemic period. Many companies have kept teleworking as either a full-time model or as part of hybrid arrangements, and a whole debate is still ongoing about the best solution to take. This trend has been especially pronounced in the IT and services sectors (Elliot, 2024), where digital transformation remains a strategic priority, and technology advancements open the gate for restructuring. At the same time, public administration and educational institutions face greater challenges in adapting their processes to



remote work, also because the length of the change is dramatically high (Teodorescu, 2025).

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We have seen during the Pandemic that the first shift to telework was reactive, driven by health concerns and lockdown policies, but nowadays organisations increasingly use remote work models to improve costs, adapting the business models to the actual economic situation, expand access to talent, and improve employee satisfaction (Elliot, 2024). Despite this progress, questions are still about how effective and efficient telework truly is in diverse sectors and job roles, and Romanian companies are looking to understand how useful telework is for business.

Telework, once an auxiliary work arrangement, became a dominant model during the COVID-19 pandemic (Wells, 2024) and continues to shape organisational operations globally and in Romania. Many organisations have adopted teleworking (or so-called virtual work) as a response to lockdowns and health concerns, revealing both benefits and challenges. This study explores how teleworking organisational influences efficiency effectiveness, based on cross-industry feedback from Romanian employees. The purpose is to show core elements that contribute to successful and telework implementation to suggest improvement pathways, also to try to draw a future path to a strategy of using or not teleworking. To guide this analysis, the article addresses the following research questions:

Question 1: How are Romanian employees perceiving the impact of teleworking, looking at productivity, communication, collaboration, and work-life balance?

Question 2: What are the correlations between perceived organisational efficiency and other teleworking-related indicators?

Question 3: Which contextual factors—such as industry sector or digital preparedness—contribute to or hinder effective teleworking adoption?

Methodology of Research

This study is based on a quantitative survey conducted in February-March 2025, targeting

Romanian professionals across five different sectors: IT, consultancy, healthcare, public administration, and education. 50 respondents have completed a structured questionnaire, and their answers are linked to their perceptions on the effectiveness of telework in terms of perceived productivity (PP), communication effectiveness (CE), collaboration level (CL), work-life balance (WLB), and technological preparedness (TP), five core indicators. The definitions for the five indicators are:

Perceived Productivity (PP): It measures the respondent's assessment of how their work output has changed due to teleworking compared to work from the office.

Communication Effectiveness (CE): Evaluates communication with colleagues and managers, the clarity, frequency, and efficiency of communication.

Collaboration Level (CL): It checks how well teamwork, knowledge sharing, and cross-department cooperation are seen in a remote environment.

Work-Life Balance (WLB): Captures the respondent's power to support boundaries and manage time between work and personal commitments during teleworking.

Technological Preparedness (TP): The reliability, accessibility, and user-friendly of the digital tools and platforms provided by their organisation.

The research design was constructed to answer the following questions:

Question 1: How are Romanian employees perceiving the impact of teleworking, looking at productivity, communication, collaboration, and work-life balance?

Question 2: What are the correlations between perceived organisational efficiency and other teleworking-related indicators?

Question 3: Which contextual factors—such as industry sector or digital preparedness—contribute to or hinder effective teleworking adoption?

Respondents rated each indicator on a 5-point Likert scale. The sample included 50 professionals from various industries, ensuring representation across IT, services, education, administration, and creative fields.

Demographic profile: Among the 50 respondents, 54% were female and 46% male. The age distribution was as follows: 24% were between 25-34 years old, 46% between 35-44 years, and 30% between 45-60 years. In terms of location, 42% were from Bucharest, 36% from other major cities, and 22% from rural or semi-urban areas.

The respondents came from a variety of professional backgrounds, contributing to a representative overview of Romania's cross-sector teleworking area. Specifically, 30% were employed in Information Technology and software

development, 18% in public administration, 14% in education, 12% in financial and banking services, 10% in creative and cultural industries, 8% in health and social work, and the remaining 8% in miscellaneous sectors such as logistics and consulting.

Responses were measured using a 5-point Likert scale and analysed using descriptive statistics, average scores (Figure 1), and a Pearson correlation matrix (Figure 2). Additional openended responses gave clarity on the quality, especially around challenges and adoption of teleworking difficulties.

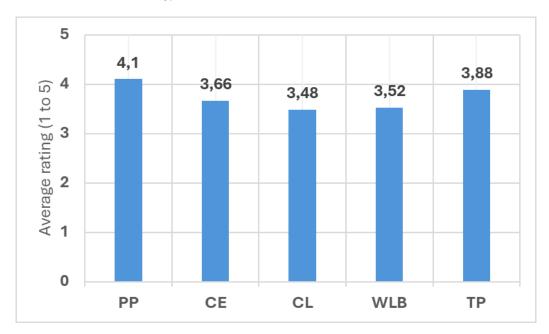


Figure 1 – Average Scores Across Survey Indicators

Average Scores Across Survey Indicators illustrates the average scores across the five key telework indicators: Perceived Productivity (PP), Communication Effectiveness (CE), Collaboration Level (CL), Work-Life Balance (WLB), and Technological Provisioning (TP).

The results reveal that Technological Provisioning (TP) received the highest average score, indicating strong satisfaction with the digital

tools and infrastructure available to remote employees (Rocha-Ibarra et al., 2024). Work-Life Balance (WLB) and Collaboration Level (CL) registered comparatively lower scores, suggesting these are potential areas for improvement in telework implementation. Overall, high scores across all categories suggest a generally favourable perception of teleworking conditions among respondents (Wells, 2024).

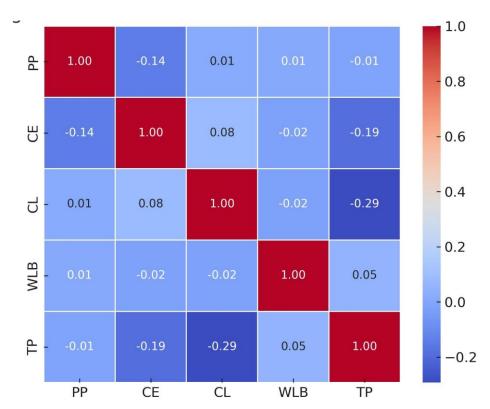


Figure 2 – Correlation Matrix

The Correlation Matrix presents the Pearson correlation matrix among the five telework indicators. Strong positive correlations are evident between Perceived Productivity (PP) and both Communication Effectiveness (CE = 0.72) and Provisioning (TP 0.70). Technological highlighting the importance of communication and digital infrastructure in supporting productivity during remote work. Similarly, Communication Effectiveness (CE) is moderately correlated with Collaboration Level (CL = 0.66), indicating that effective communication fosters better teamwork. The relatively weaker correlations involving Work-Life Balance (WLB), particularly with CE (0.48) and CL (0.50), suggest that improvements in interpersonal or organisational communication may not directly translate into a better balance between work and personal life, which may depend on other structural or individual factors.

Results and Analysis

The correlation matrix, being a statistical tool, is used to examine the degree to which variables are linearly related. Each cell in the matrix shows the Pearson correlation coefficient between two variables, ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation). That means a coefficient close to 0 will imply little to no linear relationship. In this study, the matrix illustrates how the five indicators - Perceived Productivity (PP), Communication Effectiveness (CE), Collaboration Level (CL), Work-Life Balance (WLB), and Technological Preparedness (TP) - relate to one another across the sample given based on the collected data.

The diagonal elements of the matrix are all 1.00, as each variable is perfectly correlated with itself. The off-diagonal values highlight how strongly linked each pair of indicators is. For example, the 0.72 correlation between PP and CE

suggests a strong positive relationship: when communication is seen as effective, productivity tends to be rated higher. Likewise, TP correlates positively with both PP (0.70) and CE (0.63), showing that a strong technology infrastructure will help to grow both productivity communication.

Moderate correlations, such as 0.59 between TP and WLB, show that strong and good technology is better associated with improved work-life balance, likely due to smoother workflows and fewer technical disruptions. The matrix provides a nuanced understanding of the interdependencies among the dimensions that make the telework model efficient and effective.

The sample data (Table 1) illustrates 50 anonymised entries from the 50 responses collected in the study.

Table 1 – *Sample Data*

Respondent	PP	CE	CL	WLB	TP
1	5	3	2	2	5
2	3	2	3	4	4
3	5	3	4	5	4
4	5	2	2	5	4
5	3	3	5	3	3
6	3	5	3	4	4
7	5	5	2	4	3
8	4	4	5	2	3
9	5	5	5	4	4
10	5	4	5	2	4
11	5	5	2	4	4
12	5	2	2	3	5
13	3	5	2	4	4
14	5	4	4	2	5
15	4	4	2	2	3
16	3	3	2	3	5
17	4	2	2	4	4
18	4	5	4	4	3
19	4	3	2	3	3
20	4	5	5	4	3
21	3	5	2	4	5
22	3	3	5	2	4
23	4	3	5	4	3
24	4	3	5	4	3
25	3	3	4	3	3
26	3	3	4	3	5
27	3	5	4	5	5
28	5	3	2	2	4
29	5	2	5	4	5

Respondent	PP	CE	CL	WLB	TP
30	5	4	4	4	3
31	4	3	4	5	4
32	5	3	2	4	3
33	4	5	4	2	3
34	4	3	2	5	5
35	5	3	3	2	4
36	4	3	4	5	5
37	5	5	3	5	5
38	5	3	2	3	4
39	3	4	5	2	3
40	5	5	4	4	3
41	3	4	2	4	4
42	5	5	5	2	3
43	5	3	5	4	4
44	3	4	3	4	4
45	3	5	2	2	5
46	5	2	5	5	4
47	4	3	4	2	5
48	3	5	4	5	3
49	4	2	3	4	3
50	4	5	5	4	3
	4,1	3,66	3,48	3,52	3,88

Each row stands for one respondent's ratings across the five core indicators: perceived productivity (PP), communication effectiveness (CE), collaboration level (CL), work-life balance (WLB), and technological preparedness (TP).

All values are based on a 5-point Likert scale, where 1 shows strong disagreement or poor experience and 5 shows strong agreement or excellent experience. The selected entries show diversity in individual perceptions and highlight variations that informed the correlation analysis. The complete set of data offers a comprehensive view of how participants evaluated each indicator.

Discussion

The findings offer a consistent pattern: employees perceive their productivity and efficiency to be highest when communication is effective and when they feel supported by technology. This research also gives us the

meaning of the dual importance of soft infrastructure (communication protocols, management responsiveness) and hard infrastructure (platforms, secure access, reliable internet), in total, a strong infrastructure to keep a positive approach to working virtually.

Industries that had invested in cloud-based tools, collaborative platforms, and performance monitoring systems (Rocha-Ibarra et al., 2024) reported better employee satisfaction. Respondents from IT and consultancy scored highest across most variables used by us in this research. On the other side, those in public administration and education - where telework was adopted more abruptly - expressed dissatisfaction with communication flows and interdepartmental coordination, both being strongly related to operation within these organisations.

An interesting insight from the collected data was the roles of age and digital familiarity to be seen by analysing the 50 respondents' information.

Younger respondents adapt more easily to remote tools, while older professionals are reporting difficulties with platform navigation and digital flow. Regardless of age, technological advancement and preparedness proved to be a strong key enabler of work-life balance.

Finally, the psychological impact of telework appeared as particularly important and needs to be prioritised as a theme (Elst, 2024). While not directly measured, many respondents used openended fields to express the challenge of blurred boundaries and digital fatigue (Elst, 2024), but also a sense of freedom in managing their time better. This suggests that effectiveness is not only about task completion, but also mental well-being and perceived control over the employer's schedule.

The patterns seen in Figures 1 and 2 reinforce these conclusions: the strong correlations between productivity, communication, and technology (Figure 2), along with the high average scores in these areas (Figure 1), confirm the significant role these three most important factors which are playing closer in shaping positive teleworking experiences (Wells, 2024).

Conclusion and Recommendations

This study, based on research made, confirms that teleworking models can support organisational efficiency if effectively managed, well prepared and better understood regarding the company's business model (Teodorescu, 2025), their operations and organisational culture.

On Question 1, results showed that employees perceive teleworking generally positively, especially when communication and digital tools function well and are reliable, serving as the key to effective teleworking. Question 2 is supported by the strong and positive correlations between productivity and both communication clarity and technological preparedness (Figure 2), as well as high average scores in these areas (Figure 1). Regarding Question 3, differences between businesses, organisations, and sectors were clear: and consultancy professionals reported smoother transitions and higher satisfaction, while those in public administration and education faced ongoing challenges with coordination and digital adaptation within their organisations.

These findings suggest that successful telework implementation requires more than just access to technology - it depends equally on sector-specific policies (Elliot, 2024), their operations, organisational culture, digital upskilling, and support mechanisms that address both task efficiency and psychological well-being.

The correlation matrix (Figure 2) underlines how productivity is not a standalone variable but is deeply interlinked with communication and technological support. Additionally, the high average scores seen in these categories (Figure 1) suggest that investments in digital readiness and interpersonal infrastructure have a direct impact on employee satisfaction and perceived performance.

Based on the data, we offer the following recommendations:

- Develop Telework Competency Programs: Provide structured training in virtual collaboration, time management, and platform usage to enhance confidence and performance, especially for older or less digitally fluent employees.
- Improve Digital Infrastructure: Ensure secure, stable, and user-friendly platforms for all team members, regardless of role, experience or age (Rocha-Ibarra et al., 2024). Reliability in tools reduces cognitive strain and enhances task flow.
- Promote Managerial Support: Prepare team leaders to communicate transparently, manage performance remotely, and encourage team cohesion. This reinforces the "soft infrastructure" that underpins trust and productivity for all kinds of teams and industries.
- Monitor Employee Well-being: Include well-being metrics in HR evaluations and promote access to counselling, ergonomic assessments, and flexible scheduling to mitigate digital fatigue, looking at work-life proportions (Elst, 2024).
- Tailor Strategies by Sector: Recognise that a one-size-fits-all model does not work. Sectoral specificity and role-based policies are needed to ensure that both the technological and interpersonal needs of employees are addressed.

Further research could build on this study by increasing the sample size, incorporating other industries and overall tracking, or employing qualitative interviews to better understand telework dynamics across age groups, sectors, and organisational cultures.

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Abstract

The Impact of Strategic Flexibility in the Pharmaceutical Industry

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The organizational performance in the pharmaceutical industry was under a high degree of operational and strategic pressure during the Covid-19 pandemic, a period of uncertainty and instability. Within this context characterized by high level of vulnerability, we explore the role of strategic marketing flexibility in ensuring the continuity of operational processes and rapidly adapting to the changing needs of the consumer market and healthcare professionals its relationship with performance. Based on survey from 68 respondents of the pharmaceutical companies in Romania it was highlighted that the pharmaceutical industry quickly adopted digital marketing channels. The research also shows how effective these channels were in interacting with healthcare professionals, in promoting products, and how they influenced performance indicators.

Keywords: strategic flexibility, pharmaceutical industry, marketing channels

Introduction

The evolution of the business environment and in general, of the economy and society in recent years deeply influenced by the pandemic crisis and digitalization requires new approaches focused on changes in the management of all entities. In the myriads of management changes and innovations one constant remains unchanged and that is performance. The notion of performance is of particular importance for any economic entity seeking to achieve economic and financial equilibrium. Key performance indicators are essential and sensitive tools for any business, playing a crucial role in defining success and controlling success. Measuring the performance of marketing activities with relevant indicators can





significantly contribute to increasing the productivity of marketing actions, as well as optimizing the budget allocated to them (Ghahremani-Nahr and Nozari, 2021).

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The post-pandemic context reinforces the need for adaptive key performance indicator (KPI) strategies, and the cultural sector clearly illustrates this shift, as traditional face-to-face channels maintain high impact, while email and printed materials have lost some of their effectiveness (Dam and Le Dinh, 2021). The KPIs used in pharmaceutical industry is market share, defined as a firm's sales relative to total market sales, reflects its strength - high values indicate a strong position, while low values suggest limited market presence (Bee, 2009). Among the variables analyzed, return on investment (ROI) played a central role in guiding resource allocation, helping marketing managers prioritize regions where educational events would generate the most strategic value (Oztekin, 2018).

The pharmaceutical industry plays an important role in the Romanian economy, contributing to revenues, the value chain and the number of jobs. The business environment in the pharmaceutical industry is highly competitive and dynamic, characterized by a growing trend of manufacturers and traders of medicines and medical devices, which entails an increasing generation of jobs, which is why competition is very tight. The competitive and pandemic context has pushed pharmaceutical companies to be more creative and innovative to maintain their position in the market. In this regard, strategic flexibility plays a key role in improving organizational performance, as it enables rapid adaptation to changing consumer and healthcare professional (HCPs) requirements and continuous optimization of marketing strategies.

By optimizing and diversifying communication channels, personalizing promotional messages, and developing relevant solutions and products for consumers, companies can respond effectively to emerging demand, which directly contributes to building organizational performance strengthening their competitive position in the marketplace. The pharmaceutical sector has strict and ever-changing legislative regulations and therefore requires a strategic, flexible and tailored approach to ethical and professional requirements when interacting with HCPs (Awad et al., 2022). This study investigates the critical role of strategic flexibility in marketing strategies and its impact on organizational performance in the pharmaceutical sector before, during, and after the COVID-19 crisis.

An online questionnaire was used to explore the perceptions of industry representatives regarding the effectiveness of various communication channels and how their adaptability contributed to performance outcomes throughout these distinct phases. An organization's ability to adapt and be flexible becomes critical to long-term success, while adaptability allows companies to respond effectively to unexpected market changes, flexibility enables them to adjust strategies and operations to exploit immediate opportunities. Based on this insight, we can define strategic flexibility as the ability to turn challenges into competitive advantage and improve organizational performance. Theoretical research and applied studies in strategic management is increasingly recognizing strategic flexibility as an important research area according the academic and practitioner literature (Nadkarni and Herrmann, 2010) in Ansoff' terms a "surprise" in management (Ansoff, 1975).

Strategic flexibility is a concept that has evolved from strategy and spread across disciplines such as innovation. management. marketing, entrepreneurship and operations. Results of study suggest that managers need to take a broad view of their impact on the organization's performance, monitoring not only financial results but also innovation and market success (Herhausen et al., 2020). According to Beraha et al. (2018) strategic flexibility is not just a reactive capability but an essential element of sustainable organizational performance. By cultivating flexibility at all levels of the organization and in key functions, companies can respond more effectively to external changes, adapt their decision-making strategies and maintain a competitive advantage. The bidirectional relationship between strategic flexibility and organizational flexibility allows for rapid adaptation of operations and strategies, which is directly reflected in improved performance, especially in contexts marked by uncertainty such as the global health crisis.

The authors identified three dimensions of strategic flexibility: production, marketing, and human resources of companies. They argue that

strategic flexibility, especially in the areas of production and marketing, has a significant impact on product innovation, highlighting that the adaptability of these functions is essential for strategic performance and various communication channels, such as profile events, e-platforms and social networks, play a key role in increasing marketing flexibility by facilitating access to valuable market and end-user information that supports product innovation. In engineering projectbased organizations, combining strategic flexibility with innovation is essential for improving operational performance, providing managers with an effective framework for developing sustainable policies and adapting to turbulent business environments (Awais et al., 2023).

Strategic flexibility allows companies to successfully adapt to dynamic markets and can be a valuable complement to investments in business analytics (Claussen et al 2018). For moderately dynamic firms, the combination of traditional and change-oriented strategic optimizes logic competitive advantage, but in highly dynamic firms, the duration of competitive advantage becomes unpredictable and rapid and unstable adaptation becomes essential for success (Eisenhardt and Martin 2000). The concept of dynamic strategic marketing planning (DSMP) is introduced by Theoharakis et al. (2024) and validates it as a dynamic, higher-order capability that integrates marketing planning, top management-led strategic implementation, and continuous reconfiguration.

This approach not only improves financial performance more effectively than traditional planning but also avoids the rigidities that limit innovation. DSMP therefore offers superior adaptability and supports innovation, thus ensuring the evolutionary adaptability essential for long-term competitiveness. In this paper it is use strategic flexibility in marketing for pharmaceutical companies in Romania during and after the Covid-19 crisis in terms of interaction with healthcare professionals and it examines impact on the

organization's performance, monitoring not only financial results but also innovation and market success (Theoharakis et al., 2024).

Research Methodology

The aim of this study is to examine impact of strategic flexibility on performance in pharmaceutical marketing during and after the COVID-19 pandemic. The following specific objectives have been established as a result of survey:

- Objective 1: Identifying which strategic marketing channels used by pharmaceutical companies in interactions with HCPs.
- Objective 2: Identifying the challenges faced in pharmaceutical industry regarding strategic marketing flexibility.
- Objective 3: Identifying which are the most used KPIs in pharmaceutical marketing.
- Objective 4: Extracting the effective marketing channels during and after COVID-19 pandemic.

Research Design & Data Collection. A structured, web-based questionnaire was created using Google Forms to ensure ease of access and standardized responses, being anonymous. The survey included 20 questions, a mix of closedended, rate scale, and multiple-choice questions to capture quantitative insights while maintaining consistency in data collection. The survey was distributed online between 1st February 2025 and 29th May 2025 and the respondents are from 30 of pharmaceutical companies from Romania. The survey consisted of 68 respondents from pharmaceutical companies' involvement pharmaceutical marketing and sales.

Sample Description. The collected data will be analyzed using descriptive statistics, including frequency distribution and percentage analysis, to identify key trends. Graphical representations will be used to visualize findings. The questionnaire was structured in three main sections. The first section included socio-demographic data (such as gender,

age and level of education) and professional information (experience within the company and field of activity). The second section aimed to identify the marketing channels used to facilitate interaction with healthcare professionals. The last

section was focused on performance indicators relevant to the use of marketing channels. The demographic data of the respondents was established in Table 1.

Table 1- Sample characteristics

Category	Classification	Percentage (%)	
Gender	Female	62	
	Male	38	
Age	20 – 29	7	
	30 - 39	51	
	40 - 49	39	
	50 – 59	3	
Academic Qualification	Bachelor's degree	46	
	Master's degree	49	
	Doctorate	4	
	Post doctorate	1	
Experience in working with the company	<2	16	
	2-10	67	
	11-20	161	
	21-30	1	
	Sales & Medical Representatives	38	
Field of the work	Product Manager	28	
	Key Account Manager	11	
	Area Sales Manager	3	
	Sales Manager	7	
	Marketing Manager	7	
	General Manager	6	

From Table 1 it is clear that 51 % of respondents were 30 to 39 years of age group followed by 39% of respondents belonged to the 40 to 49 years of age, therefore it can be related that most of the respondents belong to an age group of 30 to 49 years. Most respondents (62%) were female whereas 38% of respondents were male. According to the collected data, 49% of respondents have a master's degree and 46% of respondents have a bachelor's degree. Regarding experience in working with the company, most of respondents (67%) belonged to the 2-10 years, 16 % of respondents

belonged to the 10-20 years and only 16% of respondents were less than 2 years in company. In terms of field of work, 38% of respondents were Sales & Medical Representatives and 62% of respondents occupy middle and top management positions within the organizations they belong to.

The main communication channels used by pharmaceutical companies to interact with HCPs, based on the answers provided by specialists from the marketing and sales departments of pharmaceutical companies from Romanian market are presented in Table 2.

Marketing channels by the company	Percentage (%)
Sales & Medical Representative Visits	91.3
Medical Conferences & Events	71
Print Advertising (Medical Journals, Magazines)	30.9
Online, TV & Radio Advertisements	41.2
Email marketing	39.7
Social media	47.1
Website (Search Engine Optimization (SEO) and Search Engine Marketing	36.8
(SEM))	
Webinars & Virtual Events	51.5

Table 2 - *Marketing channels used by the pharmaceutical company*

From Table 2 most pharmaceutical companies used Sales & Medical Representative Visits (91.3%) and Medical Conferences & Events (71%) as an offline marketing channel. Also, 51.5% of companies used Webinars & Virtual Events as an online marketing channel followed by social media (47.1%). Other hybrid marketing channels used by the pharmaceutical company are Online, TV & Radio Advertisements (41.2%), Print Advertising (Medical Journals, Magazines) (30.9%), Email marketing (39.7%), and Website (36.8%). The data analyzed shows that most pharmaceutical companies have adopted both online and offline

marketing channels, each recording usage percentages of over 30%.

In Figure 1 the main challenge (64% of respondents) for this approach involves allocating separate and most likely larger budgets, as companies continue to invest in both types of channels to ensure effective communication with healthcare professionals. The second challenge is regulations in the pharmaceutical industry (40% of respondents) because medical pharmaceutical information for prescription drug is subject to strict regulations and the promotion of pharmaceutical products to the public is not permitted.

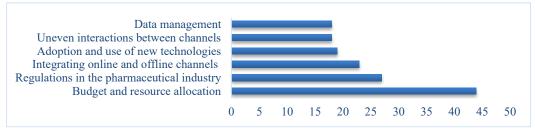


Figure 1 - *The challenges faced regarding strategic marketing flexibility*

Ensuring effective communication with healthcare professionals requires stability and tracking of relevant key performance indicators (KPIs) that reflect both the reach and quality of interactions with HCPs. In Figure 2 the results of

survey in term of KPIs used by pharmaceutical companies for evaluating the performance of marketing activities and for adjusting strategies according to market needs.



Figure 2 - KPIs for measuring performance in pharmaceutical marketing

From Figure 2 market share (66%) is the most KPI used by the pharmaceutical companies followed by engagement rate (55%) and by sales volume (52%). Return on Investment (ROI) as a key

performance indicator is utilized by only 28% of pharmaceutical companies, indicating that financial efficiency.

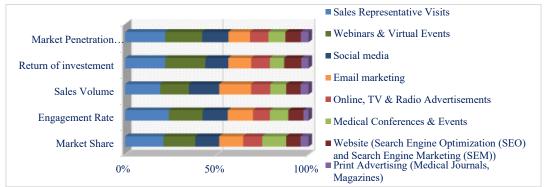


Figure 3 - The efficiency of marketing channels according to performance indicators

In Figure 3 marketing channels performance were distorted by pandemic context and digital channels (webinars, social media, email marketing, online, TV & Radio advertising) partially compensated for the lack of offline ones (for approximately 45% of total performance), moreover webinars had a similar impact to sales

visits on ROI. Sales Visits remained relevant where access was possible, which explains their strong impact on KPIs even during the pandemic. Medical conferences and print advertising had a low impact on KPIs during Covid-19 pandemic. The website had low efficiency in pharmaceutical marketing even during Covid-19 pandemic.

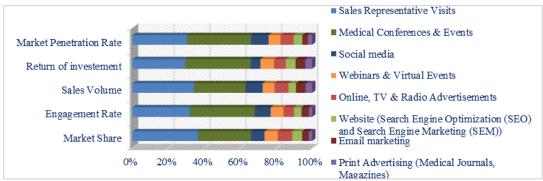


Figure 4 - The efficiency of marketing channels according to performance indicators

In Figure 4 the results of survey regarding the efficiency of marketing channels according to performance indicators after Covid-19 Pandemic clearly indicate that face to face interactions (sales visits and medical conferences) remain crucial in achieving KPIs effectiveness accounting for approximately 60% of total performance. While digital channels (social media and webinars) remain complementary and effectively supported engagement and contributed to increased sales and market penetration. Compared to the pandemic

period, email marketing has seen a substantial decline in effectiveness and, along with print media, the marketing channel with the lowest impact.

Results and Discussion

The results of the study, in the context of a COVID-19 pandemic highlight that strategic flexibility in pharmaceutical marketing is an essential factor for adaptation and performance.

The data, for Objective 1, indicate that medical & sales visits and medical conferences are the most frequently used strategic marketing channels in relation to healthcare professionals. According to the data collected, 91.3% of respondents mentioned medical visits, and 71% indicated participation in conferences and events as their communication methods. These channels offer a high degree of personalization, trust and direct interaction, having a significant impact on prescribing decisions and professional behavior. In parallel, webinars and virtual events, massively adopted during the pandemic, are used by 51.5% of companies, maintaining an active role in the postpandemic marketing mix. Digital channels such as social media (47.1%), email marketing (39.7%), SEO/SEM (36.8%) and traditional media (TV, radio, online advertising, 41.2%) are to a moderate extent, having a rather complementary role. Print advertising (medical journals, magazines) is used at a lower percentage (30.9%), indicating a decrease in relevance compared to interactive channels. These data suggest that despite accelerated digitalization, direct interactions remain dominant pharmaceutical marketing strategies.

Regarding challenges faced for Objective 2 budget and key resource allocation has challenged ensuring strategic flexibility, mentioned by over 44% of respondents. This difficulty reflects the constant pressure on pharmaceutical companies to optimize investments based on measurable results, but also to react quickly to changing contexts (e.g. pandemics, economic crises, new regulations). Another major challenge is represented by strict industry regulations (27%), which limit the freedom of marketing strategies, especially with regard to digital channels.

Findings for Objectives 3, regarding KPIs for measuring the performance of marketing strategies in the pharmaceutical industry, highlight that market share is the most used and relevant performance indicators, as shown in the literature review, followed by engagement rate and sales volume. They reflect the competitive positioning of companies and the degree of active engagement of healthcare professionals (HCPs). The return on investment (ROI) in interacting with healthcare professionals is more difficult to quantify because

the impact is indirect, long-term and influenced by multiple factors, with a face-to-face meeting being diluted over time and distributed across various communication channels.

Effective marketing channel during and after COVID-19 pandemic from this survey is medical and sales visits, dominating all key performance indicators (KPIs), especially market share, sales volume, and return on investment. Digital channels during the pandemic become very effective. Social media, email marketing and webinars have a high impact on engagement and penetration rate, with relatively low costs, hence a good ROI.

After COVID-19 pandemic, digital fatigue and a preference for direct interaction are sharply increasing the effectiveness of face-to-face marketing channels such as sales representative visits and medical conferences generating a high impact on performance indicators. However, social media and webinars continue to demonstrate a positive impact on ROI, due to their broader reach, cost-effectiveness, and capabilities to engage healthcare professionals on a large scale. The study highlights the critical importance of strategic flexibility in achieving performance and adapting marketing strategies to current environmental conditions, along with continuously measuring their performance in response to emerging challenges and opportunities.

Conclusions

Based on the findings of this study and aligned with the existing literature, effective strategic marketing in the digital age and in a volatile environment requires a flexible and adaptive framework. The study demonstrates that strategic flexibility, specifically the ability to quickly change marketing channels for interaction with HCPs and adjust resource allocation, had a direct and measurable positive impact on the performance of pharmaceutical marketing firms during and after the COVID-19 pandemic. Therefore, it can be argued that the pandemic represented an important opportunity for pharmaceutical companies to innovate and diversify communication channels, leveraging strategic flexibility, which contributed to more effective engagement and improved market

performance. These results contribute to the enlarging collection of research on strategic flexibility in marketing, emphasizing that success depends on continuous performance measurement, responsiveness to dynamic market conditions, and integration of innovative digital tools. Furthermore,

they highlight the importance of organizational strategic alignment with evolving pharmaceutical industry standards and regulations to optimize engagement and return on investment while increasing market share.

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The Professional Future of New Generations

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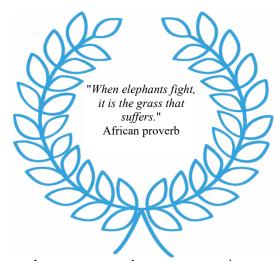
The efficiency of the transition from education to work is, by definition, a reflection of the efficiency of the economic and social system that produced it. When leaving the education and/or vocational training system, human resources have two main options: finding a job or starting their own business. Entrepreneurial qualities are essential in this respect and have manifested differently over the last 35 years of Romania's market economy. The way in which people design their career paths has varied from one generation to the following one. This paper aims to capture what this process has looked like for Generations X, Y and Z in Romania. For Generation Z, the authors studied a sample of eighty-two young people, trying to outline their professional profile, and implicitly the extent to which they will be involved in Romania's economic development, not only in terms of implementation, but also in terms of planning.

Keywords: generation Z, labour market, school to work, entrepreneurship

Introduction

The present paper aims to explore the perceptions of Generation Z regarding the school-to-work transition, with a particular focus on two of the most prevalent pathways currently available to the labour force: entrepreneurship and integration into the labour market. The human resource constitutes both the driver and the beneficiary of the entire economic mechanism, which necessitates the construction of robust bridges to facilitate the transition from professional training to employment, irrespective of the form it may take.

Romania's economic history has shaped mentalities that continue to influence the way individuals relate to the resources required for the fulfilment of their needs. The absence of private property before 1990, along with the more or less



guaranteed access to employment, gave rise to a generation whose members could hardly conceive of a professional trajectory outside the framework of lifelong, stable employment. The market economy has brought about significant changes and has unleashed latent entrepreneurial energies, which have given rise to a business environment marked by challenges and hindered by a lack of financial and entrepreneurial education.

A combination of prudence and the desire to be the beneficiary of one's labour has shaped a business landscape that, according to a study conducted by Impact Hub Bucharest, Startarium, and Datable, with the support of ING Bank, has undergone numerous transformations, gradually adapting to the market economy.

During the 1990s, there was a surge in the number of newly established firms, followed by a period of decline, and subsequently a solid recovery after the year 2000, with notable peaks in 2007 and 2017. However, not all enterprises managed to pass the test of time. Those set up during the economic crisis of 2008-201 0 faced greater difficulties, with a lower survival rate. At the same time, the proportion of new businesses in rural areas increased significantly, from just a few per cent in 1991 to 34% in 2023. However, entrepreneurship remains concentrated in urban areas, where between 60% and 66% of new businesses are launched each year, and around 20% of new businesses are in Bucharest (ING, 2024).

The professional profile of people aged between 15 and 65 has also shifted from that of the employee in a job for life to that of the entrepreneur willing to take risks and become his or her boss. Of course, this transition has not been easy in Romania because the professionally dominant generations X and Y have different characteristics from those who grew up in countries that did not have centralised economies.

Moreover, the growth trend and dynamics of the private sector, strongly influenced by digitisation, have been shaken by the financial crisis of 2008 and the economic and health crisis of 2020, and this has led to a reset effect in the business environment and has changed employment relationships from permanent contracts to so-called gig contracts. The gig economy is transforming fundamentally the way we work, shifting from traditional employment to more flexible, independent arrangements (Hwang, 2024).

The gig economy both requires and demands a different way of thinking about entrepreneurship, a different attitude to risk and stability, and a different construction of employment relationships. The socio-demographic effects of the gig economy can be seen from various dimensions and layers. Studies underscore that gig work is more attractive to younger workers, most of whom set flexibility and autonomy as a priority vis-à-vis the standard employment perks available in full-time positions (Berg, 2016). Stability has been replaced by dynamism; once measurable risks have often turned into uncertainties, and although the labour market remains heavily regulated, it tends to absorb economic shocks in a reactive rather than proactive manner.

The paper is structured in three main parts, each addressing a specific objective:

The first part aims to present the professional characteristics of Generations X, Y, and Z, offering a comparative perspective on their values, expectations, and approaches to work.

The second part focuses on the evolution of the Romanian business environment, to understand the context in which the human resource relates to its professional future.

The third and final part is dedicated to a case study based on a self-administered questionnaire distributed to several young people from Generation Z, particularly third-year students at the Faculty of Business Engineering Entrepreneurship, Management (FEBEM) from the University POLITEHNICA Bucharest, who undergo training in entrepreneurship. The objective of the study is to investigate respondents' attitudes towards the from school about transition to work, entrepreneurship and the labour market.

Methodology of Research

To support their proposed approach, the authors used a nonprobability convenience sample of 82 third-year students from FEBEM. The selection of the sample was based on the following arguments:

• The third-year undergraduate students from FEBEM start in June 2025 the internship

activity for 3 months, so the professional perspective, even if it has been ignored so far, becomes a clear and mandatory presence in their lives.

- Respondents completed the common core curriculum and accessed specialised subjects specific to entrepreneurship.
- Respondents belong to Generation Z.

The bibliographical analysis was also important, the authors selecting scientific papers from academia as well as information from the online environment to argumentatively support the chosen theme and its importance.

Professional characteristics of generations X, Y and Z

Research on American society established generational labels with traits reflecting realities of the US-born individuals, although exact start and end years aren't universally agreed upon. Generation X faced rapid social and technological changes, resulting in economic and family instability, shaping their expectation of job insecurity and preference for autonomy over supervision. With globalisation, characteristics of Generation Y and Generation Z are not limited to the US but are seen globally. Generation X values clear instructions and freedom to work independently due to their upbringing in a context of uncertainty and change, where job stability was not guaranteed (Raiu, 2021).

The generational theory emphasises different characteristics of Generation X and Generation Y that are important when making career-related choices. Generation X is characteristic by entrepreneurship, independence, individuality, constant learning, courage to make mistakes, and pragmatism. Generation Y is characteristic by optimism, self-confidence, high self-worth. superficial knowledge, cosmopolitanism, naivety, technological intelligence, and versatility. The perspectives of Generation X and Generation Y on work and careers also differ as follows: Gen Xers see a career as a means of creating wealth for themselves and their families, whereas Gen Yers primarily think of self-fulfilment and their own and their families' well-being, which does not conflict with a career. (Staniauskienė and Urbonienė, 2018). Generation X does not believe in working more, but they believe that instant work gives the best impression.

Hence, they choose to work in informal settings; they want to express their opinions. This kind of atmosphere in the workplace makes this generation come out of their shell and allows them to express ideas and better demonstrate their achievements. In addition, Generation X works on what is designed and recommended and is generally independent (Yudhaputri et al., 2021).

For their temperament, they want an enjoyable and free working environment. Therefore, they prefer working for comfortable agencies or setting up their own business. They have e xpectations such as flexible working hours, a pleasant working environment or skill-based promotion (Berk, 2013).

Members of Generation X are sceptical of being devoted to one organisation, attachment to one workplace; therefore, they look for quick ways to make money, are ready to take on risks and work for themselves. Generation X is not opposed to the institution as such; however, individuality is the that determines their decisions. feature Summarising the dynamics of Gen X's career choices, it is important to emphasise that sociocultural factors often determined their career choices and highlight the tension created by such a choice due to socio-cultural circumstances. It was also established that the career choices of this generation were based on a high level of responsibility and independence. (Stanisauskienė and Urbonienė, 2018).

In Romania, Generation X has gone through several difficult economic moments, such as the Great Recession and the Financial Crisis of 2008. For those individuals who are part of the active population cohort, which in 2022 was aged between 37 and 57, it happens that they are the main economic support of the state. Knowing the challenges of the last 30 years in Romania (the Revolution of 1989, the Financial Crisis of 2008, the crisis generated by the Covid-19 pandemic), the general wealth level of those who are part of Generation X is somewhat higher than in the rest of Eastern Europe. Thus, the challenges of these generations lie in their ability to maintain the consumption patterns of both their parents and their

children, as none of these categories is completely independent in the face of rising healthcare, education or even property costs (Bahnean and Panta, 2022).

The second section of the paper will focus on the entrepreneurial behaviour of Generation X in Romania. Generation Y entered the labour market during an economic boom when jobs were available and accessible. This shaped their mindset toward short-term career choices and territorial and professional flexibility, giving them the reputation of being unpatriotic, overconfident, and capricious. This generation prefers horizontal to vertical collaboration and hierarchical relationships. They won't simply accept "no" when management doesn't trust their ideas. They tend to be faster and more efficient than other employees (Wong and Chin, 2016). Generation Y have high expectations about a technology-driven workplace, pursues continuous advice about the quality of their job, never views their supervisors as subject matter experts because they know where to obtain the Information needed for their job (Harlianto and Rudi, 2022).

According to Mihalcea et al (2012), Romanian Generation Y shows a strong entrepreneurial drive, staying well-informed and aspiring to be their bosses. They are willing to work hard when their actions align with their passions and welcome those environments that support their development, both personal and professional. However, despite their receptiveness to entrepreneurship, they are not without barriers, including limited legal support, lack of funding, difficult credit conditions and general economic instability. The study finds that Gen Y approaches entrepreneurship with a costbenefit mindset. While many are motivated by the potential for high earnings, they remain realistic about the economic and structural challenges involved (Mihalcea et al., 2012).

Members of Generation Z are the first global generation who will "have more in common with their global peers than they do with adults in their own country". The first generation was born into a digital world where instant access to information is constantly available everywhere. They are avid consumers of technology and fans of the digital world. As true digital natives and the only

generation raised exclusively with a technological influence, Generation Z is very used to interacting, sometimes exclusively, in the digital world (Nikula et al., 2020).

Generation Z place a higher value on face-toface or in-person communication. Many are expected to enter the workforce at an early age through apprenticeships, moving away from traditional education and opting instead for online learning. For Generation Z, school is not just seen as a time for intellectual development; it is primarily seen as preparation for a career and financial success. They are not just focused on getting good grades or passing classes; they are more engaged when they can see how their knowledge and skills will be applied in the future.

Generation Z is not primarily motivated by money. They are more motivated by the opportunity for career advancement and the confidence to do a good job. Interestingly, they often experience conflict within their peer group. They tend to be self-focused and critical of others, with one in three considering their colleagues to be lazy (Raiu, 2021).

According to a study conducted in Romania by Iorgulescu (2016), the top two values for members of Generation Z were career advancement and salary. They tend to prefer working independently rather than in groups, largely due to a potential lack of social skills stemming from their extensive interaction in virtual environments rather than in real-life settings. While in the United States, Generation Z has been noted for a stronger entrepreneurial spirit compared to previous generations (Farrell and Phungsoonthorn, 2020), Romanian members of Generation Z place less importance on professional autonomy. They prefer to work as part of a team in an open office environment and expect guidance from their superiors. Generation Z also prioritises cultivation of positive relationships within the workplace. They have a strong need for security, reflected in their preference for stable jobs and competitive salaries. When thinking about their professional development, Generation Z tends to place greater importance on soft skills over hard skills (Iorgulescu, 2016).

Based on a McKinsey and Company Study, in the coming decades, Generation Z will be the driving force behind the productivity gains needed for Romania to reach convergence with the EU-27 average. To accomplish this task, Gen Z will need to cultivate six key attributes: educated and equipped with skills to remain relevant in a fastchanging economic environment, which necessitates opportunities for continuous education and skills training, entrepreneurial and proactive in building next-generation regional and global smalland medium-size enterprises, financially stable to maintain steady incomes while saving and investing to help support the rising pension burden, mentally and physically healthy to maintain productivity and minimize the burden on the healthcare system.

Many employed Gen Zers report a lack of digital skills. Those with higher education express a need for more career-oriented training. The McKinsey survey shows that only 70% of Generation Z graduates are employed in their field, typically higher-paying sectors such as IT and healthcare, and 46% are considering a career change. Many Gen Zers express entrepreneurial ambitions, but most would prefer jobs in the private or public sector for financial security (Dimitriu et al., 2023).

The evolution of the business environment in Romania

According to the study made by Impact Hub Bucharest, Startarium and Datable, with the support of ING Bank, the evolution of entrepreneurship in Romania has undergone significant changes over the last three decades, moving from a predominant concentration in the big cities - especially Bucharest - to a more even distribution nationwide. This trend highlights a geographical spread of entrepreneurial initiative, suggesting that business opportunities are becoming increasingly accessible across the country. Cities such as Cluj-Napoca, Constanta, Brasov and Timisoara have kept a relatively stable annual share of 2-4% of all new businesses. Although not dominant, this indicates a stable and sustained activity compared to other regions.

Since the 1990s, there has been a considerable increase in the share of 'other localities' in new business start-ups, reaching percentages of over 60-70% in most years. This phenomenon highlights an

expansion of entrepreneurial initiative also outside the large urban centres and a more balanced distribution of economic activities at the national level.

In 1990, Bucharest held a significant share in the entrepreneurial landscape, at the beginning of the period analysed, accounting for almost 44.68% of new businesses. Over time, however, this proportion declined as other cities became increasingly active. However, the present is bringing Bucharest back to the top of the list of cities generating new businesses, with a percentage increase of over 21% in 2023. This indicates, simultaneously, both the continued expansion of entrepreneurship outside the big cities and a revaluation of the capital as an attractive economic centre (ING, 2024).

In terms of entrepreneurial behaviour, according to data from Global Entrepreneurship Monitor (GEM, 2024), the period 2011-2015 was the peak period for entrepreneurial intentions and initiatives. Unfortunately, these intentions did not generate sustainable businesses, after 2015, seeing a decline in entrepreneurship, accentuated after 2020, probably due to the pandemic and global economic uncertainties. The large gap between intentions and reality (between intentions and Total early-stage Entrepreneurial Activity - TEA) highlights structural barriers in the Romanian entrepreneurial landscape: difficult access to finance, bureaucracy, legislative instability, etc.

In the last two years, entrepreneurship in Romania seems to be in a stagnation phase, from which it will not emerge without better targeted incentives (Figure 1). The 2007-2015 segment coincides with the period when Generation X and early Generation Y were active on the labour market. The enthusiasm in this period perhaps reflects the efforts to adapt to the market economy and the liberalisation of access to European markets after Romania acceded to the EU (2007). After 2020, the entry of Generation Z does not seem to have brought a revitalisation, which correlates with studies showing that this generation is more cautious, oriented towards security and stability rather than risk.

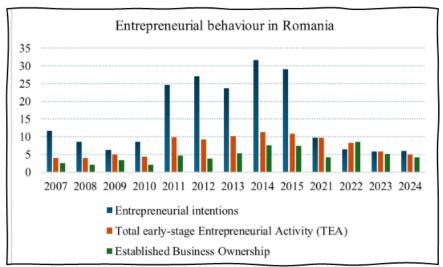


Figure 1 - *Entrepreneurial behaviour in Romania* (Source: GEM, 2024)

Entrepreneurship as a career development opportunity has increased between 2007 and 2024, from around 62% in 2007 to over 90% in 2024, with human resources increasingly valuing professional autonomy and private initiative (Figure 2). This shows a change in the mindset regarding the choice of career path, at least at the level of intention. The increase in the attractiveness of entrepreneurship from a professional point of view, however, does not correlate directly with a proportional increase in the number of entrepreneurs. Younger generations (Y and Z) are most likely to be attracted to the field,

but they are also the ones who often remain on the "dreaming" stage. Their perception is influenced by a myriad of factors such as success models promoted in the media, access to online resources and entrepreneurial education, the flexibility of remote working and the digital economy. Moreover, the educational and digital environment contributes the normalisation of the idea entrepreneurship is a natural career path, not just an alternative to not having a job. However, as things stand, there is a significant gap between desire and reality.

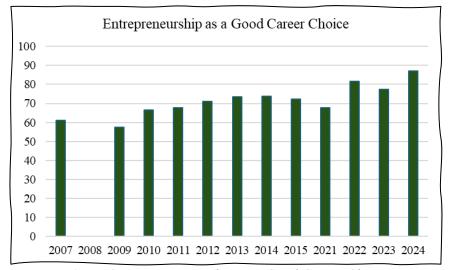


Figure 2 - Entrepreneurship as a Good Career Choice (Source: GEM, 2024)

The involvement of policy actors is essential to transform this perception into concrete behaviour and cannot be achieved without investment in financial and entrepreneurship education and targeted support for start-ups and SMEs.

In terms of entrepreneurial behaviour by generation, the developments outlined below are relevant. The data available on onrc.ro allow us to have an analysis of this evolution since 2013. Although Generation X was faced with freedom in the early 1990s, which was initially marked by the post-communist transition, they tried to accumulate information and make up for lost time. However, the accelerator pedal was always followed by the brake due to a lack of education in the field. However, the share of entrepreneurs in the total number of legal entities by age has been and remains the most consistent, considering the data available on onrc.

Ro. Their dominant share in 2025 suggests perseverance, adaptability and consolidation (ONRC, 2025).

The share of Gen Y entrepreneurs has also doubled over a decade (from 11.45% in 2013 to 23.39% in 2025). This development indicates an increased interest in entrepreneurship, but not at the expected pace for a generation perceived as "digital natives" and better prepared in theory. Under 29 in 2013, only 11.45% of entrepreneurs were Generation Y. In 2025, having reached 30-49 years of age (the peak of career potential), Gen Y only accounts for 23.39% of all entrepreneurs significantly below Gen X (51.35%). While there is an absolute increase, their share does not fully reflect the numerical and educational potential of the generation (Table 1).

Table 1 - *Entrepreneurial behaviour by generation (2013-2025)*

	August 2013	Other 2025	Other 2013	April 2025
Generation X	29-39 years old	29-39 years old	40-59 years in 2013	40-59 years old
	28,99%	23,39%	46,87%	51,35
Generation Y	<29 years old	< 29 years old	30-49 years old	30-49 years old
	11,45%	7, 94%	56,55%	23,39%

(Source: calculations from ONRC, 2025)

The analysis of the evolution of the entrepreneurial trend can also be carried out by age, not only by generation, at the 2013 and 2025 levels. Thus, we observe a decrease in entrepreneurial involvement among young people (under 40) between 2013 and 2025, from 28.99% in 2013 to 23.39% in 2025. For those under 29, the decrease is even stronger: from 11.45% (Gen Y in 2013) to 7.94% (Gen Z in 2025). Young people in 2025 are less engaged in entrepreneurship than young people in 2013, even when comparing different generations at the same ages.

As for the 40–59-year-olds, those who are part of Generation X in 2025, they have consolidated their position in the entrepreneurial landscape, increasing from 46.87% to 51.35%. Not the same

can be said about the 30-49 age group, which in 2013 had a share of 56.55% and in 2025 they reached only 23.39%, decreasing by about 41%. One possible explanation for this may be that many Gen Years have been discouraged from taking entrepreneurial risks, the post-2008 financial crisis, the COVID-19 pandemic and post-2020 inflation all being factors tempering entrepreneurial spirit.

By contrast, Generation X, with maturity and expertise as its main advantages, has weathered economic turbulence by taking advantage of the stabilisation of existing businesses. Generation Z, a generation that is still, or should still be, in the educational and vocational training system (aged between 13 and 28), will have a significant impact

on the future direction of the Romanian economy from an entrepreneurial point of view. The unique potential of Generation Z is highlighted by Cirstea and Anagnoste (2023). This generation's mindset has a significant impact on the entrepreneurial landscape. Their tech-savvy, globalised, openminded perspective is above any other generation's. Zoomers are a group of contrasts. They are individualistic and socially aware, communicative and anxious, creative and cynical. They are also eclectic, tolerant, impatient and want to understand themselves and the world around them. They are likely to take up entrepreneurship to create the life they desire and solve today's pressing challenges (Cirstea and Anagnoste, 2023).

The case study, presented in the final section of our paper, will demonstrate how members of Generation Z, as represented by a sample of 82 third-year students from the Faculty Entrepreneurship, Engineering and Management, perceive entrepreneurship and the labour market as potential career paths. Based on the data obtained, and by extending our research into the future, we will be able to paint a picture of Romania's economic future, without claiming to exhaust the subject, of course. The future is currently being built by Generations X and Y, but it belongs to Generation Z. It will be interesting to see to what extent the economic model that has worked in Romania will retain its characteristics.

Generation Z facing the professional future: between entrepreneurship and labour Market

The questionnaire distributed to the students in the sample comprised 38 questions designed to highlight the following aspects through the responses received:

- a. The subjects' career choices at the time of graduation and after five years.
- b. How they relate to their professional future when choosing a job; the values that guide them; the factors that influence their choice; and where they find relevant information about this professional path.
- c. How do they approach their professional future when considering entrepreneurship as a career path? What motivates them to make this decision? What sources of information and training in this field have they accessed so far?
- d. What is their perception of the Romanian business environment, the opportunities and challenges it generates, and how do they react to economic crises?

In terms of career choices, 79.2% of students want to find a job immediately after graduation, while only 20.8% want to start their own business. However, these percentages change when the time horizon is extended to five years after graduation. Thus, 59.7% want to open their own business, while 40.3% still want to find a job that suits their aspirations (Figure 3).

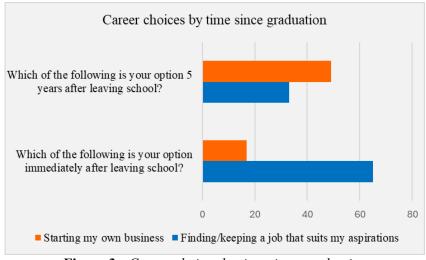


Figure 3 - Career choices by time since graduation

Their inclination towards an entrepreneurial environment is clear, but they are also attracted to the idea of deferring responsibility for running their own business. When asked about their ideal job, only 1.2% said they wanted to have their own business. Meanwhile, 34.1% said they wanted to work in a large corporation with clear career paths, and 26.8% said they wanted the freedom that comes

with geographical flexibility in the workplace. When asked, "If you had the choice between a stable job with good pay and a risky but exciting start-up opportunity, which would you choose?", the answers showed a balance between those who were enthusiastic about taking risks and those who wanted to analyse the situation according to their life stage (Figure 4).

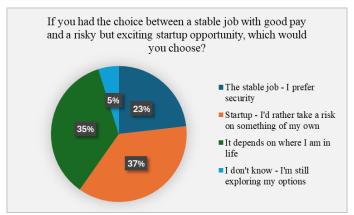


Figure 4 - A stable job or a startup opportunity

The respondents are no strangers to the idea of running a business: 19.5% have already started their own business, and the same percentage have an idea they are working on. However, turning an idea into reality is a path that some of them do not see themselves taking shortly. When asked to prioritise the most important aspects when choosing a job, the top three were consistent pay, professional

development opportunities, and the work Conversely, the least important environment. aspects were work environment/relationship with organisational colleagues. culture and possibility of working abroad. Job stability was given medium importance, and flexible working hours were given medium to high importance (Figure 5).

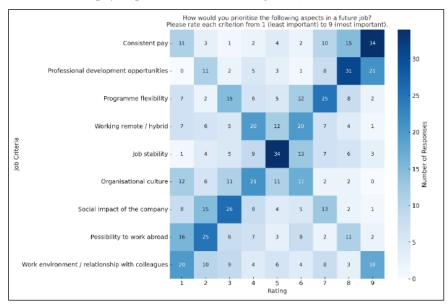


Figure 5- Factors influencing job choice

More than half of respondents (57.3%) said that it was so important to them to align their values with those of their employer that they would not work for a company whose values they did not fully share. Only 3.7% of respondents said that their employer's brand was important, and the most common reasons for getting a job were benefits

(39%) and promotion opportunities (30.5%).

A negative work environment is the second most common reason for people to quit their job, after work-life balance being ignored (Figure 6). In conclusion, it is more likely that a job will be rejected or quit if the psycho-social balance is affected for more than half of the respondents.

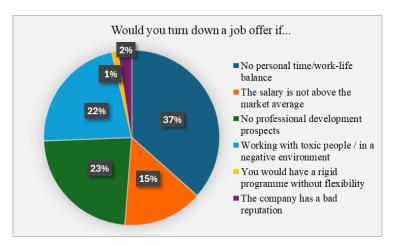


Figure 6 – *Reasons for rejecting a job offer*

Over 91.5% of participants obtain information from dedicated websites, with around 61% going directly to company sites. Additionally, 36% access information via dedicated forums or social media. 31.7% of respondents follow social media as a channel when looking for career-related content. When it comes to decision-making, 41.5% of respondents prefer to make it on their own, while 32.9% value the input of close family members. Only 11% rely on mentors in their field, and 7% rely on their teachers. In conclusion, from an employee's perspective, Generation Z values independence, freedom, stability, a consistent income, and a friendly work environment.

In the following, we will examine how the 82 students respond when they adopt the role of an entrepreneur, exploring how their behaviour and attitudes change when they step into the shoes of a business owner. The desire for independence is the main motivation for starting a business (32.9%), followed closely by a passion for a particular field (23.2%). The need for additional income and a lack of good job opportunities are also important factors. When asked about their perception of the role of an

entrepreneur, 56.1% saw it as an opportunity to express their ideas and creativity and to enjoy freedom and autonomy. Seventeen per cent of them are motivated by necessity or a lack of opportunities, but only 2.4% say they see themselves as entrepreneurs driven by necessity, while 37.8% see themselves as entrepreneurs driven by vocation.

Regarding their entrepreneurial knowledge, 53.7% of respondents acquired it during their university education, while 19.5% gained it during their secondary education. (Figure 7). Therefore, the formal education system plays an important role in shaping entrepreneurial behaviour.

Information received through formal education is supplemented by information obtained from digital media and YouTube/podcasts about business. This was the option chosen by 52.4% of respondents. We asked them to identify the biggest obstacle to starting a business, and 64.6% of them said it was accessed to finance. The second most popular answer was the lack of experience (54.9%), and the third was the fear of failure (47.6%).

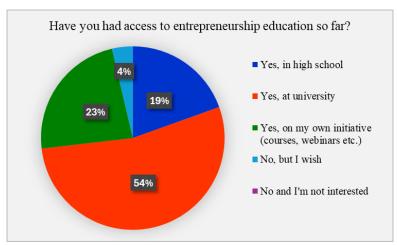


Figure 7 – *Entrepreneurial knowledge*

Their answers on how they would relate to their employees were also relevant. The main source of recruitment is still job platforms (47.6%), but this percentage is about half of the percentage when compared to the situation when respondents look for a job for themselves (91.5%).

The top three qualities that employers expect from their employees are creativity and critical thinking (53.7%), team loyalty (53.7%), and effective communication (47.6%). Interestingly, professional ethics came last, with only 13.4% of the choices. These three qualities also form the basis of 40.2% of the answers that ranked attitude and team involvement as the most important factors when evaluating employees. However, when it comes to evaluation, measurable performance is ranked second (31.7%), indicating a pragmatic approach to measuring efficiency through the achievement of objectives.

Together with advanced digital competencies, creativity and critical thinking are also at the top of the qualities that respondents perceive in members of their generation. This demonstrates their preference, as entrepreneurs, to collaborate with or hire employees from this age group. According to the respondents, the disadvantages of using their generation as labour resources include low stress tolerance (61%), a desire for quick results (52.4%) and a lack of experience (40.2%). This denotes a good knowledge of the weaknesses that characterise them, but, being aware of them, they are willing to

counteract this with a friendly (57.3%), open and collaborative (35.4%) attitude. Lack of involvement (30.5%), lack of respect towards colleagues (25.6%) and dishonesty (15.9%) are characteristics that the respondents would not tolerate in their employees.

We could see from their answers a consistency of choices in the situation where they are asked to play the role of the employee or the entrepreneur, and this consistency is evident in the way they approach both roles. The final set of questions aims to analyse the extent to which their psychological profile will help or hinder them in transforming the presented roles into reality.

In response to the question, 'How comfortable are you with uncertainty (e.g. variable income or risky decisions)?', 43.9% said 'quite comfortable', viewing this as part of growing up, and 20.7% said 'very comfortable', as they like challenges and the unknown. Therefore, more than half of the respondents have the determination to navigate the uncertainties of the professional landscape.

At the same time, 90.3% strongly believe in their ability to build something from nothing. If a project fails or goes wrong, 63.4% analyse the situation and try again, as opposed to 22% who are temporarily discouraged but do not give up altogether. Only 1.2% of respondents avoid getting involved in risky projects; the rest take the risk and continue, sooner or later, whether or not they look for different ways of solving the problem. However, 17.1% feel vulnerable in the face of economic changes and

believe that an economic crisis could significantly impact their professional future. 64.4% believe that they must always be prepared to adapt to the changes that such a crisis could bring about (especially given that they have all experienced the challenges of the 2020s).

When we asked about the most important asset for professional resilience in an economic crisis, 68.3% of respondents said it is based on the defining qualities of Generation Z, namely flexibility, adaptability, creativity and innovation. Another 25.6% said it is based on financial and economic knowledge acquired.

Conclusions

The labour market and entrepreneurship are two interconnected economic areas that cannot function effectively without each other. At least, as long as the labour resource is not fully replaced by AI, the direction of movement of these two areas must be a common one. The reasons for choosing one of the two professional areas are different, often resulting from objective factors that are difficult to control in term. These include (entrepreneurial and financial), economic crises or stability, and economic and political will. Factors related to how labour resources view themselves in terms of the qualities that recommend one of the two professional paths are also included.

The research began with an examination of the factors influencing the career choices of Generation X and Generation Y in Romania. The transition to a market economy shaped the mindset and life experience of Generation X, establishing them as one of the most stable and determined entrepreneurial generations. At a time when information about the market economy was scarce, they had a significant influence on both the business environment and the labour market.

Romania's Generation Y is the generation more likely to enter the workforce than to become entrepreneurs, having grown up in an era of abundant employment opportunities. Those aged 26–34 prefer local private companies, avoiding state-owned companies. A job is accepted by them based on the salary and the impression made during

the interview. Cash bonuses are also desired by them (Raiu, 2021). According to information from the National Trade Register Office (onrc.ro), the number of Generation Y entrepreneurs has doubled in the last ten years. This shows that more young people are interested in entrepreneurship, but not as many as expected. Generation Y is a generation that grew up with the internet and is thought to be better prepared in theory.

Romania's future is being shaped by Generation Z, the youngest labour resource, who are now on the threshold of choosing their career path. The results of the study conducted on 82 FEBEM students revealed the distinctive characteristics of Generation Z within the analysed sample. While the traits of Generation X in Romania were shaped by the centralised economy, the traits of Generation Z in the sample are similar to those in countries that did not experience a centralised economy.

Romania's economic prospects depend on the choices of this generation, as they have the power to change the direction of our society. They represent the employed, the employable, and the employing human resources, and they have the power to shape a future that generations X and Y are projecting according to their patterns. If we want a joint future based on economic well-being and balance, it is crucial that generations X and Y act as stepping stones for generation Z.

For this future, it is generations X and Y who are responsible for building bridges that will allow the baton to be passed on to generation Z. Generation Z is a special generation that believes in its strengths, makes decisions quickly, but needs the support of others to succeed.

For them, entrepreneurship is the field towards which they are heading and the one on which the Romanian economy can be developed. But it is up to the X and Y generations to create the framework in which their ideas can manifest themselves without the obstacles that come from the lack of political will and economic competence of those who can support entrepreneurship of vocation and opportunity, and not one of necessity.

The paper has limitations due to the small number of respondents and their professional background in entrepreneurship, but this can be expanded to include Generation Z members with different levels of education and attitudes towards formal and informal training. The answers they provide will undoubtedly bring greater clarity to the economic framework that will shape the evolution of the Romanian business environment. This is

because the economic contributions of Generation Z members, whether as employees or as young entrepreneurs, cannot be ignored. This is particularly significant as it will contribute to Romania's economic future.

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bstract

The Influence of Artificial Intelligence on Talent Management

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This exploratory literature review investigates the structural impact of artificial intelligence systems on contemporary talent management, with particular attention to the generational dynamics introduced by the entry of Generation Z into the workforce. Based on academic and applied sources, the study identifies a pattern of systemic misalignment between AI-driven practices in recruitment, performance evaluation, and employee engagement, and the emerging expectations of digitally native professionals. These expectations include a demand for transparency, ethical accountability, non-linear career development, and participatory governance. The analysis suggests that artificial intelligence in HR should be conceptualised not only as a set of operational tools but also as a cultural architecture that mediates institutional power and identity formation. The study adds to management theory and practice by showing that AI-driven HR needs to balance fast technological change with inclusive decision-making and a willingness to learn.

Keywords: artificial intelligence, human resources management, generation Z

Introduction

In the period between 2022 and 2025, artificial intelligence has transitioned from the status of speculative innovation to that of institutional infrastructure. Initially deployed in isolated automation tasks, it has progressively become a determining factor in how decisions are made, how hierarchies are operationalised, and performance is both conceptualised and enforced. This development is most evident in the domain of human resource management, where AI is no longer supplementary but constitutive of organisational logic (Deloitte, 2005). The transformation is not merely technological in scope but epistemological in depth. It alters the very grammar through which labour, value, and identity are understood.



This shift in function corresponds to a redefinition of what constitutes legitimate knowledge in managerial practice. Whereas

previous models relied on qualitative judgment, peer evaluation, and negotiated meaning, current systems increasingly depend on quantifiable proxies, predictive analytics, and automated classifications. As a result, the authority to assess competence and potential is progressively delegated to algorithmic systems, which operate on models trained not only on past data, but on past assumptions. This has the effect of reifying institutional biases in forms that appear neutral, mathematical, and thus unassailable. implications are structural, not circumstantial (Bouhsaien and Azmani, 2024).

This evolution coincides with a demographic shift whose significance is not accidental. The entry of Generation Z into the labour market introduces a population cohort whose digital literacy is not acquired but inherent. These individuals have been structurally conditioned by platform economies, algorithmic environments, and real-time feedback systems (Gallup, 2023). Consequently, their approach to institutional life is not passive. It is marked by scrutiny, norm sensitivity, and a preference for systems that provide procedural and moral transparency coherence. expectations are shaped not only by technological immersion, but also by broader cultural narratives concerning equity, autonomy, and psychological safety (Hazan et al., 2024).

For this cohort, legitimacy is relational and contingent. Systems that fail to offer recourse, explanation, or dialogue are unlikely to be interpreted as credible, regardless of their computational precision. As such, the deployment of AI in HR is not met with indifference, but with critical attention that identifies structural opacity and unilateral evaluation as deficiencies rather than efficiencies. Trust, in this context, is not assumed but must be continuously produced through interactional and ethical alignment (WEF, 2024). The juxtaposition of algorithmic governance with generational expectations produces a structural contradiction. Systems optimised for efficiency, uniformity, and scale are now subject to the evaluative gaze of actors who prioritise personalisation, ethical accountability, participatory logic. What results is a growing mismatch between design intent and experiential reception. AI-based HR systems, while technically consistent, are perceived by this demographic as insufficiently relational and excessively reductive. The systems evaluate without explaining, classify without dialoguing, and intervene without relational context. These characteristics are not incidental; they are structural consequences of their optimisation goals.

The contradiction is sharpened by the performative nature of institutional discourse. Organisations often position AI adoption as an indicator of innovation and fairness, yet such messaging rarely aligns with the lived experience of employees subjected to these systems (KPMG, 2025). The rhetoric of neutrality conceals a deeper epistemic asymmetry: the authority to define what counts as "talent" is no longer distributed but consolidated in automated tools whose logic is inaccessible to those evaluated by them. This misalignment generates conditions of symbolic alienation, where individuals recognise that they are being observed but do not know on what terms, by what criteria, or toward what normative end. The academic literature remains largely situated within a functionalist paradigm. AI is treated as a neutral tool whose impact can be measured in terms of speed, bias correction, or predictive power. However, such analyses omit the sociocultural consequences of delegating evaluative authority t o systems whose normative assumptions are neither visible nor contestable. Few studies examine the cumulative effect of these tools psychological contract, institutional trust, or identity formation within the workplace. Fewer still address how these effects are distributed unevenly across generational lines.

Where generational analysis does appear, it is frequently descriptive rather than critical. Preferences are catalogued but not situated within the broader logic of digital governance. As a result, the literature fails to account for how generational discomfort with AI systems reflects deeper ontological conflicts - between procedural rationality and relational understanding, between quantification and meaning, between control and recognition. These are not peripheral concerns. They constitute the ideological fault lines of contemporary organisational life.

This study responds to this omission by framing AI in HR as a socio-technical system whose legitimacy is contingent, not intrinsic. Its exploratory objective is to understand how the intensification of AI between 2022 and 2025 has impacted talent management practices and how those practices are received, interpreted, or resisted by members of Generation Z. The research is guided by three questions:

- What concrete transformations in HR architecture can be attributed to AI deployment?
- How are these transformations situated within the normative frameworks of younger employees?
- What hybrid configurations emerge when algorithmic processes confront human-centred expectations?

The significance of these questions is not only diagnostic but normative. They seek to clarify not simply what is happening, but what is at stake. If AI systems are to manage talent, then the concept of talent it self becomes subject to algorithmic inscription. This implies that the ontological status of human potential - its visibility, its measurability, its definitional boundaries - is no longer negotiated but coded. Such a transition demands scrutiny, not celebration.

The method employed is a narrative literature review, grounded in a thematic synthesis of academic and grey literature sources. The aim is not data aggregation but conceptual clarification. The review treats published work as discursive artefacts, expressions of institutional interest, cultural context, and epistemic bias. It assumes that the discourse on AI in HR is not merely descriptive but performative. It shapes the very practices it seeks to explain, and in doing so, influences the expectations, self-understandings, and organisational trajectories of those operating within its framework.

This study proceeds from the premise that no system of evaluation is neutral, and that no generation enters institutional life without normative expectations. Where these two vectors intersect - technological systems on the one hand, generational ethics on the other a space opens for empirical observation and conceptual intervention. This review is an attempt to clarify that space.

Literature Review

Although scholarly discourse surrounding intelligence in human artificial resource management has proliferated in recent years, it remains epistemologically shallow and structurally The dominant trend privileges fragmented. instrumental narratives - efficiency gains, accelerated recruitment cycles, and algorithmic neutrality - while eliding the deeper sociotechnical implications that these systems impose on organisational culture, generational identity formation, and institutional power asymmetries. The technical literature, particularly, demonstrates a troubling reductionism: it frequently translates the complexity of human potential into parametric abstractions, codified as behavioural indices or probabilistic success scores. What it fails to interrogate is the ontological redefinition of "talent" in an age when evaluative functions are increasingly outsourced to systems that neither reflect nor understand the heterogeneity of lived experience.

Artificial intelligence, as deployed in HR infrastructures, does more than automate decisionmaking. It encodes ideological hierarchies. Embedded in every training dataset, optimisation metric, and threshold variable is a managerial assumption: about what constitutes merit, what behaviours signify loyalty, and which trajectories denote promotability. These assumptions are not random; they are socio-historically inherited and operationally reified through computation. In this light, AI systems become mechanisms organisational inscription - tools that silently regulate inclusion, advancement, and exclusion, often without contestation or visibility. The absence of critical scrutiny in mainstream literature regarding these design logics constitutes a methodological blind spot with profound implications (Bouhsaien and Azmani, 2024). This becomes particularly urgent when contextualised against the demographic backdrop of Generation Z's entry into the labour force. Characterised not merely by digital fluency but by algorithmic reflexivity, this cohort has been structurally habituated to environments governed by real-time feedback, performative datafication, and predictive profiling (IBM, 2023). Their cognitive schemas are

shaped not simply by consumption of digital tools, but by their immersion in systems where identity is co-produced by interface interaction and platform logic. Consequently, they bring to the workplace a hermeneutic scepticism - an alertness to how systems perceive, classify, and act upon them.

Crucially, Generation Z's posture toward AI is ambivalent, not technophobic. Their scepticism is not grounded in fear of automation, but in the epistemic opacity and procedural asymmetry of automated systems (Vrontis et al., 2021). They are less concerned with the presence of algorithms than with their intelligibility, reversibility, and normative Systems that evaluate alignment. explanation, intervene without relational anchoring, or profile without consent are viewed not as innovations but as violations of procedural justice. The literature, however, has not kept pace with this reflexivity. Most studies that address Gen Z remain at the level of attitudinal surveys, behavioural preferences, or workplace expectations, rarely embedding these observations within a critique of the infrastructural systems that now mediate institutional life (Dawson and Agbozo, 2024).

This analytic gap is particularly visible in the IT sector. Here, the paradox is stark: it is both the crucible of AI development and the site of its most aggressive implementation. HR functions in tech firms often deploy AI tools for hiring, performance tracking, and employee development without comprehensive ethical vetting or participatory design (Tambe et al., 2019). At the same time, these organisations are disproportionately populated by Gen Z professionals, many of whom engage with these systems not passively but diagnostically. Their feedback is often informal, situationally embedded, or dispersed across subcultural networks - Slack channels, GitHub commentary, or online forums - yet it carries profound implications for organisational legitimacy (Tewari and Pant, 2020). Despite this, the academic literature remains curiously silent on how these micro-negotiations shape employee trust, emotional investment, or internal self-construction.

A related omission is the theoretical neglect of what might be termed hybrid expectation regimes. Generation Z does not conform to simplistic binaries of pro-technology versus anti-technology.

They seek systems that deliver both efficiency and empathy, clarity and co-creation. They expect performance to be evaluated with speed but also with context; they tolerate automation when it enhances agency but reject it when it occludes moral reasoning. These dual demands pose a structural challenge to conventional HR paradigms, which are largely calibrated for compliance rather than dialogue, for standardisation rather than interpretive elasticity (Tewari and Pant, 2020).

More recent literature has begun to acknowledge this, particularly through the critique of algorithmic bias and its institutional reproduction (Maghsoudi et al., 2024). Yet even here, the conceptual vocabulary remains underdeveloped. While the risks of biased data inputs are widely noted, less attention is paid to the organisational silence surrounding recourse. If an AI system misclassifies an employee, withdraws an opportunity, or generates a red flag based on questionable proxies - who bears accountability? To whom does the employee appeal? What procedural architecture exists to contest or renegotiate algorithmic decisions? For a generation with declining institutional trust, these ambiguities are not tolerable oversights; they are disqualifying failures (Saraswathi et al. 2023).

The cross-cultural dimension compounds these issues. Much of the extant literature originates from regulatory regimes in Western Europe and North America, where algorithmic governance is at least minimally constrained by institutional safeguards (Sadeghi, 2024). In post-socialist or rapidly digitising economies, however, AI is often deployed with minimal deliberation, weak oversight, and no participatory infrastructure. Generation professionals in these contexts face a double alienation: they encounter both the technocratic imposition of AI systems and the historical inertia of managerial cultures resistant to transparency (LinkedIn Learning, 2024). The discursive absence of these geographies in leading journals renders the global narrative incomplete, if not epistemically unjust.

Finally, the literature fails to produce a robust theory of organisational harm in AI-mediated HR environments. Much is written about benefits, optimisations, and future potentials, but less about the affective micro-dislocations - eroded trust,

muted participation, or institutional dissociation - that emerge when individuals realise, they are being interpreted, not understood. In this lacuna, Generation Z operates as both subject and diagnostic tool. Their resistance, disengagement, or ambivalence does not signal immaturity but epistemic friction. It exposes the limits of current models and the urgent need for new analytical frameworks (Alsaif and Aksoy, 2023).

This study emerges precisely from that epistemological discontinuity. It refuses to treat AI in HR as a neutral advancement and instead positions it as a contested site of meaning production - where values, identities, and organisational futures are being renegotiated in real time. By tracing the alignments, fractures, and latent potentials at the intersection of algorithmic infrastructures and generational ethics, the research seeks to reorient the debate toward a model of talent management that is technologically informed, but also ethically reflexive, generationally attuned, and institutionally accountable.

Methodology of Research

This inquiry does not proceed from a hypothesis in need of confirmation, nor a theoretical model awaiting validation. It begins instead with a structural dissonance—an observable, recurrent tension between the accelerationist logics of algorithmic systems and the normative expectations of a digitally native workforce. This is not an empirical detail but a methodological premise: in environments where technologies evolve faster than institutional meaning-making, rigid frameworks risk reifying precisely what requires interrogation. Accordingly, the research adopts an exploratory orientation, not as a retreat from structure, but as a means of remaining epistemologically responsive to field still in the process of conceptual consolidation (Nowell et al., 2017). The core of this investigation is a structured narrative literature review, executed through a methodologically reflexive and thematically synthesised approach. The objective is not quantitative frequency but qualitative resonance - an effort to surface, juxtapose, and triangulate the latent grammars of meaning embedded within contemporary discourse on AI in human resource management, particularly as it intersects with the evolving ethos of Generation Z. The decision to rely on secondary sources, rather than primary fieldwork, is both practical and principled. Practically, the 2022-2025 period has yielded a proliferation of academic and industry commentary, rich in contradiction and complexity. Conceptually, the terrain itself - how talent is understood, measured, and governed - has become a discursive site that warrants interpretive analysis (Viñals et al., 2024). Sources were curated from academic databases including Scopus, Web of Science, and Google Scholar, as well as from institutional repositories such as the IBM Institute for Business Value, World Economic Forum, Deloitte Insights, Gallup, McKinsey & Company, and SHRM. The inclusion of grey literature was deliberate. In this domain, consultancies and think tanks often articulate dominant paradigms before academia, shaping managerial imaginaries long before scholarly consensus emerges. To exclude such texts would be to exclude a primary vector of normative influence (Patoucha and Gareiou, 2024).

The search architecture relied on semantic constellations such as "AI in HR," "algorithmic bias in hiring," "Generation Z workplace values," "automated performance management," "digital natives in organisational systems," and "ethics of workforce surveillance." Relevance was determined not by citation count or terminological saturation, but by conceptual contribution. Out of more than seventy documents initially reviewed, thirty-eight were retained for close analysis. Each was evaluated for its capacity to either reinforce or problematize one or more of the study's core questions.

The analytical method combined deductive scaffolding with inductive emergence. Deductively, the literature was examined through the prism of three guiding research questions:

- RQ1: What systemic transformations in HR governance can be attributed to the rise of AI technologies?
- RQ2: In what ways do Generation Z professionals interpret, resist, or adapt to these systems?
- RQ3: What epistemological frictions arise when algorithmic evaluation mechanisms confront generationally specific expectations of fairness, transparency, and agency?

Inductively, the process remained open to unanticipated inflexions - conceptual drift, symbolic inversions, or silences that revealed more than explicit claims. Themes such as performance optimisation, psychological contract erosion, algorithmic legibility, hybrid human-AI dynamics, and organisational opacity were iteratively coded and refined. Analysis privileged interpretive density over representational generality. A critical decision in this process was to treat each source as a discursive artefact. Reports, articles, and white papers were not presumed to be neutral observations of reality, but speech acts that perform ideological work. A management consultancy valorising AI as a "future-ready solution" operates from a different epistemic register than a peer-reviewed critique of governance. Recognising algorithmic epistemological distinctions was essential for constructing a dialogue across knowledge systems technical, institutional, and generational.

The limitations of the study are acknowledged with rigour. The absence of empirical field data precludes direct engagement with lived workplace narratives. Yet this is offset by the conceptual breadth afforded by interpretive synthesis. More pressing is the geographical bias in the available literature. Anglo-American and Western European sources dominate, while Eastern European, Latin American, African, and Southeast perspectives remain underrepresented. This skew constrains the generalizability of findings and underscores the necessity of future comparative, context-sensitive research (Braun and Clarke, 2006).

Ethical considerations were embedded throughout the methodological arc. Sources were engaged with in good faith, situated within their institutional origins, and read critically but constructively. Claims were triangulated wherever possible, and dissonance was preserved rather than erased. The aim was not to resolve debate, but to render it more legible - particularly for a domain where technical rationalities often obscure the symbolic, emotional, and ethical dimensions of work. Ultimately, this methodology attempts to do justice to the complexity of its object: the coevolution of artificial intelligence and the generational redefinition of labour. Rather than reducing the subject to managerial metrics or sociological typologies, the approach foregrounds ambiguity, contradiction, and emergence. It treats the literature not as a repository of answers, but as a contested space in which the future of work is being actively imagined, negotiated, and contested (Nowell et al., 2017).

Results and Discussions

The integration of artificial intelligence into the operational core of human resource management has irrevocably altered how organisations perceive, classify, and engage with talent. This shift, while often couched in narratives of optimisation and efficiency, conceals a complex matrix interpretive tensions - especially when juxtaposed with the expectations and working philosophies of Generation Z (Hazan et al., 2024). The existing literature underscores several tensions that emerge at the intersection of generational workplace algorithmically-driven expectations and practices. These tensions arise from fundamental differences in how value, transparency, and agency are perceived and operationalised. To clarify these complex interactions, Table 1 synthesises key Generation Z workplace expectations alongside commonly deployed AI functionalities in human resource management.

Table 1 - Key	Generational Ex	xpectations vs.	Common AI-HI	<i>Conceins of the Europe of the Functionalities</i>
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Themes	AI Logic	Generation Z Perspective	Organizational Tension
Evaluation	Predictive efficiency	Reflexive learning	Distrust, disengagement
Identity Formation	Categorisation via data	Narrative identity	Misrecognition
Decision-Making	Centralized automation	Participatory governance	Resistance or noncompliance
Feedback and Recognition	Quantitative scoring	Qualitative feedback	Emotional dissonance

To visually summarise these critical relationships and their resulting misalignments, Figure 1

provides a conceptual model that clearly illustrates the interplay among these three key elements.

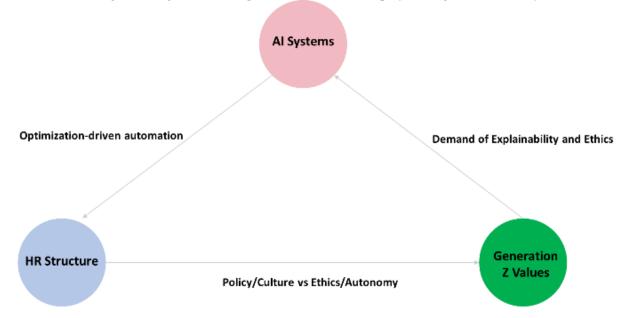


Figure 1 - Conceptual Model - AI–HR–Gen Z Misalignment Framework

One of the most salient tensions identified in the literature involves the disconnect between algorithmically defined markers of talent and the lived realities of early-career professionals. AI systems applied in areas such as candidate screening, onboarding, and internal mobility frequently rely on historical data models that privilege linear career standardised paths. competencies, and predictable behaviours. Generation Z, by contrast, often embraces projectbased work, interdisciplinary skill sets, and ethical alignment - qualities that resist conventional metrics. As a result, these tools may inadvertently marginalise individuals who are best positioned to drive innovation, creativity, or cultural renewal within organisations (LinkedIn Learning, 2024).

Further complicating this picture is the growing presence of visibility mechanisms embedded within AI-enabled HR platforms. These range from engagement dashboards to sentiment analysis engines, all designed to make employee behaviour more legible to management systems. Yet for digitally fluent workers, particularly those in Generation Z, the experience of being persistently monitored may lead to a phenomenon described in

recent literature as "engagement fatigue." Rather than inspiring trust, the constant quantification of soft skills, emotional expression, and interaction patterns can create a sense of being emotionally surveilled (Dawson and Agbozo, 2024). This undermines the relational trust necessary for meaningful workplace engagement, especially when feedback is derived from opaque or unverifiable algorithms. The same tension is observable in AI-powered performance and which learning systems, often fragment development into discrete, app-driven modules. While this level of personalisation appears progressive, it frequently strips learning of context, narrative, and mentorship - elements that are particularly valued by emerging professionals. Behind these platforms lies a "hidden curriculum," one that subtly prioritises speed, compliance, and visibility over reflection, resistance, or creativity. Promotion algorithms that reward output frequency rather than critical thought may unintentionally shift organisational definition of competence, producing environments in which metric adherence eclipses mission alignment (Maghsoudi et al., 2024).

Sadeghi (2024) shows that not all employee responses to such systems are compliant. Subtle forms of resistance - such as disengagement from feedback platforms, manipulation of scoring tools, opt-outs from intentional AI-generated recommendations - may be interpreted as signals of agency. These micro-acts, rather than representing friction to be minimised, can be read as valuable feedback indicating a misalignment between system design and user experience. A growing body of scholarship argues that such resistance should be designed for rather than designed out, serving as a prompt for iterative recalibration of HR technologies in line with evolving expectations (Palos-Sanchez et al., 2022).

Alongside behavioural resistance, emotional responses to AI-driven systems are becoming increasingly visible in organisational life. One particularly concerning theme is the emergence of algorithmic anxiety: the psychological strain induced by continuous, data-mediated evaluation (IBM, 2023). While AI systems are frequently positioned as neutral or empowering, they often impose specific and narrow demands for visibility through wellness nudges, progress dashboards, or activity tracking mechanisms - that fragment individual identity into measurable traits. For younger employees, whose careers are still forming, this can produce a persistent dissonance between how they see themselves and how they are rendered by the system.

This emotional burden is compounded by the fact that algorithmic encouragement frequently conceals coercive structures. Systems that claim to offer support may be experienced as performative, triggering stress rather than motivation. When employees feel watched rather than trusted, psychological safety is compromised - a foundational condition for creativity, learning, and collaboration. In this sense, AI-based management systems, even when deployed with the intention of empowerment, can reproduce feelings of alienation or exclusion if they fail to align with human rhythms and needs (Vrontis et al., 2021).

A further area of concern within the reviewed literature involves the differing temporal logics between AI systems and human development. Whereas AI-enabled HR tools are typically

designed around real-time data collection and continuous feedback cycles, the process of earlycareer growth tends to unfold at a more variable and less linear pace. Generation Z, still in the formative stages of professional identity construction, often requires time for ambiguity, mentorship, and personal reflection—needs that resist acceleration through automated processes. This tension between systemic urgency and human tempo creates a mismatch that many studies frame as a growing source of organisational friction (Tewari and Pant, 2020). The consequences of this temporal misalignment can take subtle but significant forms. Employees who do not meet system-generated learning milestones may be perceived as underperforming, even when their developmental rhythm is appropriate to their context or role. Managers, operating within the logic of the system, may interpret thoughtful or cautious behaviour as a lack of motivation. In more extreme cases, promotion algorithms may penalise those who deviate from standardised growth mistaking reflective progression for stagnation. These outcomes suggest that a recalibration of time is needed—one in which systems adapt to the contours of human growth, rather than the other way around (Tewari and Pant, 2020).

Another critical theme that surfaces in the literature relates to the cultural assumptions embedded within AI-driven HR systems. Despite their sophistication, many of these tools are underpinned by unexamined norms derived from Western managerial contexts, especially those shaped by U.S. or Western European traditions. These cultural scripts influence what is classified as professionalism, productivity, or potential - often in ways that appear neutral but carry exclusionary applied implications when across diverse workforces (Strohmeier and Piazza, 2015).

The challenges become especially visible when Generation Z professionals from non-Western or minority cultural backgrounds are assessed by these systems. Behaviours that fall outside dominant expectations - such as indirect communication styles, collaborative decision-making, or modest self-presentation - can be misinterpreted as disengagement or lack of initiative. In such cases, the system does not merely overlook excellence; it

reinforces cultural exclusion through invisible classifications (Vincenti et al., 2024). Crucially, these failures are not technological flaws to be patched - they are epistemic blind spots that call for deeper interventions. Addressing them requires intercultural awareness, participatory design processes, and the incorporation of plural value systems into the development of HR technologies.

Cultural misrecognition is closely linked to another widespread concern across the reviewed sources: the inadequacy of ethics frameworks currently governing AI use in HR. While many organisations have adopted formal ethics policies, published guidelines, or established oversight committees, such measures often remain symbolic. They function as performative signals of responsibility rather than as mechanisms for real dialogue or accountability (Saraswathi et al., 2023). For Generation Z, whose expectations of institutional ethics are shaped by transparency, cocreation, and responsiveness, this gap is particularly salient.

The literature suggests that ethical governance must evolve from compliance-focused models toward dialogic frameworks - systems where those subject to algorithmic evaluation have opportunities to shape and critique the tools that affect them. This may involve co-design workshops, algorithmic literacy initiatives, or internal appeal mechanisms that allow employees to contest how they are assessed (Strohmeier and Piazza, 2015). Though still rare in practice, these participatory approaches are positioned as necessary if organisations are to maintain credibility with a workforce that increasingly equates legitimacy with inclusion and responsiveness (Palos-Sanchez et al., 2022). For this generation, ethical alignment is not a benefit it is a baseline expectation.

Within this context, the IT sector is often cited as a paradoxical case. It stands as both a primary site of automation and a domain acutely aware of its limitations. IT organisations are early adopters of AI technologies and frequently operate with agile, data-driven methodologies. At the same time, they are among the first to confront the costs of overautomation: depersonalised workflows, accelerated burnout, and disengaged technical talent (Dawson and Agbozo, 2024). Several contributions advocate

for turning IT firms into experimental spaces for ethical and inclusive HR design. Proposals include embedding interdisciplinary innovation labs, forming employee councils with decision-making power, and implementing agile HR practices that reflect the same participatory values that drive technological development (Johansson Herranen, 2023). Such models could serve as blueprints for a broader transformation - where technology does not simply enhance control, but supports more reflective. democratic. approaches to managing sustainable people (KPMG, 2025).

Underpinning many of these discussions is a shared concern with how performance is defined, measured, and recognised in AI-mediated environments. The assumption that visibility equates to value is repeatedly challenged. HR systems increasingly rely on metrics such as screen time, learning completion rates, or communication frequency to assess engagement and output. However, these proxies often fail to capture less quantifiable but equally essential contributions such as emotional intelligence, contextual thinking, or creative improvisation (Qamar et al., 2021). For Generation Z, socialised in environments where communication is layered, ironic, and highly

A recurring insight in the literature concerns the growing fragility of the psychological contract between employee and employer in AI-mediated environments. This contract - though often unspoken - represents the mutual expectations that frame workplace relationships. For many members of Generation Z, these expectations include mentorship, transparency, ethical alignment, and opportunities for meaningful contribution (Tewari and Pant, 2020). When organisational systems fail to meet these expectations - whether by design or neglect - the resulting breach is rarely dramatic, but it is nonetheless consequential. Rather than provoking open conflict or mass attrition, such breaches more often lead to subtle patterns of disengagement. These may take the form of reduced participation, emotional withdrawal, or bareminimum compliance. Organisations sometimes misinterpret these behaviours as generational fickleness or lack of resilience, overlooking the systemic signals embedded in their processes

(Vincenti et al., 2024). The literature suggests that poorly implemented AI in HR functions not only reflects organisational misalignment—it may amplify it. When algorithmic systems fall short, they do not simply fail to meet expectations; they actively shape and then disappoint them. Repairing this fracture requires more than technical correction. It calls for a reconceptualisation of AI as a tool that supports and extends the psychological contract by making institutional promises visible, evaluation processes contestable, and workplace relationships more durable (Tambe et al., 2019).

Closely related to participation is the issue of language - another often-overlooked vector of power within AI-driven HR systems. The terminology used by these tools - classifications

such as "low potential," "non-standard performer," or "at risk" - does not merely describe behaviour. It constructs narratives, influences perceptions, and shapes workplace identities. These terms, generated through models trained on historical data, carry the weight of judgment even as they masquerade as neutral categories (Gallup, 2023).

Given these persistent tensions, moving forward requires rethinking traditional, automation-centric HR approaches. To illustrate a structured path towards more inclusive and human-oriented frameworks. Figure 2 proposes a post-algorithmic HR design model, highlighting key stages and design considerations for organisations navigating this critical transition.

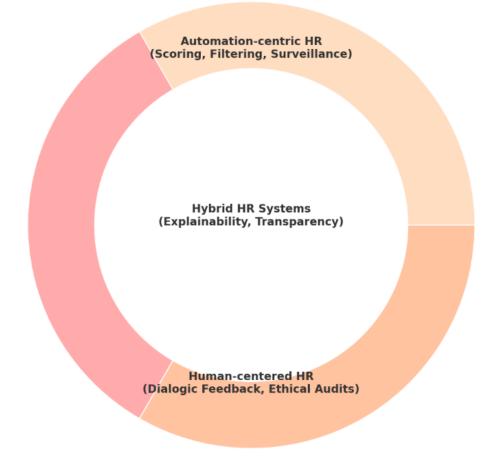


Figure 2 - Post-Algorithmic HR Design Framework

The challenge, then, is not only technical. It is cultural, ethical, and philosophical. Organisations

must move beyond the impulse to "manage by metrics" and instead begin to ask what kind of future they are building - and for whom. In doing so, they may find that AI, far from replacing human-centred leadership, has the potential to support it - if designed with care, humility, and a willingness to listen (Hazan et al., 2024).

Taken together, these findings suggest that the introduction of AI into human resource functions is not merely a matter of operational improvement. It marks a deeper cultural shift in how organisations understand people, value, and performance. The challenges raised by Generation Z are not simply generational preferences, but reflections of a broader disjunction between mechanised optimisation and human development (Johansson and Herranen, 2023). Addressing these tensions requires a shift from automation-first models to more dialogic, participatory approaches - ones that treat systems as adaptable and employees as collaborators in their trajectories.

Conclusion

The synthesis of literature presented in this study supports a structural diagnosis: the convergence of AI-mediated HR systems and the entry of Generation Z into the workforce is not a technological anomaly, but an epistemic rupture. This is not a marginal adjustment to workplace tools, but a foundational redefinition of how institutions assign value, attribute identity, and structure authority within digital environments of labour (Alsaif and Aksoy, 2023).

Throughout the reviewed material - academic, institutional, and corporate - three patterns recur with notable consistency. First, AI systems in HR tend to formalise narrow behavioural templates derived from historical data, which systematically exclude non-linear, experimental, or contextually situated trajectories of growth. Second, the operational opacity of these systems introduces a governance asymmetry: the evaluated are visible to the system, but the system remains unintelligible to those it evaluates. Third, a failure to account for emotional labour and self-narrative impoverishes the representational ecology of the workplace, reducing individuals to statistical proxies optimised for throughput rather than development (Yawalkar, 2019). These patterns are not errors in calibration -

they are the result of algorithmic rationalities that prioritise efficiency over deliberation, auditability over relational trust, and scalability over situated judgment. In this context, Generation Z does not merely appear as a "new demographic" with distinct workplace preferences. Rather, it constitutes a structural critique-in-practice: a population whose formative experiences in platform governance, data exposure, and algorithmic sorting have produced a subjectivity attuned to power asymmetries encoded in technical systems (Pan et al., 2021).

Crucially, the literature suggests that this generation's ambivalence toward AI in HR is not reducible to resistance or enthusiasm. It is a demand for intelligibility, contestability, and alignment between system behaviour and institutional values. They do not seek the abandonment of AI, but its constitutional reform: tools that can be interrogated, architectures that allow refusal, and evaluation systems that enable self-authorship rather than behavioural compliance (SHRM, 2024). For practitioners, this implies the necessity of abandoning the assumption that performance systems can be "neutral" if only technically improved. The design logic must shift from automation to articulation - from prediction to deliberation. That requires governance models which include generational representatives in system co-design, the institutionalisation of redress mechanisms within AI-powered evaluations, and the embedding of qualitative, non-metric forms of knowledge into formal HR processes (Qin et al., 2023).

The theoretical implications are no less significant. The study shows that AI in HR is not merely a new medium through which management is exercised - it is a semiotic regime that translates normative assumptions about labour, hierarchy, and merit into executable code. The shift from human managers to systems of statistical inference must therefore be examined not only for technical accuracy but for its role in reproducing classed, gendered, and cultural scripts under the guise of optimisation. In this light, AI systems emerge not as post-human administrators, but as ideologically coded instruments of organisational inscription (Suseno et al., 2021).

This literature review has obvious limitations. The lack of robust empirical studies - especially from non-Western, non-corporate, or informally structured labour markets - means that our picture remains skewed toward digitally mature, institutionally formalised environments. However, the findings offer a necessary conceptual grammar to pursue such empirical inquiries with greater analytical clarity (PRC, 2023).

In conclusion, HR systems powered by AI are not passive infrastructures. They are sites of cultural

production, institutional memory, and social ordering. As Generation Z becomes a central force in the labour market, the legitimacy of these systems will hinge on their capacity to support, not overwrite, the plural, reflexive, and relational conditions of contemporary work. In this moment of convergence, the question is no longer whether AI should be adopted, but under whose terms, according to which ethics, and toward what conception of the human.

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bstract

Human Resource Analytics and Strategic Performance

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Human Resource Analytics HRA is widely recognised as an important tool for achieving a firm's strategic performance. Strategically, organisations can apply data analytics in human resource functions to gain actionable insights to inform decision-making. An integrated literature approach is employed to explore the strategic outcomes of HRA and the challenges encountered by firms when adopting HRA. Based on a review of 18 empirical studies conducted between 2017 and 2025, we observed that HRA facilitates workforce planning, talent acquisition, retention, and performance management, thereby aligning human resource functions with organisational strategy. Despite the potential benefits, it also presents challenges such as data quality, skills shortages, and ethical considerations. The paper offers practical guidance and recommendations for future research on how HRA drives strategic performance.

Keywords: challenges, human resource analytics, strategic performance, workforce planning

Introduction

Today's competitive business environment calls for agility, innovation, and enhanced strategic performance. In this context, HRA has emerged as an important tool for strategic decision-making. Human resource analytics involves the systematic collection, analysis, and interpretation of data related to human resources for evidence-based decision-making and organisational results (Marler and Boudreau, 2017). HRA provides data-driven inputs to workforce planning, talent management, and organisational development, making HR a nontransactional function but a strategic business partner. The strategic adoption of HRA enables organisations to make informed forecasts, manage talent more effectively, and match workforce competencies with business objectives in the broadest sense (Levenson, 2018). Given the volatile



and uncertain business environment, the ability to leverage workforce data to inform decision-making has been a differentiator. HRA enables companies to identify high-potential employees, predict turnover, optimise recruitment campaigns, and improve employee engagement (Davenport et al., 2010). These metrics have an intrinsic connection with improved strategic performance. Despite the growing adoption of HRA, its applicability in strategic systems remains a challenge for most organisations.

To address this gap, this article explores the contribution of HRA to strategic performance using the integrated literature review method. Since HR functions are intended to support organisational strategy, it would be pertinent to understand how HRA promotes the organisation's strategic outcomes. This paper aims to identify key themes in the literature on HRA: talent acquisition, performance management, employee retention, strategic alignment, and capability development. In these contexts, the author provides insights into how HR analytics can benefit strategic HR functions. Furthermore, the theoretical underpinning of HRA is explored through frameworks such as the Resource-Based View (RBV) and Balanced Scorecard (BSC) to contextualise its strategic relevance (Barney, 1991; Kaplan and Norton, 1992). This study is based on the following research questions:

- RQ1. What are the strategic outcomes of HRA?
- RQ2. What are the challenges companies face when implementing HRA?
- RQ3. What theory underpins HRA literature? Although existing literature recognises the growing importance of HRA, extensive integrative research examining its strategic implications across various HR functions is lacking. Most studies individual metrics examine specific organisational outcomes without providing robust insights into the strategic value of HRA. Furthermore, the application of RBV and BSC theoretical models for exploring HRA remains under-researched, limiting the generalisability of research findings in the context of a broader strategic framework. This study attempts to narrow this knowledge gap by:

- 1. Synthesising different literature to provide a holistic picture of HRA's contribution to strategic HRM.
- 2. Applying the theories of strategic management (RBV and BSC) to place HRA's significance in building competitive advantage.
- 3. Outlining challenges in implementing HRA, thus informing practitioners as well as researchers on how to overcome these barriers.

By bridging these gaps, our study enriches the strategic human resource management (SHRM) domain, highlighting the importance of evidence-based practices in achieving sustainable organisational excellence.

Methodology of Research

The study employs an integrated literature review method to explore Human Resource Analytics (HRA) and strategic performance. An integrated literature review synthesises empirical evidence and theoretical perspectives to offer a holistic understanding of a complex research phenomenon (Torraco, 2016). The approach allows scholars to establish patterns, conceptualisations, and research gaps, and therefore allows for the development of comprehensive insights into the contribution of HRA to strategic performance. The justification for integrated review is due to its capability to bridge theory-practice gaps. As HRA entails data science, organisational behaviour, and strategic management, the approach ensures that academic standards and practicability are catered for. Besides, it accommodates studying diverse forms of evidence such as case studies, quantitative data, and conceptual frameworks, and provides a richer understanding of the topic (Whittemore and Knafl, 2005).

Search Strategy and Inclusion Criteria

To ensure methodological clarity and consistency, this literature review follows the PRISMA guidelines as implemented by Page et al. (2021). The PRISMA protocol establishes a systematic process for the identification, screening,

and inclusion of studies in a systematic literature review. The PRISMA flow diagram in Figure 1 presents a visual illustration of the process from identification to final inclusion. The initial strategy was to search databases exhaustively using Litmaps for peer-reviewed articles that examine the intersection of human resource analytics (HRA) and strategic performance. Boolean operators were applied in the search terms to broaden and narrow down the results.

The search term employed is "human resource analytics". This yielded a total of 88 documents. After removing 18 duplications, 6 non-journal articles, and 30 documents included in other journal titles, 34 distinct publications were left. Full-text screening reduced articles to 18, which were used in the final synthesis. To be considered, an article must be a peer-reviewed article published between 2017 and 2025 in the English language. The selection of the 2017-2025 time frame is methodologically significant for several reasons. First, HR analytics has evolved rapidly since 2017 from a mainly operational tool to a strategic organisational function. This reflects the increasing connection between data analytics and human resource management (HRM), in which measures are no longer descriptive alone but more predictive and prescriptive. Furthermore, the COVID-19 pandemic in 2020 brought unprecedented change to work environments, performance metrics, and HR policy. These innovations further stimulated research on strategic workforce planning, employee engagement, distance performance and measurement, all of which lie at the core of investigating the intersection of HR analytics and organisational strategy. The incorporation of literature published in 2025 ensures the capture of emerging trends and the most current theoretical and empirical developments in the field.

Litmaps was chosen as the primary search engine due to its unique capacity to map research networks and trace scholarly debate over time. Litmaps enables researchers to explore citation connections, highlighting foundational and frontier research visually and interactively. This is particularly useful in cross-field domains such as HR analytics, where key contributions are across fields like data science and strategic management. Litmaps also integrates real-time data from sources such as Google Scholar and Crossref so that the search encompasses the most recent peer-reviewed literature, including in-press and early-access articles. The use of Litmaps in combination with a focused search window of 2017-2025 ensured a solid foundation for the identification and exploration of critical literature. This approach provides a wide and up-to-date understanding of how HR analytics supports strategic performance in contemporary organisations.

Thematic synthesis was employed to review the selected literature. Braun and Clarke's (2006) sixstep thematic analysis method, familiarisation, coding, generation of themes, checking themes, refinement, and reporting, was employed to ascertain salient themes and systematically classify them. They were talent acquisition, strategic alignment and performance management, employee engagement and retention, capability development, problems of HRA implementation, and theoretical frameworks and integration. During the review, special focus was placed on the theoretical foundation of the literature. Central theories such as the Resource-Based View (Barney, 1991) and Balanced Scorecard (Kaplan and Norton, 2004) were primarily theoretical frameworks where scholars placed the strategic value of HRA within a framework. These methodologies provided a central context for examining how HRA contributes to sustained strategic performance. This systematic and objective search and integration ensured that the review's conclusions were both theoretically robust and methodologically sound, offering informed insights into how Human Resource Analytics facilitates strategic performance.

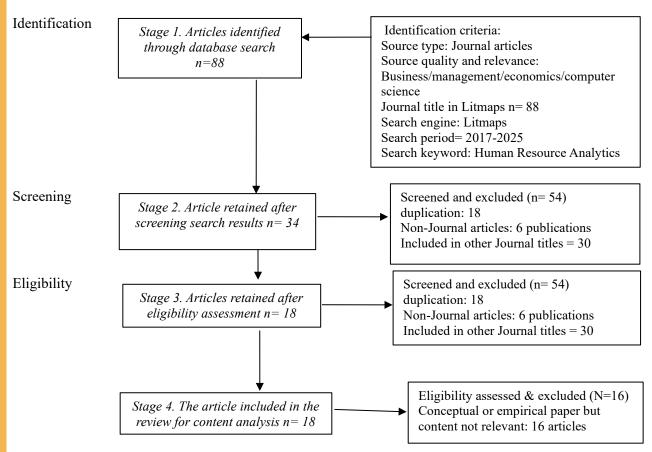


Figure 1 - PRISMA Flow Diagram

Literature Review

Strategic Outcomes of Human Resource Analytics

The integration of HRA and strategic performance has been recognised by practitioners and scholars. Global competition and the need for agile decision-making require organisations to depend on evidence-based strategies to optimise human capital management. HRA, by definition, involves the systematic collection, analysis, and interpretation of information on HR to enable and enhance the strategic decision-making process (Marler and Boudreau, 2017; Rasmussen and Ulrich, 2015). Huselid (2018) categorises HRA into three broad categories, namely: descriptive, predictive, and prescriptive analytics. Descriptive analytics reflects historical HR data, delineating the workforce demographics, turnover, and performance distributions. Predictive analytics applies statistical modelling in predicting future HR outcomes such as employee attrition, engagement, or potential for development (Van den Heuvel and Bondarouk, 2016). Prescriptive analytics, the most advanced, offers actionable recommendations through simulations and optimisation techniques, so that leaders can anticipate talent and organisational capability management (Bassi et al. 2012). This kind of breakthrough from data analysis to strategic prescription greatly enhances the capability of HR departments to achieve strategic outcomes. Strategic performance suggests the potential of an organisation to achieve long-term objectives through continued and effective HRA practices (Becker and Huselid, 2006).

Arguably, human resource analytics is widely used in talent acquisition. Chamorro-Premuzic et al. (2019) note that predictive analytics software has

the potential to select those who are most likely to excel in the workplace through previous performance records analysis, psychological examinations, and signs of cultural fit. This leads to quality hiring, fewer employment risks, and time-to-productivity enhanced cycles, thus translating to strategic agility and competitiveness advantage (Chamorro-Premuzic et al., 2019).

Bevond recruitment, HRA strengthens performance management systems by adopting uninterrupted and dynamic observation of employees' productivity, activity, accomplishment of goals. According to Bersin (2013), companies are moving away from yearly evaluations towards performance continual feedback models powered by real-time analytics dashboards. Such systems enable managers to identify performance deviations early on, prescribe individualised goals, and intervene promptly, resulting in increased congruence between employees' behaviour and strategic goals (Cascio and Boudreau, 2016).

Another key area in which HRA adds strategic value is employee retention. Through analytics, Hausknecht and Holwerda (2013) suggest that it is conceivable to determine "flight risks" through absence patterns, engagement survey data, compensation level, and job satisfaction measures. Through forecasting these metrics, targeted retention such as career development initiatives,

compensation shifts, or work-life balance initiatives, organisations can preserve institutional knowledge and reduce turnover costs (Guenole et al., 2017).

Besides operational efficiency, HRA supports total strategic alignment. Several studies indicate that organisations integrating HRA with financial and operational data are better able to link HR initiatives to business and key performance indicators (Huselid, 2018). Through these types of information integration, strategic decision-making is enhanced, and HR leaders can contribute meaningfully at the executive level. For example, data on labour productivity, cost-of-hire, and turnover rates can be used to inform strategic planning regarding workforce restructuring, succession planning, and mergers and acquisitions.

HRA is an effective tool used for identifying skill gaps and training effectiveness. Bassi (2011) asserts that HRA enables organisations to determine skill gaps, which facilitates the development of customised learning and development interventions that target individual and organisational needs. This type of realignment fosters capability development, which prepares employees for evolving business demands. Table 1 sheds light on the key themes: HR functions, HRA application, strategic outcomes and key authors associated with the adoption of HRA.

 Table 1- Summary of HR Functions, HRA Applications, Strategic Outcomes and Authors

HR Function	Application of HRA	Strategic Outcome	Key Authors
Talent Acquisition	Predictive hiring models using historical data	Improved hiring quality, reduced costs	Chamorro-Premuzic et al. (2019), Marler & Boudreau (2017)
Employee Retention	Attrition risk modelling, engagement analysis	Lower turnover, increased workforce stability	Hausknecht & Holwerda (2013)
Performance Management	Real-time data, feedback loops, KPI tracking	Higher transparency, better performance calibration	Bersin (2016), Bassi (2011)
Strategic Alignment	Integration of HR data with financial and operational KPIs	Better business alignment, strategic agility	Huselid (2018), Barney (1991)
Capability Development	Analytics of skills gaps and training effectiveness	Targeted upskilling, sustained competitive advantage	Bassi (2011), Angrave et al. (2016)

Challenges in Human Resource Analytics Implementation

Scholars predict that while the use of HRA is growing, most HR departments still lag due to skill deficiencies, the absence of technological infrastructure, and unrealistic concerns regarding data privacy (Angrave et al., 2016). These problems hinder the effective adoption of HRA as a strategic change tool. In addition, the absence of an integrated framework or best practices in the implementation of HRA makes it more challenging for companies that intend to optimise their strategic agility and performance (Minbaeva, 2018).

Low data quality and fragmentation are cited as the most common challenges in the literature. HR data, as Marler and Boudreau (2017) explain, usually live in separate silos in legacy systems that are not standardised and are unavailable in real time. This hinders organisations from deriving valuable insights and undermines the integrity of analytical findings. Further, Marler and Fisher, (2013) argue that quality and integration issues with the data, such as definitions, siloed systems, and entry errors, can call into question the validity of analytics outputs. Equally, Tursunbayeva et al. (2018) observed that low or unreliable data devalue predictive models, and strategic decisions become difficult for HR departments. Data availability is not enough for effective HRA; strong infrastructure must also exist for integration and data governance.

Angrave et al. (2016) observe that HR professionals generally lack sufficient statistical literacy and data interpretation capability necessary to effectively use analytics tools. Such a limitation can result in under-leverage HRA systems or improper interpretation of results, which can result in low-quality decisions. Similarly, Minbaeva (2018) notes that HR professionals lack the technical skills required to use HRA tools efficiently. Data scientists may possess relevant technical expertise but lack equivalent domain knowledge to put HR-related insights in context (Levenson, 2020). A gap thus emerges between useful HR insights and data analysis.

Organisational cultural resistance is another hindrance cited in the literature. Managers and employees might perceive data transparency and accountability as threatening, especially for those with a prior history of untransparent or ad hoc HR practices (Rasmussen and Ulrich, 2015). Davenport et al. (2018) highlighted that employees and managers resist analytics-driven HR practices due to concerns about being monitored and depersonalised. Distrust of data or fear of being "reduced to numbers" can limit the application of analytics tools. Bondarouk et al. (2021) also argue that even well-designed HRA programmes may fail in data-fearing organisations due to low organisational preparedness.

Several studies emphasised that failure to link HRA to organisational strategy renders it useless. Tursunbayeva et al. (2018) observed that most companies use HRA as a compliance-focused, reactive tool rather than associating it with strategic planning and talent growth. Margherita (2021) also agrees, further stating that without definitive business results, the result of HRA becomes a waste and is normally overlooked by top management. Arguably, aligning analytics initiatives with organisational goals and key performance indicators enhances usage and relevance.

Finally, ethical and privacy concerns are a growing issue in the implementation of HRA. With more sophisticated methods of data collection, concerns around employee surveillance, consent, and data abuse are becoming increasingly critical. Van den Heuvel and Bondarouk (2017) emphasised that organisations must implement ethical practices to protect employees' autonomy and trust. Zickgraf (2022) further posited that opaque analytics practices are most likely to breach legal frameworks such as the General Data Protection Regulation (GDPR) and damage organisational reputation and staff morale. Creating formalised ethical guidelines, disclosure of data, and involving employees in analytics design will enable firms to avoid reputational risks (Bodie et al., 2017).

The integrated literature recognises that HRA implementation involves human, strategic, and technical challenges. While data infrastructure and technology provide the building blocks, there is a need for competent staff, a supportive organisational culture, and strategic clarity. Table 2 captures the challenges faced by organisations in implementing HRA. The challenge category, description, and key authors are summarised.

Challenge Category	Description	Authors
Data Quality & Integration	Fragmented, inconsistent, and siloed HR data reduce analytical reliability and integration across systems.	Marler & Boudreau (2017); Tursunbayeva et al. (2018)
Skills and Capabilities	HR professionals often lack data analysis skills; data scientists lack HR domain knowledge.	Minbaeva (2018); Levenson (2020)
Cultural Resistance	Resistance from employees/managers due to fear of surveillance or depersonalised decision-making.	Davenport et al. (2018); Bondarouk et al. (2021)
Strategic Misalignment	HRA is often not aligned with broader business strategy, leading to underutilised insights.	Tursunbayeva et al. (2018); Margherita (2021)
Ethical & Privacy Concerns	Fear of misuse of employee data, lack of transparency, and legal risks (e.g., GDPR non-compliance).	Van den Heuvel & Bondarouk (2017); Zickgraf (2022)

Table 2 - Summary of Challenges in Implementing HR Analytics

Theoretical Framework

Theoretical foundations for the strategic role of HRA are drawn from tools such as the Balanced Scorecard and the Resource-Based View (RBV). Kaplan and Norton's (2004) Balanced Scorecard suggests tracking organisational performance using the multi-dimensional approach: finances. customers, internal processes, and learning and growth. HRA addresses these issues directly by providing empirical data that relates workforce capabilities with business outcomes (Becker et al., 2001). HRA complements the BSC framework with the data infrastructure to track and manage along these dimensions. Analytics, for example, can track employee productivity (internal processes), customer service performance tied to frontline employee actions (customer perspective), and training efficacy (learning and growth). HRA tools also have the potential to connect HR metrics with organisational KPIs more broadly, so that managers can see how workforce gains in engagement or skill gain are converted into bottom-line impact (Kaplan and Norton, 2004).

Similarly, RBV (Barney, 1991; Wright et al, 2001) suggests that valuable, rare, inimitable, and non-substitutable human resources are the basis for sustainable competitive advantage. HRA enables firms to find and cultivate strategic human resources by sensing key competencies, forecasting emerging capability needs, and connecting workforce planning to strategic needs. HRA applies the RBV

by enabling organisations to systematically discover, quantify, and leverage such human assets. Predictive and prescriptive analytics enable organisations to recognise talent, measure the potential of the workforce, and align talent initiatives with long-term organisational goals. For instance, through workforce analysis, organisations can make strategic decisions concerning leadership development, succession, and training investment, thus enhancing the value and strategic contribution of their human capital (Wright et al., 2001). On a fundamental level, HRA is a vehicle for unleashing the strategic potential of human resources, thus achieving the fundamental principles of the RBV.

Furthermore, emerging technologies are also increasing the capabilities of HRA. Bassi (2011) also points out the functionalities of AI in machine learning and predictive modelling in enabling organisations to identify subtle patterns in employee data that were not seen before. Such abilities allow for more sophisticated sentiment analysis and anticipation of cultural or behavioural shifts, thus making the organisation more responsive (Fitz-Enz Minbaeva, and Mattox. 2014: 2018). Implementation of artificial intelligence (AI) within HR functions also simplifies processes such as resume screening, internal mobility planning, and leadership pipeline development (Tursunbayeva et al., 2018).

Discussion

The findings of the integrated literature review rigorously substantiate HRA as an indispensable tool for enhancing strategic performance across different aspects of an organisation. The literature review of 18 peer-reviewed articles revealed a familiar narrative: effective use of HRA facilitates evidence-based decision-making that promotes talent acquisition, staff retention, performance management, and strategic alignment. HRA's significant value is its ability to optimise the process of attracting talent. For example, predictive analytics has been widely used for selecting highpotential candidates by examining past data sets of resumes, cognitive and behavioural assessments, interview notes, and records of job performance (Chamorro-Premuzic et al., 2019). These predictive models not only enhance the quality of hiring decisions but also reduce recruitment time and cost. Moreover, algorithmic suggestions assure a better job-candidate fit, which has been associated with improved long-term performance and retention (Marler and Boudreau, 2017). These developments show the shift from intuition-driven to evidencedriven recruitment, facilitating organisational agility and competitiveness.

The findings of this review aligned with global patterns in digitalisation and the evolution of SHRM. As companies operate in ambiguous, information-rich environments, the ability to get actionable intelligence from human resource data has become a source of competitive advantage. Human Resource Analytics (HRA) is no longer a support tool on the periphery but a key strategic driver and a critical business partner with a direct influence on strategic performance.

This overview suggests that adopting HRA adds value to strategy through the delivery of well-informed evidence-based decisions in HR practices such as recruitment, performance management, staff retention, and alignment of the workforce with corporate strategy. These findings also aligned with the Resource-Based View (RBV) of the firm, which places human resources as a unique and inimitable resource that has the potential to create sustainable competitive advantage (Barney, 1991). By implementing HRA, organisations can attract,

develop, and use high-value human resources more effectively than competitors. Another core area in which HRA demonstrates measurable strategic advantage is staff retention. Several studies establish that HR analytics assist organisations in identifying early warning signs of disengagement and flight risk. For instance, Hausknecht and Holwerda (2013) mention that firms with predictive modelling capabilities can intervene in advance with tailored strategies such as tailored career planning programmes or targeted compensation reform, thus reducing voluntary turnover. These interventions are important in high-performing or strategically important employee retention, reduced recruitment and onboarding expenses. It is also suggested that HRA contributes to increased employee participation as it guides efforts that focus on employee expectations and organisational culture (Smarp, 2020).

HRA promotes continuous, real-time feedback processes, dynamic goal setting, and individualised performance management. It moves away from conventional, static, one-time-a-year performance reviews to adaptive performance management systems focusing on agility, transparency, and growth. Indeed, organisations that integrate HRA into their performance systems are likely to be more responsive to strategic change and emerging labour realities.

Human Resource Analytics (HRA) has great potential in evidence-based decision-making and SHRM. However, a review of peer-reviewed articles between 2017 and 2025 reveals some ongoing challenges that organisations face in institutionalising HRA in their operating and strategic systems. These challenges fall under five thematic categories: data quality and integration, skills and capabilities, cultural resistance, strategic misalignment, and ethical and privacy concerns. Top among them is the lack of HR capability, particularly data literacy, statistical knowledge, and business acumen. Angrave et al. (2016) assert that the inability of HR professionals to effectively analyse HR data hinders HRA implementation. Furthermore, data integration issues such as HR information system fragmentation and the absence of standard data entry procedures also affect the validity and reliability of the outcome.

There is the issue of privacy and ethical concerns, especially as organisations collect and analyse more precise employee information. Without robust data governance frameworks, organisations risk not only legal non-compliance but even employee suspicion and demoralisation. Surveillance, algorithmic bias, and data abuse are concerns that require an ethical approach to HRA, based on transparency, informed consent, and responsible use of technology (Bodie et al., 2017).

The review also validates that the successful deployment of HRA depends to a large degree on organisational maturity and leadership support. Businesses that connect HRA to overall business strategy and gain executive support can realise higher returns on analytics investments. These businesses are likely to foster a culture in which evidence-based decision-making is the standard, and analytics are leveraged not only reactively, but also proactively to forecast trends, reduce risks, and encourage innovation.

Several studies indicate that organisations' failure to integrate HRA with financial and operational strategy, including key performance indicators (Huselid, 2018), makes HRA irrelevant. Nonetheless, linking HRA to firm strategy enhances strategic decision-making, which enables HR leaders to contribute meaningfully at the executive level. For example, data on labour productivity, cost-of-hire, and turnover rates can be used to inform strategic planning regarding workforce restructuring, succession planning, and mergers and acquisitions. Arguably, HRA is a strategic enabler and change agent that enables businesses to move from reactive HR management to proactive workforce planning. It assists in running the effectively through process business more improvement and better decision-making, as well as delivers transformational outcomes such as cultural alignment, leadership pipeline creation, strategic agility in the long run.

Based on this review, two theoretical frameworks were identified: the Resource-Based View (RBV) and the Balanced Scorecard (BSC). Both theoretical frameworks are integrated to provide a well-established framework for understanding HRA and strategic performance through the transformation of HR data into strategic assets and actionable information.

The RBV, as Barney (1991) initially suggested, emphasise that a firm's sustainable competitive advantage emanates from its ownership and use of strategic assets that are valuable, rare, inimitable, and non-substitutable (VRIN). HRA applies the RBV by enabling organisations to systematically discover, quantify, and leverage such human assets. Predictive and prescriptive analytics enable organisations to recognise talent, measure the potential of the workforce, and align talent initiatives with long-term organisational goals.

The Balanced Scorecard, conceived by Kaplan and Norton (1992; 2004), extends the RBV by suggesting a system of performance measurement and management, which is multi-dimensional. Instead of using only financial indicators, the BSC measures organisational performance from four main perspectives: financial, customer, internal business processes, and learning and growth. The measure is very appropriate given the dynamic and human-centric nature of strategic HR management.

HRA complements the BSC framework with the data infrastructure to track and manage along these dimensions. Analytics, for example, can track employee productivity (internal processes), customer service performance tied to frontline employee actions (customer perspective), and training efficacy (learning and growth). HRA tools also have the potential to connect HR metrics with organisational KPIs more broadly, so that managers can see how workforce engagement or skill is converted into bottom-line impact (Kaplan and Norton, 2004).

Figure 2 is a model showing the integrative value of RBV and BSC. By superimposing HRA on the BSC architecture, firms can leverage strategic objectives and relate them to quantifiable HR outcomes, connecting workforce planning, talent development, and performance management to business objectives. This single platform supports the notion that human resources is a strategic asset (from RBV) as well as a source of performance across the firm. Further, the combination of RBV and BSC provides a synergistic framework for strategic HRA analytics. The RBV addresses the strategic relevance of human resources, and the BSC provides a measurable methodology for quantifying and managing the resource in alignment with organisational goals.

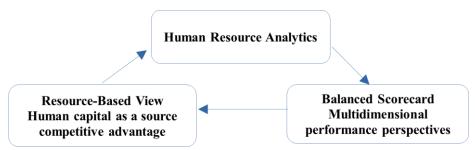


Figure 2 – Data Driven Insights

This study offers several implications for organisational leaders and human resource practitioners navigating the journey to evidencebased decision-making. Firstly, it confirms the strategic value of human resource analytics (HRA) as a pioneering tool augmenting and enlarging traditional HR activities such as recruitment, staff retention, and performance management. By showing how predictive and prescriptive analytics can improve talent acquisition, attrition, and continuous performance management, the findings provide executives with a quick business case for investing in analytics capability. Second, the research provides a conceptual roadmap for HR transformation with an emphasis on building analytical capability within the HR organisation. This involves developing data interpretation competencies, cross-functional collaboration with the information technology and data science groups, and a data-driven HR decision-making culture. Managers must encourage alignment of HR metrics with business KPIs and provide clear strategies for HR programmes to achieve business objectives. This alignment puts the HR function as a strategic business partner rather than an administrative function. In addition, the study identifies organisational readiness drivers such as leadership support, data stewardship, and technological foundation, which should exist for HRA to be implemented effectively. Such findings provide actionable recommendations to practitioners who seek to implement or enhance HR analytics in their organisations.

At the theoretical level, this study contributes to SHRM literature by combining empirical and

conceptual insights on HR analytics and strategic outcomes. Based on the RBV and the BSC models, this paper creates a double-theoretical approach that translates both human resources' significance and measurement instruments required to optimise its use. The BSC school of thought draws attention to the need for balanced performance measures in more than one dimension. HRA enables such a balance as it offers information corresponding employee to behaviour organisational performance on finance, customer, process, and learning dimensions. Furthermore, the study contributes to theory development by outlining a conceptual model (as shown in Figure 2), placing HRA at the middle ground between strategic resource maximisation and overall performance measurement. Not only does this synthesis extend the explanatory power of both theories, but it also sets up a confluence point for future empirical studies. In this context, the current study contributes theoretically and practically to the field of HR analytics and strategic performance management.

Conclusion

Human Resource Analytics (HRA) is a in strategic human breakthrough management. Through an integrative review of the literature, this paper suggests that HRA is a key facilitator of data-driven decision-making for core functions, particularly talent attraction, performance management, and staff retention. This study confirms that HRA maximises strategic performance delivering by practical recommendations that bridge organisational goals and workforce capabilities. However, organisations face some challenges in implementing HRA. These

challenges include poor quality data and integration, a lack of analytical skills and capability among HR functions. cultural resistance. misalignment, as well as ethical concerns and privacy. HRA enables HR professionals to embrace a "decision science" approach, thus becoming strategic business planners. Evidence supporting the Resource-Based View (RBV) is that human resources are a sustainable basis for competitive advantage if properly managed (Barney, 1991). HRA offers vehicles for strategically identifying, building, and deploying human resources, enhancing the organisational ability to maintain competitiveness in constantly changing markets.

Based on this review, we offer the following recommendations for organisations and HR practitioners;

- 1. Organisations should invest in data analytics by training HR professionals, recruiting analyticscapable staff, and encouraging cooperation between the HR department and data science units.
- 2. To achieve strategic alignment, HR analytics should be directly linked with organisational objectives such as revenue growth, innovation, and customer satisfaction.
- 3. Organisations should centralise and integrate HR systems to enhance data access, analysis, and quality of data across functional areas.

- 4. Organisations should put in place well-defined ethical and governance policies to ensure ethical usage of employee data, transparency, and build employee trust.
- 5. Organisations must encourage leadership support and change management as these are important for successful HRA implementation.

Limitations and Future Research

This paper provides valuable insights into the strategic value of HRA but has some shortcomings. This study integrates current literature without collecting primary data or empirical testing. Further studies should use quantitative or qualitative approaches to examine the subject. The usefulness of HRA could vary depending on the industry, organisational level, and location. Future research is needed to identify contextual factors that drive the adoption and performance of HRA. Comparative studies of a single analytics platform or an algorithm are excluded from the research, which could offer practical insights into the selection of HR technology. Future research can build upon this work by examining sectoral applications of HRA, testing the performance of different analytics tools or algorithms, or exploring the long-term strategic consequences of HRA on organisational innovation and resilience.

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"Peace is not absence of conflict, it is the ability to handle conflict."
Ronald Reagan.

The Role of Middle Managers in **Digital Transformation**

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Digital transformation (DT) is a strategic imperative, yet most large-scale DT initiatives still underperform, with only 30% achieving their intended outcomes. While organisations invest heavily in digital technologies, the human side of transformation is underexplored, particularly the role of middle managers (MMs). Positioned between strategy and execution, MMs face increasing pressure to manage ambiguity, implement new technologies and maintain business continuity. This conceptual paper explores the evolving roles of MMs in DT and examines the conditions under which they enable or block transformation efforts. Building on Floyd and Wooldridge's role framework and Mantere's theory of strategic agency, the paper proposes an updated model of MM contribution in DT, integrating insights from emotional balancing, ambidexterity and sensemaking

Keywords: digital transformation, middle managers, strategic roles

Introduction

The perpetual technological shifts and the impact they have on customer expectation, competitive landscape and business models make DT a key priority for organisations worldwide. According to the BCG TSS Index (2024), 27% of European companies now have a strong need to transform operationally. Globally, only 30% of large-scale DT initiatives were successful, that is, they were delivered on time, on the goals and within the budget (McKinsey, 2025; BCG, 2024).

DT is a strategic direction where failure is not an option, yet organisations struggle. The recent preoccupation with understanding the causes of such poor results in DT showed that the human side of the transformation was neglected. Companies fell into the trap that somehow, technology would make this work. This is also visible among scholars, as actor-centric research is rising (Nadkarni and Prügl, 2021).

"The problem is not the conflict itself, but how we respond to it." Marshall Rosenberg

The paper aims to shed light on the contribution that MMs have on the success or failure of DT. Because of their unique position in the middle of the organisation, they are instrumental in passing the strategic direction to the operations through their

sensemaking and team mobilisation capabilities and enabling continuous flows of information. Studies suggest MMs are positively related to the introduction of DT, enabling digital innovation, exploring opportunities, acting as catalysts across hierarchies to reduce decision-making time (Christodoulou et al., 2022; Funke et al., 2023; Nadkarni and Prügl, 2020; Putra et al., 2024). However, sandwiched between top management and individual contributors, they often find themselves caught between the positive promise that technology will boost efficiency and create higher value jobs and the negative reality that comes with work extensification, role ambiguity and conflict, pressure and anxiety coming from managing resistance (Hassard and Morris, 2021; Greven, 2023).

The paper builds on the findings of an extensive literature review aimed at understanding the role MMs play in DT and proposes a conceptual framework on the evolving role of MMs in DT, as well as how they enable or block DT. The insights are mapped around Floyd and Wooldridge's (1992) role framework and Mantere's (2008) theory of strategic agency of MMs, supported also by the theoretical lenses of emotional balancing, ambidexterity, resistance and sensemaking. The research question is: how is the role of MMs evolving in the context of DT, and what factors influence whether they act as enablers or blockers of change?

Ultimately, this will provide both an academic framework and a practical tool for organisations that want to leverage MMs contribution to their transformation efforts. As a final note to set the foundation for the paper, DT is seen as "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial, 2019, p.118). Yet this paper assumes that DT is more than a technological shift, but a humandriven process. MMs are defined as "managers with access to top management, coupled with a very good knowledge of operations" (Wooldridge et al., 2008, p. 1192). In the context of DT, their role evolves to incorporate a stronger emphasis on driving change and human-oriented leadership.

Methodology of Research

The fields of DT and MM research are rich, yet fragmented. Middle management research has a well-established history, with articles indexed since focusing mainly on role, strategic involvement and organisational processes. DT has rapidly expanded in recent years, with over 1,000 articles published annually since 2017, reflecting its growing relevance as organisations adapt to technological disruption (Tarakci et al., 2023). However, both fields lack coherence due to their multidisciplinary nature. Middle management studies struggle to grasp the dynamic challenges coming from DT. Similarly, DT research extensively explores technological implications, and it's just starting to investigate the human-centric and organisational implications, particularly the essential role of MMs in implementing and sustaining transformation efforts.

PRISMA protocol was applied to consider proper keywords, as well as inclusion and exclusion criteria. A bibliometric analysis of 76 papers and a cross-cluster analysis of 16 papers confirmed a strong connection between DT and MM.

Theoretical foundation. MMs contribution to DT is no longer limited to translating strategy; they bring their best value when they drive change, manage uncertainty and shape team behaviours. The following section explores the theoretical foundations that help explain these evolving needs and expectations.

Role theory. Role theory is by far the dominant theme in MM research. In the context of DT, there is a vivid interest among scholars to understand what the role is or should be. Role is defined as the "totality of expectations directed by others towards an individual within a social context" (Mantere, 2008, p. 296). This is a powerful concept, especially for practitioners. Employees think, communicate and behave based on their roles. Expectations among individuals are shaped by the perspective each has on the others or their role. Because of such conflicting expectations, lack of clarity and ambiguous authority, MMs experience tension, pressure, conflicting role demands and significant emotional and cognitive load (Hassard and Morris, 2021; Koponen et al., 2023; Putra et al., 2024).

By synthesising the literature from 1970 to 1990, Floyd and Wooldridge (1992) proposed four strategic roles for MMs (Figure 1), and their framework is the most widely adopted and accepted within the research community even to this day.

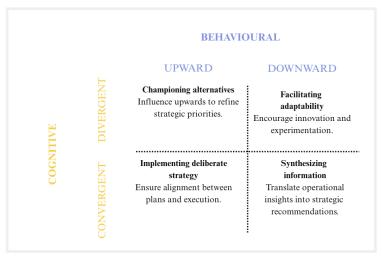


Figure 1 - *Middle managers' traditional roles matrix* (Source: adapted from S. W. Floyd and B. Wooldridge, 1992, p. 154)

The roles defined by Floyd & Wooldridge bring a lot of value, especially since MMs themselves can easily identify with them (Mantere, 2008; Van Rensburg et al., 2014; Van Niekerk, 2022). However, despite the authors' intent to create a well-defined image of MMs, research in the human dimension of DT asks for an expansion of the perspective, through the lens of agency theory (Klein et al., 2022; Mantere, 2008; Nadkarni and Prügl, 2020). The notion of agency refers to the capacity of actors to "reflect on the conditions of their activities and hence, transforming those conditions" (Mantere, 2008, p. 296). This frees up the reflection from the deterministic lens the role gives and is particularly important in social interactions in DT, which ask for a malleable, fluid way of evolving.

Supporting theories. There are a few supporting theoretical lenses that emerge from the evolving roles and intersection of the MM and DT literature.

Emotional balancing theory. Change initiatives require a lot of emotional energy, especially to balance business as usual with innovation. The theory refers to "a group-level process involving the juxtaposition of emotion-related activities intended to drive change and to induce continuity in a group of people" (Huy, 2002, p. 33). Created by Quy Huy

(2002), this theory is based on extensive research on how MMs facilitate or inhibit change depending on how they manage the emotions of employees. While not the only factor influencing transformation success, it plays an essential role. The research showed that when emotions are addressed properly, change outcomes are more sustainable.

Ambidexterity theory. The central role of MMs brings challenging and often conflicting demands: ensuring business continuity while driving change (Huy, 2002), implementing changes that directly affect their roles (Heyden et al., 2018), and introducing new knowledge while leveraging existing competencies in strategic renewal processes (Floyd and Lane, 2000). This aligns with the concept of ambidexterity, that is, the ability "to balance explorative and exploitative capabilities" (Greven, 2023, p. 1787). Ambidexterity requires MMs to explore new opportunities while optimising current resources. In practice, this also includes balancing traditional management responsibilities with emerging digital competencies. This is highly relevant, as the work characteristics of MMs are grounded in the dual demands of their roles. As seen in emotional balancing theory, this tension requires high levels of emotional energy.

Sensemaking theory. Through sensemaking, described as "a social process of constructing and deconstructing meaning through which managers and understand their interpret changing organisational context" (Rouleau and Balogun, 2011, p. 955), MMs shape how strategic change is interpreted and communicated within organisations. Their interpretations influence how employees perceive transformation and further affect the levels of engagement or resistance. A related behaviour, sensegiving, refers to the "discursive ability to tell a story in the right way, at the right time and in the right place" (Rouleau and Balogun, 2011, p. 956). Together, these processes allow MMs to act as translators of strategy, connecting the often abstract goals coming from top management to daily operations. This is particularly important in DT, where ambiguity is high and things evolve quickly. Sensemaking and sensegiving are among the most complex processes MMs undertake, requiring a dynamic mosaic of knowledge and communication skills to help employees make sense of ongoing change.

The evolving role framework. Building on this evidence, the role matrix for MM requires an update to reflect their evolving contributions they make in organisations undergoing DT. As demonstrated in recent research, MMs now perform diverse and increasingly complex roles that are critical to transformation success, synthesised in Figure 2.

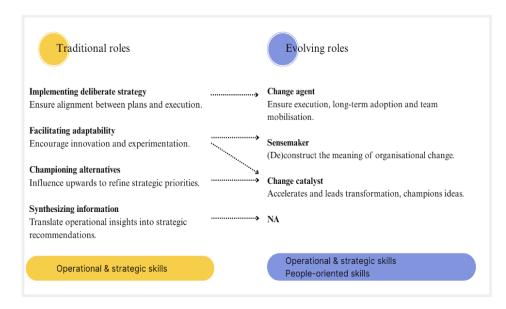


Figure 2 - Middle managers' evolving roles in digital transformation

The framework reflects that MMs give their best contribution in DT when they combine excellent operational skills and strategic contribution with strong people-oriented skills. The model, based on the systematic literature review (SLR) insights, introduces three new roles, two focused on change. It is important to make the distinction between them:

 A change agent is defined by Caldwell (2003) as any internal or external actor "responsible for initiating, sponsoring, directing,

- managing or implementing" a transformation initiative (p. 139);
- A change catalyst represents a more proactive, high-impact oriented perspective of this role and describes actors who accelerate or mobilise transformation through strategic influence and cross-functional leadership (Caldwell, 2003, p. 132).

The change agent role of MMs was originally associated with Nonaka's (1994) knowledge creation theory. In parallel, Huy's (2002) work on radical change introduced the emotional balancing

required of MMs during transformation. This is especially relevant given the significant organisational changes happening today and the increasing focus on employee well-being and talent management.

Recent research reinforces the complementary role of top and middle management as change agents (Christodoulou et al., 2023). While top management contributes with social capital and strategic legitimacy, helping reduce resistance, build trust, and influence stakeholders (Funke et al., 2023; Putra, 2024), MMs control execution by translating strategy into action. They reduce ambiguity through sensemaking and sensegiving, showing how the work of teams and individuals is connected to organisational needs, solve tensions at lower levels within the organisation by promoting empowerment and creating a space for people to feel valued and safe, overcome innovation myopia and the often experienced misalignments of DTs initiatives (Funke et al., 2023; Kringelum et al., 2024; Nadkarni and Prügl, 2020; Putra et al., 2024)

As catalysts of transformation hierarchies, MMs are essential in reducing decisionmaking cycles (Christodoulou et al., 2022). They also compensate for structural gaps through boundary-spanning behaviours, improving intergroup coordination across vertical and lateral organisational structures (Porck and Van Knippenberg, 2023).

Finally, it is worth noting that the traditional synthesiser role, through which MMs once filtered operational insights upward, is less relevant. While this role may still exist, it no longer defines the real

value that MM bring, especially in times where information flows are increasingly democratised through digital platforms. The real contribution of MMs today comes not by the interpretation of data and facts, but by activating organisational resources, creating motion and emotion.

The position of middle managers towards digital transformation. MMs perform a wide and complex range of functions during DT: connecting networks, selling initiatives to teams, not just synthesising and boundary spanning to facilitate implementation, creating new structures within the organization, sensemaking and sensegiving, championing new alternatives, adapting and effecting change, collaborating, mobilising, peacekeeping, and overseeing the employee experience (Funke et al., 2023; Van Niekerk, 2023).

Building on insights from the SLR and crosscluster analysis, one key pattern stands out: the relationship between top management and middle management is decisive. It influences how MMs align with strategic objectives, engage with ambiguity and respond to organisational change (Denning, 2022; Van Niekerk, 2022).

As Mantere (2008) argues, MM agency depends on specific enabling conditions: narration, contextualization, resource allocation, respect, trust, responsiveness, inclusion and refereeing. These conditions shape whether MMs feel empowered and connected to the strategic direction or excluded, overwhelmed, and consequently react with resistance. Table 1 presents a comparative view of how these dynamics support or hinder MM contribution to DT.

his role may still exist, it no longer defines the real	contribution to DT.	
Table 1 - How agency shapes middle man	nagers' roles in digital transformation	

Component	How it supports MMs to act as enablers	How it leads to MMs acting as blockers	
Narration	Top managers explain their strategic thinking in DT, enabling MMs to see continuity and coherence in actions (Christodoulou et al., 2022; Funke et al., 2023; Kringelum et al., 2024; Putra et al., 2024)	Closed-doors DT strategy development leaves MMs confused and disconnected, feeling unseen and unlistened to (Buick, 2017; Van Niekerk, 2022; Van Doorn et al., 2023)	
Contextualisation	Strategy is linked to a specific operational context, so MMs feel confident to make decisions and act. (Putra et al., 2024)	Top-down strategies feel imposed or misaligned with realities. While they lead to more impactful outcomes, it is also proven that they lead to resistance both from MMs	

		and from employees (Horváth and Szabó, 2019; Marienfeld, 2023)
Resource allocation	Resources follow strategic objectives, showing commitment and allowing execution (Funke et al., 2023; Kringelum et al., 2024)	Lack of resources, information, and support undermines the capacity to act, impacting MMs' confidence to act and undermining their change management contribution (Koponen et al., 2023; Van Doorn et al., 2023)
Respect	Recognition of MMs' contributions increases motivation and alignment with strategy (Putra et al., 2024; Kringelum et al., 2024)	Ignoring MMs, letting them feel unseen, unheard, demotivates and signals a disconnect from execution (Denning, 2023; Hassard and Morris, 2021)
Trust	Trust leads to experimentation and risk-taking, supports adaptability, which are critical needs in DT (Bagraotini and Gordienko, 2023)	Fear of failure leads to inertia (Horváth and Szabó, 2019; Lucas and Goh, 2009)
Responsiveness	Feedback loops validate contributions, helping refine and align next steps.(Lopez and Estevez, 2013; Kringelum et al., 2024)	One-way communication limits learning and signals a lack of interest in feedback and collaboration (Funke et al., 2023)
Inclusion	Involvement in planning enhances legitimacy, buy-in and commitment (Christodoulou et al, 2022; Putra et al., 2024)	Exclusion from planning reduces ownership and slows down or even blocks implementation (Lucas and Goh, 2009)
Refereeing	Balanced evaluation of ideas empowers MMs to champion innovation confidently and boosts their catalyst energy (Christodoulou et al, 2022; Nadkarni and Prügl, 2020; Wu et al., 2021)	Absence of guidance leaves MMs unsupported in ideation efforts. (Horváth and Szabó, 2019; Lucas and Goh, 2009)

(Source: adapted from Saku Mantere, 2008, pp. 302-304)

Resistance has long been associated with middle management, yet in the context of DT, resistance is a symptom - moreover, a natural reaction of any DT process - of unmet needs, tensions and gaps that are a priceless source of learning and continuous evolution, especially for top management. MMs become a blocker or slow down DT when they:

- Lack of involvement in early stages of the DT strategy;
- Experience work overload and pressure, and a lack of guidance on how to manage priorities, especially balancing change with business continuity;
 - Miss digital or change capabilities;

• Feel excluded, undervalued or unsupported emotionally, accelerating their fear of becoming obsolete.

On the other hand, MMs act as enablers when they:

- Are treated as partners in change, especially by senior leaders;
- Have clarity over their roles and support in designing it;

Are empowered with training, time and legitimacy to interpret and clarify the changes;

• Feel their emotional well-being is important. Factors such as tenure, digital competence, empowerment and psychological safety further influence these behaviours (Bagrationi and Gordienko, 2023; Mantere, 2008; Tarakci et al., 2017).

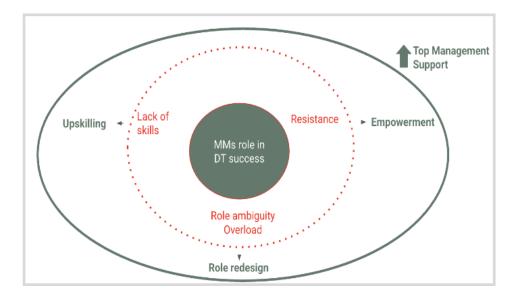


Figure 3 - Acceleration framework for digital transformation

A strong business case is Kodak's failure to pivot to digital photography despite having a \$5 billion annual innovation budget. MMs resisted change due to being excluded from early transformation efforts, lacking empowerment and digital literacy. CEO George Fischer later declared that "he hasn't been able to change the huge mass of middle managers" who "just don't understand the digital world" (Lucas and Goh, 2009, p. 50). In contrast, Microsoft's transformation under Satya Nadella shows the value of empowering MMs. By investing in digital skills and positioning MMs as change agents, the company achieved a successful shift toward cloud and AI (McAfee, 2022; Iansiti and Nadella, 2022).

Conclusion

This paper proposes a conceptual understanding of the evolving role of MMs in DT. Building on established role theory and strategic agency frameworks, it argues that MMs are actively shaping the change as they navigate between top-down vision and the practicalities of execution. Their positioning allows them to translate strategy, regulate emotional tension and catalyse organisational momentum.

This paper aimed to explore how the role of MMs is evolving in DT and what conditions shape their behaviour as enablers or blockers. The

proposed framework highlights that MMs bring the most value when they integrate deep operational expertise with people-focused leadership. The findings suggest that MMs can act as either enablers or blockers of transformation, depending on the organisational context, especially the quality of their relationship with top management, access to resources, inclusion in planning and empowerment. When these enabling conditions are absent, MMs may become disengaged or resistant, slowing down progress. When present, however, they act as change agents, sensemakers and catalysts, accelerating transformation.

The support around MMs should continue to evolve as DT continues to evolve, covering role design, investment in emotional and digital capabilities and cultural changes that promote dialogue across hierarchies.

As a final takeaway, MMs represent a critical, yet underutilised leverage in DT. Organisations that fail to support them risk inertia and unsustainable transformations. Future research should further investigate how MM roles are redesigned, understand MMs' perspective and real-life experiences, behaviours, decision-making, psychological impact, strategist role, hierarchical dynamics and long-term implications of technology on managerial work, so that their potential is activated in a constructive direction.

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bstract

Mapping the Literature on Conflict Management and Employee Retention

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Effective conflict management is now seen as a strategic tool for sustaining workforce stability and enhancing organisational performance. This study aims to examine the scientific literature connecting conflict management and employee retention through a bibliometric analysis of publications, using data extracted from the Web of Science Core Collection. The results show a clear upward trend in research interest, reflecting heightened organisational concern for employee well-being. Most of the documents were original articles, with limited presence of review studies, indicating a fragmented field with room for theoretical integration. The United States led the research output, while keyword network analysis revealed job satisfaction, turnover, and work-family conflict as central themes. These findings highlight the need for more cross-disciplinary and comparative studies to better understand how conflict resolution practices influence long-term employee retention.

Keywords: waste industry, digital transformations, automated recycling bin

Introduction

Over the past three decades, the challenges of employee retention and workplace conflict have drawn increasing concern from both practitioners and scholars in the field of organisational management. This growing attention is well-founded, given the profound implications these issues carry - not only for the individual employee, but also for teams, organisational culture, and the long-term health of the enterprise. Retention is no longer viewed simply as a matter of compensation or benefits; rather, it is understood as part of a wider organisational dynamic influenced by interpersonal



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relationships, leadership quality, and the oftensubtle tensions that arise in day-to-day work environments.

Workplace conflict, whether visible or underlying, plays a critical role in shaping an employee's decision to remain or disengage. These conflicts may stem from differences in communication styles, mismatched expectations, cultural dissonance, or structural ambiguities in roles and responsibilities. Just as importantly, the way an organisation responds to conflict - through its policies, managerial behaviour, and informal norms - can either reinforce employee loyalty or quietly encourage exit.

What makes employee retention particularly complex is that it does not rest on a single cause. Instead, it unfolds through an evolving mix of individual, interpersonal, and systemic factors. An employee's professional history, values, perceived growth opportunities, and trust in leadership all interact with organisational pressures, team dynamics, and even external socioeconomic forces. These interactions form a web of influences that cannot be easily reduced to linear models or simplistic strategies.

Conflict management. Over the past five years, the discourse around workplace conflict has matured significantly, reflecting the evolving complexity of modern organisations. Conflict is no longer viewed as merely a disruption to be avoided, but as a dynamic process that, if managed effectively, can foster growth, innovation, and cohesion (Al-Maaitah and Mohammad, 2021). Yet, unresolved conflict remains one of the most pervasive threats to employee satisfaction and organisational stability. Recent studies underscore the direct correlation between conflict mismanagement and high turnover diminished productivity, and the erosion of workplace culture (Dhillom et.al., 2025).

Current research differentiates between interpersonal conflict, often stemming from personality clashes or communication breakdowns, and task-related conflict, which can emerge from divergent perspectives on goals or procedures. While the latter can sometimes be beneficial -

sparking debate and innovation - interpersonal conflict is frequently destructive and emotionally charged (Hwang and Shin, 2024). These nuances necessitate a strategic and context-aware approach to conflict management, particularly in environments where collaboration and knowledge sharing are key to performance.

Conflict management strategies have become more refined, moving beyond the traditional binary of avoidance and confrontation. A growing body of literature, including the work of Sashikant et.al. (2025), emphasises the situational application of strategies such as collaborative negotiation, mediation, and restorative dialogue. Their findings suggest that adaptability, emotional intelligence, and leader-mediated interventions significantly improve conflict outcomes and employee retention. Moreover, organisations that embed conflict resolution into leadership training and team development programs tend to see measurable improvements in trust, morale, and retention metrics (Omene, 2021).

Sector-specific considerations also play a role. Public institutions, for instance, often operate under rigid hierarchies and administrative protocols, which can suppress open communication and complicate conflict resolution efforts (Krueger et.al, 2022). In contrast, private-sector organisations - particularly in the tech and service industries - may have more agility but also face unique pressures related to competition and performance expectations.

Of particular interest is the role of remote and hybrid work environments in reshaping the conflict landscape. Virtual collaboration tools have introduced new stressors - such as communication lag, perceived exclusion, and unclear boundaries - which have been shown to heighten conflict if not proactively addressed (Choi, 2025). This has led to a surge in research on digital conflict resolution methods, including asynchronous mediation and AI-supported facilitation tools, though scholars remain cautious about their ethical and practical implications.

Ultimately, conflict cannot - and should not - be eliminated from organisational life. It is, as many

experts now argue, an inevitable feature of diverse and dynamic workplaces. What matters is how conflict is understood, approached, and resolved (Ayoko, 2016).

For management professionals and scholars alike, the implication is clear: conflict management must be treated not as a reactive measure, but as a core strategic function, embedded into the very fabric of organisational life.

Employee retention. In recent years, the academic conversation around employee retention has expanded beyond traditional models of financial compensation and career advancement to emphasise the psychosocial and organisational dynamics underpinning long-term employee engagement. Current empirical work underscores the dual influence of conflict and supportive managerial practices in shaping turnover intentions. For example, Mutadzakupa et al. (2023) demonstrated that in high-turnover service sectors like tourism, work-life integration and inclusive HR strategies significantly mitigate employees' intent to leave, especially when supported by structured employee feedback mechanisms. Similarly, Lamane-Harim, Cegarra-Leiva, and Sánchez-Vidal (2023) found that a work-life balance supportive culture not only reduces work-family conflict but also strengthens organisational commitment in SMEs—suggesting that cultural dimensions play a vital role in retention. Treuren's (2024) study offers further nuance by revealing that on-the-job embeddedness" (social and relational integration within the firm) buffers the adverse effects of workfamily conflict on leaving intentions, especially during periods of organisational stress.

Meanwhile, research by Lee, Gan, and Chia (2023) among ICT employees in Malaysia confirms that behavioural and strain-based work-family conflict consistently predict higher turnover intentions, reinforcing the call for conflict-aware leadership models. Qadri (2024) adds a regional lens, illustrating that flexible working arrangements - such as telecommuting and adaptive scheduling substantially boost retention among executive-level professionals in the Saudi private sector. Collectively, these findings suggest that employee retention is not simply a function of benefits or tenure policies, but of how conflict is anticipated, understood, and constructively addressed through organisational embedded practices. management scholars and practitioners alike, the challenge lies in aligning conflict resolution strategies with retention frameworks in a way that acknowledges generational needs, workplace diversity, and the emotional ecology of modern employment.

Research Methodology

The goal of this study is to present the research evolution that tackles conflict management in correlation with employee retention. To accomplish the systematic review outlined in this study and to align with the research objectives, we adopted a mixed-methods approach grounded in the PRISMA 2020 framework for transparent and replicable reviews (Page et al., 2021). This methodology is particularly well-suited for studies that integrate both quantitative and qualitative dimensions of scholarly production. The review process unfolded in two distinct but interdependent phases. The first phase focused on the identification and selection of relevant academic publications, drawing from core capture high-impact literature to databases published. Inclusion and exclusion criteria were clearly defined to ensure the relevance and quality of the sources. The second phase involved the analysis and synthesis of the retrieved records through bibliometric techniques and content analysis. Bibliometric indicators such as publication frequency, type of documents, Web of Science index and keyword co-occurrence were used to map the intellectual structure of the field.

To address the research questions guiding this study, we conducted a structured search within the Web of Science Core Collection, which served as the primary database for retrieving relevant literature. This platform was selected due to its established reputation for indexing high-quality. peer-reviewed research and its recognised significance within the Romanian academic community. Web of Science offers comprehensive coverage of scientific output, including journal articles, conference proceedings, and academic books—all of which are curated through a rigorous selection process, ensuring a high level of credibility and relevance.

Given that the database indexes titles, abstracts, and keywords in English, the search was carried out using English-language terms. We initiated the process by identifying appropriate keywords to capture the core themes of our investigation. Using the TOPIC field search, we entered the terms "employee retention" AND "work conflict", which yielded an initial result of 224 records.

Following this step, we applied a set of inclusion and exclusion criteria to refine the dataset and ensure the relevance and quality of the publications selected for bibliometric analysis. These criteria included:

- 1. The inclusion criteria:
- Use oft keyword "employee retention"
- Use of the second keyword "work conflict"
- Use of the connection word AND
- Selecting for both words "TOPIC", which according to the search means "Searches title, abstract, keyword, plus, and author keywords"
- Material production till 2024, inclusive
- Web of Science Core Collection
- 2. The exclusion criteria:
- The material was published in 2025 because the year is not yet complete.
- Other scientific databases.

Considering that we wanted to include as many studies as possible, we did not apply other exclusion criteria. After considering these criteria, only 198 results were provided by the Web of Science Core Collection.

For this study, detailed data were extracted for each document, including information such as document type, year of publication, author names, keywords, and citation metadata. This dataset formed the basis for the bibliometric analysis. To ensure objectivity and minimise selection bias, each author independently reviewed the records during the screening phase. In cases where discrepancies arose regarding a document's eligibility, the full text was examined collectively until consensus was reached.

Furthermore, the PRISMA 2020 checklist was applied systematically to each selected document to ensure methodological rigour and transparency in the inclusion process. The entire review process was documented using the PRISMA 2020 flow diagram, which is presented in Figure 1 to illustrate the stages of identification, screening, eligibility, and inclusion.

The next stage in the methodology involved exporting all retrieved records in plain text format, which included detailed metadata such as document type, authorship, keywords, abstracts, researcher identifiers, citation counts, and publication dates. comprehensive dataset This provided foundation for subsequent analysis. Upon download, the dataset underwent a manual and automated verification process to identify and remove duplicate entries, thereby safeguarding the consistency and accuracy of the bibliometric evaluation.

To ensure a holistic analysis that integrates both quantitative metrics and qualitative insights, we extended our review to the journals in which the selected documents were published, with particular attention to their academic relevance and impact. The general bibliometric analysis commenced with an evaluation of annual publication trends, offering insight into the growth trajectory of research activity on employee retention and workplace conflict.

Following this, we identified the most prolific authors, assessing their institutional affiliations, total citation counts, and impact metrics across three research domains: human resource management, organisational behaviour, and conflict resolution. The analysis was then expanded to highlight the most productive institutions, along with the publishers contributing the highest volume of scholarly output.

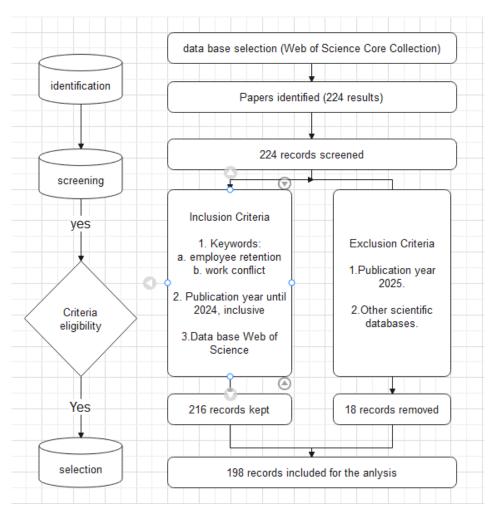


Figure 1 – Research diagram

In addition to institutional and author-level analysis, we examined the distribution of document types - including articles, proceedings papers, and reviews - and identified the countries contributing most significantly to the academic discourse on the topic. As a final step, a citation network analysis was conducted using authors as the unit of analysis, enabling the visualisation of scholarly influence and thematic clustering. This network mapping was facilitated by VOSviewer, which allowed us to identify key contributors, collaborative patterns, and the intellectual structure of the field.

Research Results

Regarding the findings that resulted from the research methodology, we were able to analyse the evolution of conflict management in correlation with employee retention. Thus, starting with the analysis of the topic done by scientists over the years, we can see that the research trend is ascending. Year 2020 emerged as particularly significant, with the highest number of articles (Figure 2). As can be observed, the topic gained popularity from around 2008 till 2015, when most of the articles were published. During the COVID-19 pandemic, the subject became of interest once again.

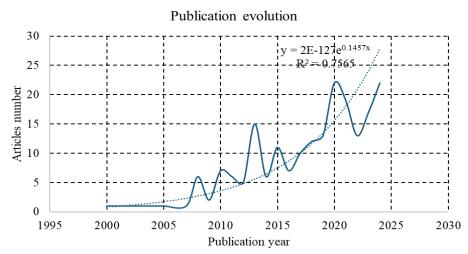


Figure 2 – Diachronic productivity of materials published in Web of Science

Regarding the type of document mostly published, we can see from Figure 3 that 91.92% are "article" type, while all other types represent less than 9%. The analysis of the overall topic by

"review articles" is even less than 4%, which indicates the need for a correlation done on the subject selected.

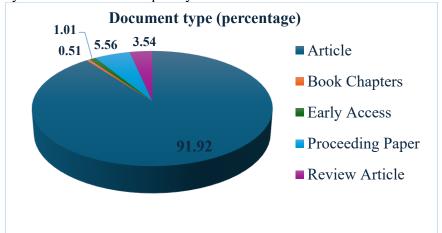


Figure 3 – Scientific documents published type

According to Figure 4, the Web of Science Index shows that the Social Sciences Citation Index (SSCI) has the highest number of publications, having a percentage of more than 55%, followed by Emerging Sources Citation Index (ESCI) with 36.87%.

Since the connection between the keywords selected for the analysis revealed a small number of articles compared to another topic, we also wanted to see which countries were more preoccupied with the topic. Thus, in Figure 5, we can see the countries with the highest number of publications are the USA with a record of 34% followed by Australia with a record of 7.5%, India with a record of 7.07% and Germany with a record of 6.5%. In correlation to the number of articles published over the years, we can say that the interest in other countries is increasing, and they are starting to study the subject, bringing new incite on the issue.

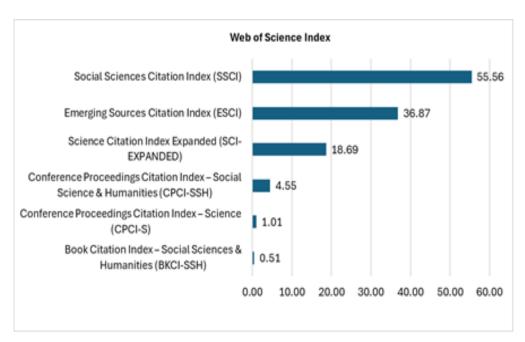


Figure 4 – *Publications distribution by WoS Indexes*



Figure 5 – Publishing countries

To better present the interest in the topic, we created a network that expresses the co-occurrence of all keywords used by the authors. Thus, using VOSviewer, the network was created as it can be observed in Figure 6. Out of 1157 keywords, 83 met the threshold, meaning the minimum number of occurrences of a keyword is 5. A total of 5 clusters could be identified, the largest cluster having 21 items. The links for these keywords are 1756, and the total strength is 3892.

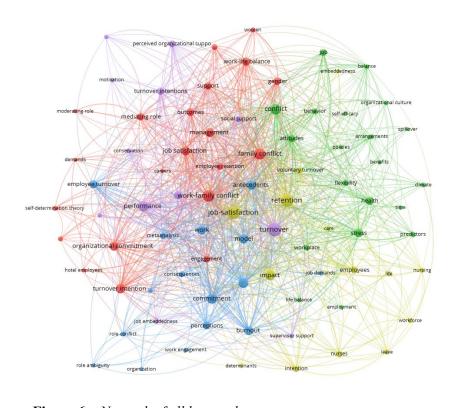


Figure 6 – Network of all keyword co-occurrences

In Table 1, we can see the top 10 keywords and their occurrences and total strengths. As can be observed, the word most met is turnover, but it has

& VOSviewer

a lower total link strength of 319, unlike jobsatisfaction, which has 333 total link strengths but has an occurrence of 49.

Table 1. The most important Keywords from the network analysis

Nr. crt.	Keywords	Occurences	Total link length
1	Job-satisfaction	49	333
2	Turnover	52	319
3	Retention	48	314
4	Family Conflict	38	264
5	Wok-family conflict	40	244
6	Impact	32	215
7	Conflict	35	209
8	Performance	31	208
9	Commitment	32	190
10	Satisfaction	30	190

To better present the keywords met in the analysis in Figure 7, we can see the two main clusters and the links between the keywords.

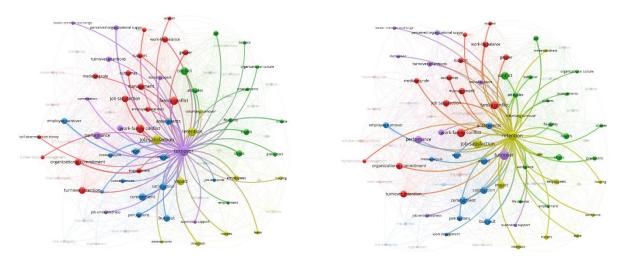


Figure 7 – Network of the main clusters of all keyword co-occurrences

Conclusions

This study examined the intersection of conflict management and employee retention through a bibliometric lens, using data from the Web of Science Core Collection. The analysis confirms that academic interest in the topic has grown steadily, with a noticeable peak in 2020. Earlier momentum between 2008 and 2015 laid the groundwork for this link reconsideration.

The overwhelming majority of publications were original research articles (over 91%), with review articles accounting for less than 4%, signalling a clear need for more integrative studies in this domain. The topic remains concentrated in the

Social Sciences Citation Index (SSCI), and the United States leads global contributions, followed by Australia, India, and Germany. Keyword mapping revealed five major thematic clusters, with job satisfaction, turnover, and retention as central concepts. Notably, job satisfaction, while less frequent than turnover, showed stronger conceptual linkages, suggesting its foundational role in retention-related research.

In sum, the field is growing but fragmented. There is room for more theoretical synthesis, cross-cultural comparison, and practical application. As scholars and practitioners, we must now move beyond isolated case studies toward frameworks that integrate conflict resolution and employee engagement into long-term organisational strategy.

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Dropping Out of Higher Education as a Result of Conflicts. How to Manage It

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This article presents a novel point of view on the higher education dropout phenomenon as well as possible solutions to deal with it. There is an integrated approach that considers dropout as a late result of preceding latent conflicts unsolved, unaddressed or poorly solved during the career orientation phase. The authors propose a possible solution (conflict management type), highlighting the role of the prediction function of management, and applying the theory of weak signals, adapted in that sense of early detection of STEM-related weak signals. As an explorative study, there are inherent limitations, which also indicate further research avenues. Implications are both theoretical and practical, mainly impacting the education system, support services, and business community.

Keywords: drop out of engineering studies, career orientation, STEM competences, weak signals, conflict management

Introduction

About five years ago, one of the authors started to systematically ask a consecutive series of engineering students this question: Why were you enrolled on this engineering programme?

While the majority indicated their own decision as the main reason (of course, backed by a variety of motives, from talent to ambition), there always was a smaller but significant percentage of students (10% ... 20%) who confessed that it was somebody else's will or strong advice (parents, relatives or friends).



As the difference in opinions evolves to become a latent conflict (eventually leading to dropping out of engineering studies), this question arises: Is this reason for dropping out (more) significant among engineering students?

There is common knowledge that many top billionaires are former dropouts of higher education institutions (either universities or colleges), dropouts who founded successful companies, well-known worldwide: Bill Gates (of Harvard University, Microsoft), Steve Jobs (of Reed College, Apple), Mark Zukerberg (of Harvard University, Facebook), Michael Dell (of University of Texas, Dell Technologies), Jan Koum (of San Jose University, WhatsApp) to name just a few, and examples may follow (Arangarajan and Rehman, 2022). Hence, one can say, with these arguments, that an easy way to become a billionaire is to drop out of college *yet to start up own business*.

Moreover, dropouts as those cited above were previously accepted to prestigious higher education institutions. Then, leaving not only a higher education institution but also cutting off higher tuition fees seems to be the right decision to make in front of a crucial decision to pursue a business opportunity and career.

However, there is also the other face of the coin: the fact that these worldwide known people were accepted to top colleges and universities proves without doubt their top intellectual capacity as well.

Dropping out of college does not guarantee billionaire status: *All that glitters is not gold!* In other words, not any dropout starts a business, and not all dropouts who start their businesses are successful. Table 1 shows that level of *education plays a lead role in being successful* in the professional life, particularly in business.

Table 1 – Level of education in Forbes billionaire list (2025)

Level of education attended	Percentage [%]
Elite higher education institution	44.9
An average higher education institution	44.3
No college education	10.8
Total	100.0

(Source: Adapted from Wai and Rindermann, 2017a; Arangarajan and Rehman, 2022)

Wai and Rindermann (2017a) explain the myth of the college dropout: "While it's true there are successful college dropouts, statistically speaking, they are not the norm. As researchers in education and talent, we found that the vast majority of the country's success stories are college graduates, such as Sheryl Sandberg (Harvard), Jeff Bezos (Princeton) and Marissa Mayer (Stanford)." Even declarations made by successful dropouts in their autobiographies or interviews contain not exactly regrets for dropping out, but clear statements like success would have been bigger in the case of completed education.

In any case, the discussion on becoming superrich in the case of exceptional individuals is complex (Wai and Rindermann, 2017b) and beyond the purpose of this paper. The scope of work is the more common phenomenon of *dropping out of*

higher education institutions, while success is not guaranteed for the large majority of dropped-out students.

As Wai and Rindermann (2017a) concluded: "The educational path of the cream of the crop may not apply to most people. So, going to college *may not be the right or even the best path* for everyone. However, if you're a student thinking about not going to college or considering dropping out, remember that even Gates and Zuckerberg got into college. Even if you're not aiming for mega success, doing the work to get into and graduate from college today may *open important doors*".

Consequently, it is fair to think about the value of the wasted resources (time, material and intellectual resources), which becomes larger when the number of students who abandon their studies is beyond certain reasonable limits considered as normal. Then the issue of dropping out is a becoming not only an issue of interest, but also of growing concern, mainly in Romania – as statistics demonstrate (Eurostat, 2025, pp. 1–2): in 2024 the proportion of early leavers from education and training among young people aged 18–24 is a worrying 16.8%, significantly higher than the EU average of 9.3%. In other words, this group of leavers from education (young people aged 18–24) is exactly the definition of university students.

Except for the macroeconomic statistic reports published by the European Union, there is limited literature related to this subject across Romanian universities, and even less among engineering schools. This paper is an attempt to address this issue.

Therefore, the remaining of this paper is structured as follows: methodology of the study; pilot study among university students to eventually identify root causes of dropping out in Romanian higher education (engineering studies in particular); results analysis and formulation of a solution to possibly reduce the rate of dropping out in the case of engineering studies, followed by discussions and implications, conclusion and further studies.

Methodology of the Study

The focus of this study is limited to the *latent* conflict that can emerge from the difference between students' aptitude-based opinion (on one hand), and, on the other, somebody else's will or strong advice, a conflict which can develop into a root cause of dropping out of engineering studies in Romanian higher education.

Since dropping out is an unintended phenomenon associated with negative consequences (significant waste of resources among them), these research questions arise: *Is there any means to avoid the waste of resources (time included) by dropping out? Do career orientation services play any role in mitigating or even avoiding the conflict?*

As the scope of work covers the drop out of engineering studies in Romanian higher education institutions (as technology universities), the objectives of this explorative study are: (i) to have an image about the influence the career orientation services might have on dropping out; and (ii) to

formulate a possible solution which could have a positive impact (mitigation and/or reducing the dropping out phenomenon).

Both secondary research (literature survey) and primary research (pilot survey and interviews with students as well as career orientation advisers) were conducted. When necessary, practical examples were identified by primary research to illustrate the theoretical discourse. There are two phases of this pilot study among a limited number of respondents.

In the first phase (*data collection*), both preuniversity and university students attending engineering study programmes were surveyed to get their insights. In addition, interviews were conducted among career orientation services to have a better image of their role and identify possible solutions to improve them (in that sense of mitigating and/or reducing the dropout).

The second phase (*solution development*): to design a possible solution to mitigate and/or reduce the drop out, while dealing with the root cause as a latent conflict, and managing the conflict in a predictive manner, while using *elements of the theory of weak signals*, adapted in that sense of early detection of STEM-related weak signals.

A Pilot Study on the Causes of Dropping Out of Engineering Studies

There are cases when students are enrolled on schools with a profile other than their own talents or inner career intentions. Whatever the reason, there are two possible ways to pursue the career of their dreams: drop out of university or graduate first and then go for it. Nevertheless, both are consuming considerable resources (time included). A scheme of dropping out of engineering studies is displayed in Figure 1. The scheme is simplified (the second option is not represented).

The main flow of students pursuing an engineering career, from high school to completing engineering studies (pictured with blue arrows), is represented in opposition to the flow of students who drop out of engineering studies to compete for a job on the labour market (marked in red disrupted arrows). The other option (enrolling on a different university/faculty, different from engineering, which is secondary to this study) is not represented.

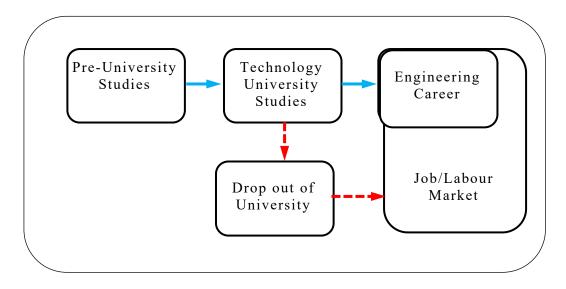


Figure 1 – A simplified scheme of dropping out of engineering studies

A pilot survey among engineering students

A research project was carried out between 2024–2025 among students at the National University of Science and Technology POLITEHNICA Bucharest, aiming to analyse the abandonment in higher educational institutions with a technical profile, and to conduct a detailed investigation of factors that influence the academic path of students in this field.

The study targeted a population of 1,400 students in the first and second year of study at four engineering faculties, known for their diversity of

study programmes (including an important management component) and laboratory support applications.

As quantitative research, the study used a semistructured questionnaire-based survey method for data collection between March and June 2024. By the end, 171 sets of data were collected. This sample (Table 2) is representative of the target audience as gender, location and background education (high school profile). The data collected was processed statistically (SPSS 19.0 software). A factorial analysis was performed to identify the factors that influence school dropout.

Table 2 –	Demograph	ic characteristics	s of the sample

Characteristics	Split	
Gender	53.8% female; 45% male; 1.2% undisclosed	
Urban/rural location	68.4% urban (36.3% Bucharest); 31.6% rural	
Background: high school studies	40.9% maths-info; 24.0% natural sciences; 23.4% economics	
Total	100.0%	

Since the general objective of the study was to identify and analyse the challenges faced by students to adapt to university life, the results indicated that the lack of social integration, as well as feelings of loneliness, can negatively affect the of students adaptation to the university environment. Also, the difficulties in managing the academic workload, combined with the lack of support from teaching staff, affect the students' ability to understand the course materials, making them less motivated to learn. At the same time, inadequate prior knowledge indicates the need for more rigorous prior training (yet hoping to improve their studies once they reach college). Overall, the various difficulties in managing the amount of academic workload were mentioned by about a quarter of students (24%).

In addition, financial difficulties can put pressure on students, who often must work to support themselves away from home, which affects both their personal lives and academic performance. *Emotional and financial support* from family and friends is crucial to academic success.

A worrying percent of 21% confessed that the idea of abandoning engineering studies has crossed their mind. Although there are no official statistics about dropped out students, the above figure is close to insulated data at some engineering faculties of university (20% dropped out during first year of studies) and covers the proportion of early leavers from education and training among young people aged 18–24 from European statistics (Eurostat, 2025) in 2024: 16.8%.

The study neither confirms nor denies whether the percentage of engineering students who drop out is higher than the national average among students, but *it provides convincing reasons for doing so*.

The key results of the study – related to the reasons behind dropping out

The above study also revealed, in qualitative terms mainly, likely reasons for quitting engineering studies.

- Lack of proper advice and career orientation services during pre-university studies is among the top three reasons mentioned by the first-year students to quit engineering studies.
- Students who come from families without university experience or with limited resources are more likely to abandon their studies.
- A fair majority of students (54%) admitted that their chosen engineering profile does not match their natural abilities.
- Many students quit because they realise that the engineering classes they attend are not consistent with their expectations.

The study neither confirms nor denies whether the percentage of engineering students who drop out is higher than the national average among students, but it does confirm that the difference between students' intentions and aspirations, and somebody else's will or strong advice (in place of professional career orientation counselling) is among the causes of dropout.

Figure 2 depicts the position of career orientation services (represented by thin dotted green arrows) relative to pre-university and engineering studies.

Depending on the reasons behind (e.g., quality information about future career), these differences may follow different paths — either to develop into latent conflicts (and wrong career choices) or to be mitigated and/or solved ultimately by proper career orientation services. Therefore, the next section presents the results of another pilot investigation in this respect.

Targeting active students only (from first and second years of study) – and not former students who already dropped out of university studies – is a serious limitation of the study presented. Nevertheless, it highlights the critical issues of concern that can further develop into real causes.

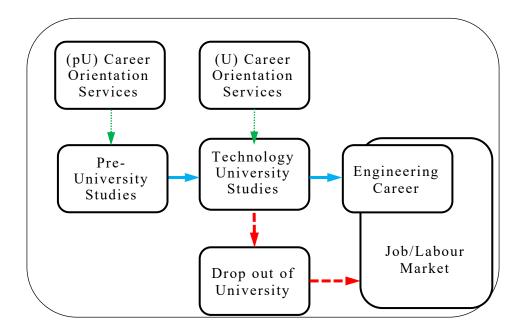


Figure 2 – A simplified scheme of career orientation services and their roles

An Explorative Study on Career Orientation Services

An explorative study was conducted by one of the authors during the first half of 2025 with the purpose of obtaining insights related to the activity of career orientation services, both at pre-university and university levels. The interview was the method for data collection, using a semi-structured interview guide (including 10 open questions) as an instrument, which was developed around two research questions: (i) Do career orientation services play any role in mitigating that type of conflict under the research lens? (ii) What types of services do they provide, as far as career orientation specifically?

The interviewees were eight teachers who provide career orientation services, selected from a technical university and a private high school in Bucharest. The interviews were conducted by telephone during the month of June 2025.

Each interview lasted approximately 30 minutes, and responses were transcribed in real time. All responses were treated confidentially and anonymised during the analysis process.

Key takeaways, lessons learnt and recommendations – as results of interviews

There is a certain degree of confusion related to professional terms. Specifically, "career guidance" and "career orientation" are used interchangeably. As opposed to career guidance (to support occupational decisions throughout active life), career orientation should be focused on university and mainly on pre-university students to align their own abilities, interests and values with future career paths.

There is a certain degree of uncertainty related to the status of career orientation services (e.g., are they mandatory or optional; are they a right or an obligation; etc.) as well as the status of service providers (e.g., are they teachers or specialised service providers who need professional training). Therefore, these issues should be regulated by laws and corresponding constitutions.

In the same vein of discussion, the answers of interviewees are blatantly uneven (from vague, general and uninformed answers to concrete examples of services provided). Then, it is obvious that service providers should be selected according to their educational background, experience, professionalism and merits (and not just filling a

vacant position, and to complete a regular teaching position). In other words, providers of career orientation services should not be regular teaching staff.

Analysis of the interview results displays a large variety of "activities" under the name of "career orientation services" as well as threefold overlapping (service providing and promotion activities; service providing and regular classroom teaching; service providing and lectures given by guest speakers). A neat and clean content definition of the types of career orientation services (e.g., counselling, training, information provision, etc.) should be in place. Only insulated answers tests" mentioned "aptitude among career orientation services provided. More than an exception, the aptitude tests must be the core activity and the base for career orientation of preuniversity students.

The frequency of delivering career orientation services is a reflection of the above, going from not having an activity planner at all (equivalent to having not much interest in career orientation services) to "whenever needed" to "at least once a month" and "twice a week". The other extreme is the vague "ongoing".

In line with the confusion, heterogeneity of types and uneven frequency of providing career orientation services, there is a tendency to mention promotion of partnerships and invitation of various guest speakers (although positive) instead of proper support to students' career orientation. To replace (and not to supplement) is not an advisable solution.

The answers during interviews should be taken cum grano salis (statements should be taken with reservations). The best example is that optimistic answers (e.g., "career guidance services can be a decisive factor in keeping students within the preuniversity and university academic environments; they offer young people direction, meaning, and support, thus preventing dropout; effective integration of these services into the educational system could transform individual pathways and significantly reduce the risk of early school leaving") are in opposition to results displayed by a survey conducted during academic year 2024–2025 among Bucharest high school students by Grigorescu (2025, p. 44): 38.5% more than one third

of respondents (38.5%) neatly declared that they were not informed enough about engineering career, while only 19.2% were satisfied.

Results of this investigation suggest that not all activity of existing career orientation centres is suitable to address the type of dropout cause under scrutiny, and not always are the services delivered at the level in need (i.e. pre-university / secondary level). In other words, it is recommended to monitor the university dropouts and analyse their causes case-by-case, and then tailor specific services accordingly.

For all these reasons, it is recommended to provide proper career orientation services (as systematic aptitude tests) at pre-university level, while providing support services relative to finding a specific job (how to apply for a job, finding a job, organizing job fairs and days of 'open doors', and alike) at university level, to engineering students.

The next section is focused on this issue: how to develop a proper career orientation service, based on aptitude tests tailored for pre-university students, to detect the most suitable candidates for engineering careers. A supporting predictive theory is also presented.

Developing a Hands-on Solution

The difference between students' inner talents and career aspirations and the parents' willpower and/or relatives' and/or friends' advice can become a latent conflict and then develop in time. The conflict resolution can be a compromise, or the opinion of one side prevails (usually the parents' one). Any outcome is possible, depending on a multitude of factors. Nonetheless, as in any conflict negotiation, the arguments do count. And no argument is stronger than a student's aspirations and abilities (mainly innate talents, but also learnt and trained skills). This last line of thinking will be followed by this paper.

Assuming that career service centres are in place, at both levels (pre-university and university) and the root-cause of future drop out is known (is theory), then it is obvious that secondary education is the place where proper career advice must be provided: earlier, better — according to conflict management principles as well as prevision

(integral to the management function of planning). In practical terms, there are two sides of the solution: how to [early] identify the latent conflict and which are the elements to be detected, recognised and identified. To summarise:

- A later damaging conflict (dropping out of university) can be fairly managed if detected earlier (during pre-university studies) as a difference in opinions.
- If a difference in opinions does exist, then students' aptitudes prevail.
- In case of engineering studies, engineering aptitudes are STEM-based (Science, Technology, Engineering, Mathematics).
- STEM abilities include creativity, analytical reasoning, critical thinking, logical-mathematical skills, problemsolving, and teamwork.
- Appropriate, tailored instruments can be used to assess STEM abilities.

As such, a short excursion into the territory of the theory of weak signals would be useful.

Theory of Weak Signals

Traditionally associated with electric and electromagnetic signals – i.e. useful signal/noise ratio and long distance radio communication (Iiu, Ma and Sun, 2018; Huang et al., 2023) – the theory of weak signals has achieved large range of applications as in science and technology prediction (Eulaerts et al., 2021), anticipation of catastrophic events (Wohlstetter, 1962; Andrews, 2007; Schoemaker and Day, 2009) even in intelligence (Carvalho, 2010; Lesca and Lesca, 2011) and defence planning (Betts, 1982) to prevent surprise attacks.

According to Connelly et al. (2024, p. 24), "signalling theory is about decision-making and communication [that] describes scenarios where signallers send observable signals that carry credible information about unobservable qualities". The signals detected, recognised and identified help decision-makers to make better decisions when they

have incomplete or imperfect information. Rossel (2012) placed the problem of weak signals within the "broader field of futures studies" or, as Carvalho (2021) said, "what is coming" – a euphemism for the novel *Foresight* studies.

Makridakis (1988) introduced the term "metaforecasting" to "improve forecasting accuracy and usefulness". Kahn and Wiener (1967) "speculated the next thirty-three years," anticipating the year 2000. There is beyond the topic of this article than to make comments about the rightness degree of their prediction.

The theory of weak signals is a good approach to anticipate the "future changes" (Hiltunen, 2008). While Hiltunen proposed environmental scanning—as Aguilar (1967) proposed scanning the business environment earlier—to identify sources of weak signals empirically, Coffman (1997) conducted comprehensive research on weak signals, from basic information theory to weak signal evolution and lifecycle to its maturity.

As far as approaching futures studies, Dufva (2019) has discussed three ways: (i) preparing for the future (i.e. to identify the current trends and consider their consequences; (ii) planning the futures (i.e. to plan futures in case there is no clear vision about them); and (iii) expanding on the futures, which is a combination of the previous two ways. Choosing one approach or the other is a matter of circumstances and objectives.

Wack (1985a; 1985b) has shared his experience in scenario planning while directing the Royal Dutch / Shell Group planning department for about a decade (1971–1981), a period that coincided with the oil and energy crises.

Ansoff (1975) understood the potential of the theory of weak signals to be applied in management and decision theory, mainly for long-term decisions in turbulent environments (Ansoff, 1982), and broadly in strategic management and strategic decisions (Ansoff and Lindsey, 1984; Ansoff and McDonnel, 1990). In his doctoral thesis, Webb (1987) applied Ansoff's theory of weak signal management to forecast the future of ophthalmic lasers.

In Ansoff's line of thinking, applications of the theory of weak signals at the micro-level of enterprise are also notable (Makridakis and Heau, 1987; Weschke, 1994; Lesca and Blanco, 2002). Nikander (2002) considered early warnings "a phenomenon in project management".

Considering a large area of applications, Boutout and Wahabi (2020) emphasised the use of weak signals "to prevent strategic surprises", also identifying some limits of the theory of weak signals (Ibidem, pp. 126–128).

Despite a large amount of work and studies published, there is not much about the use of this theory in education (as an interconnected and dynamic system and its socio-economic impact, and not necessarily about the education process itself).

Detection of STEM-related aptitudes as Weak Signals

Grigorescu and Scarlat (2024) proposed a weak signals approach for early detection of STEM-related aptitudes during pre-university (secondary) education, underlying the challenges of early detection, while predicting success in engineering studies (Grigorescu and Scarlat, 2024). Van Veen and Ortt (2021) used a "three-step approach including cluster analysis to unify 68 reviewed definitions" of weak signals from different specialised fields, "each field framed the research in its own theoretical and methodological basis, and this led to a myriad of different terms, definitions and operationalisations of weak signals". The authors of this study are in the process of applying the same procedure.

Career aspirations in the fields of science, technology, engineering, and mathematics (STEM) are formed from an early age, with the high school years representing a critical period for identifying cognitive and motivational factors that increase young people's chances of choosing a STEM career. Early identification of weak signals could help students and teachers in the career guidance process. A study conducted by Wang et al. (2017) focused on examining relative cognitive strengths and

interests in math, science, and verbal domains among high school students. Data were collected through a longitudinal study with a sample of 1,762 ninth-grade students, followed up until the age of 33.

The results showed that in the group with high verbal, math, and science abilities, individuals who preferred science-related tasks and were less altruistic were more likely to choose STEM careers. Likewise, the group with low verbal abilities but moderate math and science abilities, who showed an interest in math, were also more likely to pursue STEM careers. Thus, those who use their strengths and have an interest in math and science more often choose STEM careers. Additionally, individuals who are strong across all domains have more options but still tend to choose STEM fields if they are more interested in science than in helping others (Wang et al., 2017). Therefore, detecting weak STEM signals among students is very important to help them choose the best educational and career path according to their strengths and interests.

Regarding the identification and development of STEM talent, Andersen (2014) discusses visualspatial ability as a complex component of intelligence that has predictive value for future achievements in STEM occupations. This ability is rarely measured and often neglected in gifted education. Andersen argues that for students to succeed, educational services should be adapted to meet the needs of spatially gifted students and develop their talents in this area (Andersen, 2014). This approach can be adapted and applied in most cases, regardless of the type of talent. More specifically, early identification of students' weak signals is essential for education to achieve the desired outcomes and for students to obtain academic and professional success.

Figure 3 highlights the process of detection, recognition and identification of STEM-related aptitudes among pre-university students – leading to improved career orientation services (the green dotted lines are thicker), while the phenomenon of dropping out diminishes (the red disrupted lines are thinner).

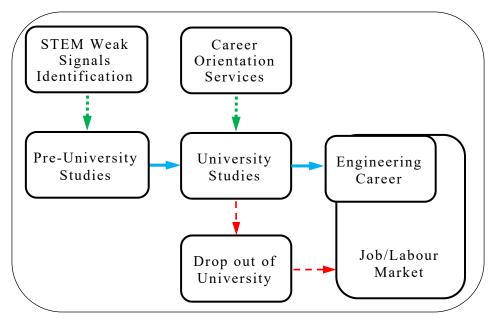


Figure 3 – The process of detection, recognition and identification of STEM

Discussion and Implications

The authors' approach is complex: "early" is measured in years (from university years back to secondary school studies); "warning" is "signalled" by instant communication of objectively measured STEM-related aptitudes to both pre-university students and their family and friends; career decision is made earlier and with higher probability to prove right; the number of dropped-out students is expected to be lower, and the quality of long-term prediction will increase significantly.

Besides the general approach, the critical coreproduct designed (Grigorescu, 2024; 2025a; 2025b) is the set of methods and instruments for testing the students' STEM-related aptitudes.

There are multiple advantages:

- Different opinions and latent conflicts between students' talents and career ambitions versus good-intention-based advice from family and/or friends became meaningless when career decisions are based on the objective assessment of students' aptitudes;
- Resources wasted by dropping out of university (both students' years of life as well as university education resources) will be put a

better use in students' professional careers and the university education process respectively;

 More adapted and specialised career orientation services mean more effective and efficient use of the resources of career centres.

A notable theoretical result is launching a provocative debate related to possible solutions to effectively reduce the engineering students' drop out; and drop out of university students in general (if other than STEM-related aptitudes are considered as suitable in other than engineering careers).

Besides the theoretical importance of correct understanding and use of novel concepts, there are educational implications for the whole education system, managerial implications, impacting career support services, and the business community, ultimately.

Implementation of the proposed aptitude-based tests as a weak signal for future career (engineering career may be the pilot) takes time and might be distant. Nonetheless, some changes could improve the current situation of students in Romania, according to the answers given by the teaching staff in the interviews, and these changes can be implemented quickly.

These measures consist of introducing hours dedicated to career orientation training and counselling in the framework plan, supplementing the number of school trainers and counsellors able to provide support services, and promoting a culture of career orientation in high schools/universities.

Currently, for different socio-economic reasons (which are beyond the objectives of this study), the relationship between family and school is not exactly how it should be, and a proper culture of career orientation supported by this relationship is not in place. The proposed approach may play, to a certain extent, a substitution role.

In addition, running projects in partnership with various institutions or companies could help young people to choose the best option regarding their educational and career path, reducing the number of students who drop out of the education system.

Career choice is not just an event, but a result of a series of close influencing factors (family and friends), gender and generational stereotypes, as well as continuous environmental pressure exercised by mass media, limited information and/or resources. Young people who end up studying in the wrong faculty often end up dropping out or getting stuck in an unfulfilling profession. This is extremely harmful for the younger generation, but also for society as a whole.

Career orientation is currently undervalued, and the investment in this field represents an investment for a better professional, personal and economic future of the new generations. A relevant education system connected to reality must put more emphasis on career orientation, as this is an essential element for a constantly evolving society.

Conclusion

This paper extends the applications of the theory of weak signals, by proposing its particular use in the system of education, providing a possible solution to address the negative phenomenon of dropping out in engineering studies: early warning by detection, recognition and identification of STEM-related aptitudes of pre-university students (as weak signals) to provide them career orientation services before deciding to go for engineering studies.

This pilot study has inherent limitations. In particular, targeting active students only (and not former students who dropped out of university studies) is also a limitation. It should be followed by further studies at the university level on a larger number of students, as well as on dropouts from the same university. Moreover, the results should be observed in time: the percentage of dropout students should be measured against macroeconomic indexes.

The initial set of methods and instruments tested on a limited number of students should be adjusted and improved, which is the subject of future studies.

The path of further studies associated with different careers is open.

It is a large avenue.

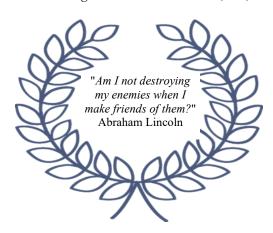
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bstract

Resolving Team Conflicts Through Root-Cause Analysis

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Constructive conflict management is a critical competency for organizations seeking to ensure efficiency, cohesion, and resilience under operational pressure. This article presents a case study from a large manufacturing company, where a conflict arose in the recruitment team following a newly hired employee's failure to report on their first day. Using a qualitative, action-research approach, the team manager facilitated a session to apply structured root cause analysis tools. Beyond de-escalating interpersonal tensions, the intervention led to the introduction of performance indicators and the implementation of collaborative practices. The study emphasizes the dual function of conflict: as an indicator of systemic weaknesses and as a catalyst for organizational learning. The findings offer a replicable framework for leaders aiming to transform conflict into a structured opportunity for improvement, applicable beyond the HR context.

Keywords: conflict management, root cause analysis, fishbone diagram efficiency

Introduction

Conflicts are an inevitable component of organizational life, arising from differences in perspectives, interests, experiences, or values between individuals or groups. Although often perceived as a dysfunction, conflict can become a valuable opportunity for learning, change, and organizational development when managed constructively (Rahim, 2011). In this regard, conflict management has become a central topic in studies on leadership, organizational behavior, and team development.

Particularly in Human Resources departments—positioned at the intersection of people, processes, and strategy—conflicts may emerge not only in relation to employees or senior



management, but also within the team itself. The dynamics of HR teams are often influenced by high workloads, multiple responsibilities, procedural ambiguity, or the absence of a feedback-driven organizational culture (Jehn, 1995; Tjosvold, 2008). In such contexts, tensions can quickly escalate, affecting not only team performance but also internal cohesion and the organization's perception of its own work climate, with broader implications for organizational culture.

The importance of a structured approach to conflict management thus becomes evident. The application of well-established analytical tools - such as the *Cause-and-effect diagram* (Fishbone) and *The 5 Whys technique* - helps shift the focus from individuals to processes, from blame to cause, and from emotional reaction to systemic understanding (Ishikawa, 1985; Ohno, 1988). These tools not only help defuse conflicts but also contribute to the professionalization of organizational culture and the development of a team oriented toward continuous learning.

This article presents a real-life case study based on the author's direct experience within an HR team of a large manufacturing plant. The analyzed scenario illustrates a conflict that arose following the recruitment process for blue-collar production positions, where a newly hired employee failed to report on their first day. This incident triggered conflicting reactions within the recruitment team, highlighting issues related to responsibility, communication, and both individual and collective accountability. By employing two recognized methods - the Fishbone diagram and the 5 Whys technique - the team manager facilitated a collaborative, process-oriented approach rather than one focused on blame.

The article particularly emphasizes how conflict was transformed into an opportunity for learning and organizational development, resulting in measurable benefits for the team and for subsequent work processes. By outlining the steps taken, the identified causes, and the outcomes achieved, this study provides a practical and transferable perspective on how conflicts can become drivers of organizational progress.

Literature Survey

In the specialized literature, conflict is regarded as a natural manifestation of human interaction within the organizational context. It arises when there are divergent perceptions, incompatible interests, or tensions related to the allocation of resources, responsibilities, or goals (Rahim, 2011). In the field of human resources, where work involves both direct relationships with people and decision-making processes with organizational impact, conflict can take various forms, from latent tensions overt disputes. Studies organizational conflict have evolved from an initial approach focused on avoidance or suppression, toward recognition of its constructive potential, depending on how it is managed. Although traditionally defined as a negative interaction between individuals or groups whose goals, interests, or values are incompatible (Rahim, 2011), in practice, conflicts can be dysfunctional when they hinder team performance - or functional - when they lead to clarification, innovation, and adaptation (Deutsch, 2006).

An important contribution is brought by Jehn (1995), who distinguishes between three major types of conflict: task conflict, relationship conflict, and process conflict. Task conflict may have positive effects as it stimulates critical thinking and improves decision-making, whereas relationship conflicts tend to erode trust and undermine performance. In human resources teams, all these types may coexist, often exacerbated by time pressure, heavy workloads, and role ambiguity (Tanko, 2024). In HR settings, conflicts may also stem from differences in professional style, experience levels, or the absence of a well-defined organizational culture.

Thomas and Kilmann (1974) classified conflict management strategies into five distinct styles: avoidance, accommodation, competition, compromise, and collaboration. In current organizational practice, there is increasing emphasis on collaborative strategies, which involve the active participation of all parties and the pursuit of mutually beneficial solutions (Yi, 2024). This approach is supported by contemporary literature, which advocates for building a "conflict-positive climate" in organizations - an environment where constructive expression of divergent opinions is encouraged and valued (Tjosvold, 2008).

In addition to behavioral strategies, recent literature also proposes methodological tools for analyzing the causes of conflict. Among them, the *Cause-and-effect diagram* (Fishbone/Ishikawa) and the *5 Whys technique* are increasingly used not only in quality management but also in the field of human resources, particularly for analyzing faulty processes and recurring incidents (Fadillah, 2024). These tools support a shift from a reactive to a proactive and systemic approach.

In conclusion, the specialized literature provides a solid framework for understanding organizational conflict, but a gap remains concerning the practical application of analytical methods in managing conflicts within support teams, particularly in HR. This article seeks to contribute to this area through an applied approach, illustrating how such tools can transform a specific conflict into a process of collective learning and evolution.

Methodology of Research

Theoretical aspects. The present study adopts a qualitative research approach, grounded in a real organizational context encountered by the author during her tenure as Human Resources Manager in a large manufacturing company operating with over 2,500 employees. The analyzed case is based on an internal conflict that emerged within the recruitment team, composed of eight HR professionals, following a failed onboarding event: a candidate hired for a blue-collar position did not show up on their first day of work, despite having signed the employment contract.

The chosen method allowed for a detailed exploration of the organizational context, the interpersonal relationships within the team, and the concrete way in which an internal conflict was addressed. The aim of the research was not to generalize the findings, but rather to gain an indepth understanding of the mechanisms and dynamics of a managerial intervention based on causal analysis tools, with potential applicability in

other organizational contexts. The tools used were the *Cause-and-effect diagram* and the *5 Whys technique*.

The cause-and-effect diagram (Fishbone/ Ishikawa) was used to identify and classify the factors that contributed to the emergence of the conflict. This method allowed for a visual structuring of the team discussions and encouraged a participatory analysis of possible root causes. It is well-recognized in the literature for its effectiveness in identifying systemic factors that contribute to the emergence of a problem (Ishikawa, 1985; Rooney and van den Heuvel, 2004). The diagram is a graphic tool that visually represents the multiple causes that may lead to a particular issue. Structured around six categories -People, Method, Material, Measurement, Machine, and Environment - it enables the identification of causal links and stimulates collective reflection.

Complementarily, the 5 Whys method was used to investigate in depth the root causes of the problem, starting from the concrete incident (the failure of a newly hired employee to report to work) and exploring the causal chain down to the systemic sources. This method involves a brief but profound exercise of successively asking "why" in order to reach the root cause. It is also widely recognized in the literature for its efficiency in uncovering systemic contributors to a problem (Ishikawa, 1985; Rooney and van den Heuvel, 2004).

This combination of tools is frequently used in organizational contexts to support collective learning, reduce tensions, and foster a solution-oriented mindset (Antonacopoulou & Bento, 2004). When combined, these two methods provide a valuable framework for conflict analysis, especially in multidisciplinary teams or in contexts where emotions may hinder the objectivity required to identify sustainable solutions.

Case Study Presentation. In the context of a large manufacturing company with approximately 2,500 employees, the recruitment team consisted of eight specialists responsible for staffing both blue-collar and white-collar positions. The selection process for positions in production and logistics was standardized, and team members operated with a high degree of autonomy in administering

tests, evaluating candidates, and issuing job offers, without requiring the direct involvement of the team manager or factory leadership.

In a particular situation, two team members one with significant experience (hereafter referred to as A) and one junior (B) - managed the recruitment process for a group of manufacturing operators. Following the selection process, several candidates were shortlisted, tested, and signed employment contracts. The problem arose on the first day of work, when one of the newly hired employees failed to show up. This incident triggered conflict on multiple levels. production manager criticized the recruitment team for a lack of rigor in the selection process. Simultaneously, A shifted full responsibility onto her colleague B, arguing that B was the only one physically present in the testing room on the day in question. The team became polarized: some members supported B, while others either remained neutral or aligned themselves with A. The situation risked escalating and undermining team cohesion, especially as disciplinary sanctions were being proposed.

The company in which this case took place operates in a competitive industrial sector, where the production pace is sustained by a continuous flow of personnel. This context exerts pressure not only on production teams but also on support functions, particularly the human resources department. The analyzed recruitment team had a clearly defined structure, but the complexity of hiring requirements and the high volume of recruitment led to a dynamic task distribution, based on availability and each member's level of experience. However, the absence of explicit monitoring of recruitment outcomes and the lack of a strong internal feedback culture allowed latent tensions to accumulate over time.

The sensitivity of this case was further amplified by the informal hierarchical relationship between the two colleagues: A, being more experienced, exercised de facto authority, while B, a newcomer to the profession, was in a vulnerable position, eager to prove her capabilities. The absence of a formal mentoring process and the lack of regular 'lessons learned' meetings meant that perceived mistakes or process flaws were not

addressed in a constructive setting. Thus, the conflict was not merely the result of a one-time incident, but rather a manifestation of deeper team dynamics, where accountability was diffuse and cooperation relied more on personal relationships than on clearly defined norms of professional collaboration.

Conflict Resolution Process through Managerial Intervention. The recruitment team manager chose to address this situation not by assigning blame, but by deeply understanding the systemic causes that contributed to the emergence of the issue. A team meeting was convened, during the Fishbone method was applied, complemented by targeted questions from the 5 Whys technique, in order to structure the analysis and foster collective reflection within the team. From the outset, the emphasis was placed on shared responsibility and organizational learning, rather than on individual penalties. Thus, the facilitation process was designed as a participatory managerial intervention, in which the recruitment manager acted as a guide, in line with best practices in collaborative leadership in hightension environments (Deutsch, Coleman and Marcus, 2014).

The data collection process included direct observation, the manager's participation in the team meeting as a facilitator, the analysis of internal documents (meeting minutes, recruitment procedures), and professional reflection. The information was synthesized in a narrative format, following the chronology of events, team reactions, and relevant managerial interventions. The meeting began with the classic investigative questions of the method: What happened? Where? When? Who was involved? What was the impact? The recruitment team then jointly defined the problem: a newly hired employee, who had been tested and signed the employment contract, failed to show up on the first day of work. This led to the immediate termination of the contract and was perceived by the recruitment team as a failure in the effectiveness of that specific hiring process. As such, the intervention blended principles, methods, and best practices from the field of organizational problem-solving.

The methodological process was structured into a series of steps that ensured a coherent and participatory team-level intervention. Figure 1 presents the sequence of actions undertaken - from the identification of the problem situation and the scheduling of the team meeting, to the application of the Fishbone and 5 Whys methods, the identification of systemic causes, and the formulation of intervention solutions. This visual structure facilitated both the team's understanding of the process and the rigorous documentation of the applied approach.

The managerial intervention was based on the premise of restoring balance and redirecting the team toward solutions without emphasizing individual fault. The meeting was structured around three main components: defining the problem and emphasizing its impact specifically at

the recruitment team level (excluding broader company image, other departments, or external brand reputation); exploring the causes using the Fishbone method; and stimulating reflection through the 5 Whys technique. These methods were introduced in accessible language, and the participation of all team members was encouraged and supported.

The chosen approach has the advantage of highlighting the real dynamics of conflict and of emphasizing the direct impact of leadership decisions on the team. Through its applied nature, the study provides a replicable model of intervention for other support teams facing similar tensions, particularly in organizational environments marked by complexity, speed, and pressure.

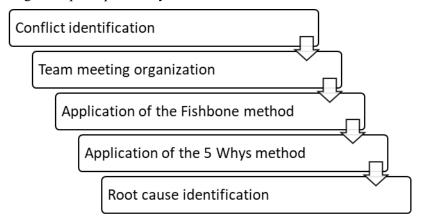


Figure 1- *Methodological Steps Applied in the Analysis of the Internal Conflict* (Source: adapted from Ishikawa, 1985 and Antonacopoulou and Bento, 2004)

Research Results

The application of root cause analysis methods during the team meeting generated a significant shift in the team members' perception of the conflict and the way the situation was addressed. From an initial approach focused on identifying a culprit, the team was guided toward a collective analysis of the processes involved in the reported incident. It became evident that using these tools led to a visible reduction in tension: instead of focusing on assigning blame, the team members began to jointly explore process deficiencies.

By clearly defining the problem - a newly hired and tested employee failed to show up on the first day of work, resulting in the immediate termination of the employment contract and an ineffective recruitment process - the team recognized the importance of focusing on team objectives rather than the expectations of other organizational units (e.g., beneficiary departments), and the essential role of collaboration.

Using the Fishbone diagram, multiple potential causes were identified and grouped into specific categories: lack of specialized training for recruiting blue-collar positions, absence of a formal training process and dedicated materials, lack of a standardized internal feedback system,

limited experience in delivering negative feedback, selection tests not aligned with actual factory tasks, lack of cross-validation in the selection process, and internal organization and communication issues within the team. These findings were later confirmed through the application of the 5 Whys method, which allowed for a deeper understanding of causal chains and highlighted systemic vulnerabilities.

Based on these insights, a series of concrete improvement solutions were proposed, including: internal training programs tailored for blue-collar recruitment, revision of the recruitment manual, involvement of two team members in each candidate screening process, team exercises on giving and receiving negative feedback, revision of the selection tests, and better task allocation and workflow optimization.

Beyond the technical aspects, the manager facilitated an open discussion about the values that should underpin team collaboration: transparency, mutual support, the right to make mistakes, and collective responsibility. It was mutually agreed that each recruitment process would be followed

by a mini post-hoc reflection session, and that any issues would be addressed without personal blame. Additionally, the idea of "ethical pre-evaluation" of selection decisions was introduced, allowing colleagues to seek a second opinion before advancing a candidate—especially for high-volume roles. This practice strengthened a culture of consultation and reduced the risk of silent, repeated errors.

As a result, the internal collaboration principles were reaffirmed: all external communication or escalation would be coordinated through the team manager, and any procedural changes would require managerial approval. For a synthesis of the discussion and proposed actions, Table 1 presents the main causes identified during the team session, categorized according to the Fishbone diagram dimensions, along with the concrete solutions implemented. This structured approach enabled a systemic analysis and facilitated the development of a coherent action plan aimed at preventing recurrence and increasing team effectiveness in the recruitment process.

 Table 1 - Solutions in the Conflict Management Process

Cause	Fishbone	Proposed Solutions
	Category	
Lack of training	Man (People)	Internal analysis and training on the recruitment process (specific case: blue collar roles)
Lack of training materials or structured training process	Method	Revision of the recruitment manual, with a focus on blue-collar (operator) recruitment
Limited experience of team members in recruiting on blue collar positions	People	Strengthening collaboration between team members Involving at least two recruiters for each operator recruitment round Process analysis and improvement identification
Lack of experience in delivering negative feedback to candidates	People	Organizing internal role-play sessions within the team to practice giving constructive feedback
Inadequate candidate selection test	Measurement/ Method	Revision of the candidate selection test
Poor team organization and communication breakdowns	People/ Method	Team manager to review team structure, task allocation, and internal communication processes to improve overall organization, communication, and performance

The results of the intervention were immediate and visible. The conflict diminished significantly, tensions among team members were reduced, and B was no longer isolated or stigmatized within the team. In other words, one of the most relevant outcomes of this intervention was the shift in focus

from the individual to the process. Following the analysis, no disciplinary action was taken against colleague A, since similar situations had occurred in the past without sanctions, and the decision was to apply a consistent and equitable approach.

One of the most relevant outcomes of this intervention was the shift in focus from the individual to the process. Thus, the initial accusations directed solely at B, the junior team member, were recontextualized, and the team acknowledged that responsibility was collective. As a result of the discussions, concrete solutions were formulated, such as the involvement of two recruiters in each selection process for blue-collar positions, organizing internal training sessions on giving negative feedback, and a comprehensive review of the selection tests used.

As a result of these decisions, a new performance indicator (KPI) was introduced to monitor the proportion of candidates who actually started work compared to those who had been selected and signed the contract. This is an effectiveness monitoring indicator, reflecting the extent to which recruitment and selection processes result not only in the signing of an individual labor contract but in the actual commencement of work by the selected candidate who accepted the job offer. The idea was emphasized that recruitment success does not end with signing the contract - it also involves short-term retention and candidate motivation. Moreover, the team began to regularly use the concepts of efficiency and effectiveness in evaluating the recruitment process.

Additionally, the internal communication procedures within the team were revised, and a new rule was introduced requiring prior notification of the manager before any external communication or interdepartmental escalation.

In the short term, the conflict was de-escalated, and the team climate became significantly more collaborative. In the medium term, no similar incidents were reported, and the quality of the recruitment process improved—an aspect noted even by managers of the beneficiary departments. Beyond immediate outcomes, the team began to use a shared vocabulary related to learning, responsibility, and continuous improvement.

The results of the mediation and root cause analysis process were reflected not only in the internal climate but also in the team's operational indicators. Following this incident, an increase in first-week retention was observed, along with a decrease in no-show cases on the first day. Specific KPIs were also introduced, such as "hiring effectiveness" (defined as the ratio of employees who actually start work to those who sign the contract) and "selection accuracy" (correlated with performance at 30 days post-hiring).

At the team level, informal feedback became more frequent, and weekly meetings included a dedicated section for learning from cases. More experienced team members began to take on informal mentoring roles for newer colleagues, and the process of updating internal procedures accelerated. It is worth noting that six months after the incident, the team was evaluated by the factory management as one of the most stable and effective support teams, and the applied root cause analysis methodology was recommended for adoption by other departments. Finally, intervention helped strengthen the team's organizational culture, based on collaboration. learning, and process orientationrather than blame.

Discussion

This case study highlights the importance of a strategic managerial intervention in managing internal conflicts within support teams, particularly in the field of human resources. The case demonstrates that, despite appearing to be a simple interpersonal misunderstanding, conflicts within teams can have deeper systemic causes related to organization, processes, training, communication. By well-established using problem-solving tools based on root cause analysis - such as the Fishbone diagram and the 5 Whys method - the team's attention shifted from assigning blame to objectively analyzing processes and identifying sustainable solutions.

Thus, the study confirms the notion that process-oriented interventions, rather than those focused on personal dynamics, can reduce the escalation of conflicts within teams. The use of the Fishbone and 5 Whys methods enabled a shift from a "culture of blame" toward one of organizational learning (Gelfand et al., 2017; Ishikawa, 1985). This type of intervention is increasingly present in the literature on modern conflict management, which emphasizes prevention, clarification, and

building solutions collaboratively with the team (Lipsky, Seeber and Fincher, 2003; Thomas, 1992).

An important point to emphasize is how problem-solving tools can function not only as methods for operational improvement but also as mechanisms for mediation and rebuilding trust within the team. The shift in perspective - from interpersonal conflict to process dysfunction allowed for the reconstruction of a collaborative working framework and encouraged shared responsibility.

Moreover, the introduction of a new KPI to monitor the attendance of newly hired employees anchored the outcomes of the team discussions in a measurable format and ensured continuity in tracking the effectiveness of the recruitment process. From an organizational perspective, this step triggered critical reflection on the distinction between efficiency (contract signing) and effectiveness (actual attendance and integration into the role).

Furthermore, the case underlines the need for a clear framework for internal communication and escalation of issues, where the team manager acts as a pillar of coherence and coordination rather than a passive observer. A timely intervention, grounded in scientifically validated methods and adapted to the context, can prevent the deterioration of team relationships and contribute to the development of a culture of learning and collaboration.

From a leadership perspective, the analyzed case supports Tjosvold's (2008) conclusion that organizations with a positive conflict culture can turn tensions into development opportunities, provided they are managed with responsibility and transparency. It is essential for managers to create safe spaces for expression while also clarifying the procedural framework for escalating critical situations (Costantino and Merchant, 1996).

These findings are consistent with academic literature, which emphasizes the role of constructive leadership, systemic feedback, and data-driven interventions in preventing and resolving organizational conflicts (Gelfand et al., 2020; Jehn, 2019; Tjosvold, 2008). Thus, the presented case study can serve as an example of

good practice for team managers, particularly in large organizations where operational complexity increases the risk of tensions and breakdowns in collaboration.

Conclusions

The analyzed case demonstrates that in the face of a potentially destructive conflict, the application of managerial root cause analysis methods can turn the problem into an opportunity for growth. The use of the Fishbone method and the 5 Whys technique enabled the team to shift from a blamefocused mindset to one centered on processes and continuous improvement. Moreover, managerial approach—focused on learning and shared responsibility - had a positive impact on both team climate and the quality of the recruitment process. Beyond operational aspects, the article highlights the importance of empathetic, structured. and solution-oriented leadership, especially in dynamic organizational contexts such as the industrial sector. Thus, conflict becomes not only an obstacle, but also a valuable resource for organizational transformation.

Managing conflicts within operational or support teams - such as those in the human resources field - requires an integrated approach that combines timely managerial intervention with validated analytical tools. The case study presented in this article shows that, in the absence of an organizational culture based on learning and collaboration, tensions arising from minor operational incidents can quickly escalate and impact both team climate and performance.

By applying the Fishbone and 5 Whys methods, the conflict was de-escalated, and the team was able to identify genuine, systemic causes requiring attention. This approach not only resolved the immediate issue, but also contributed development of a more mature organizational culture—one that is process- and outcome-oriented, rather than blame-oriented. It has thus been shown that root cause analysis methods can support the resolution of latent conflicts and the improvement of team dynamics, particularly when accompanied by empathetic leadership, procedural clarity, and collective engagement.

Furthermore, the case reveals the importance of defining performance indicators that reflect not only operational efficiency (e.g., contracts signed), but also outcome effectiveness (e.g., attendance rate on the first day of work). In this respect, the introduction of a relevant KPI for the recruitment area led to a paradigm shift and increased commitment to high-quality hiring decisions.

In conclusion, managerial interventions based on analytical methods and collaborative facilitation can transform organizational conflicts into opportunities for learning and optimization. The study proposes a good practice example that is applicable to the industrial context, yet transferable to other organizational domains, reinforcing the idea that a well-managed conflict can serve as a catalyst for team development and internal resilience.

Additionally, the experience documented in this article demonstrates that, in today's organizational environment - characterized by fast-paced rhythms and multiple pressures - conflicts should not be avoided, but rather addressed with clarity, method, and empathy. The leader's role becomes essential in transforming tensions into lessons, while tools such as the Fishbone diagram and 5 Whys offer not only structure but also a culture of meaningful inquiry. By shifting attention from individuals to underlying causes and cultivating responsibility, teams become more cohesive, mature, and high-performing. Thus, conflict becomes a natural link in the chain of organizational evolution - not a rupture in cohesion.

Limitations of the study. This research also presents several limitations: it is based on a single case study conducted within a specific HR team in industrial company, which limits generalizability of its conclusions. The dual role of the author - as both researcher and team manager may introduce a degree of subjectivity in data interpretation, even though the process was thoroughly documented. Furthermore, the lack of external control or triangulated validation with independent sources may affect the perceived objectivity of the results. The organizational context, internal culture, and team dynamics strongly influenced the intervention process, meaning that replicating the method in other organizations would require specific adaptations.

Future research directions. In the future, this research could be expanded through comparative studies across multiple organizations in various industries that use the same root cause analysis methods in managing internal conflicts. Integrating mixed methods (quantitative and qualitative), such as pre- and post-intervention surveys or long-term performance indicator tracking, could provide more robust validation of the effectiveness of these tools. Additionally, a promising line of research could explore the impact of visual-based interventions (Fishbone, 5 Whys) on team climate, organizational trust, and engagement levels—particularly in hybrid or distributed work environments.

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