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The Role of HRM Practices in Shaping a Positive Psychosocial Experience of Employees: Insights from the SCARF Model

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Abstract: By integrating the concept of sustainable human resource management and Rock's neuroscience-based SCARF (status, certainty, autonomy, relatedness, and fairness) model, the paper aims to reveal the role of sustainable HRM practices in shaping a positive psychosocial experience of employees. Through this process, qualitative data were collected using semi-structured interviews with 50 STEM (science, technology, engineering, and mathematics) workers in Lithuania. The research revealed the key characteristics of sustainable HRM practices in terms of performance management, employee relations, rewards, employee development, career management, onboarding, and dismissal that shape positive experiences of STEM workers. Moreover, harmful HRM practice characteristics were identified that need to be eliminated to achieve sustainable human resource management. The results of the study allow organizations to better understand the role of HRM practices in enhancing positive psychosocial experiences of STEM employees through strengthening the domains of the SCARF model. Based on the insights obtained, organizations could better focus their efforts on the development of sustainable HRM practices that not only increase employee engagement but also contribute to their long-term professional sustainability.

Keywords: sustainable HRM practices; harmful HRM practices; psychosocial experiences; SCARF

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1. Introduction

Over the last 40 years, strong debates have been going on over the "proper" approach to human resources and their management of organizations [1]. The debates were substantially fueled by the situation in which employees were treated as a means, rather than an end, and the primary focus was on performance, suggesting little concern for employee well-being [2]. However, changes on the society level, while strongly focusing on sustainable development, which refers to "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [3] (p. 41), inspired a shift at the business level. Sustainability in business means that an organization adopts the so-called triple-bottom-line perspective that focuses simultaneously on its environmental, social, and economic performance [4]. Business commitment to sustainability means fundamental changes, as it requires integrating sustainability into strategy, business models, and operating processes and building "cultures that support the necessary transformation of mind-sets and behaviors" [5] (p. 2). Accordingly, sustainability has increasingly become strategically important for HRM, proposing a new approach to human resource management.

While the concept of sustainable HRM is still very much evolving, there is a consensus that sustainable HRM combines the idea of sustainability with the soft approach of HRM [1]. Sustainable HRM is seen as an extension of strategic HRM and presents a new approach to people management with a focus on long-term human resource development, regeneration, and renewal [6]. Sustainable HRM is seen as a survival strategy for organizations to deal with people in such a way that current and potential employees would have (a) the wish to work for a particular organization, (b) the ability to perform duties in a manner appropriate for business, and (c) possibilities for working in terms of health, stress, or work–life balance [7].

The core aim of sustainable HRM is to reframe people management and ultimately to improve employee well-being [8]. Hence, it is very important to understand the impact that sustainable HRM practices generate on employee experience. Speaking of employee experience, the current paper focuses on the SCARF model, which defines the five domains of experience, namely status, certainty, autonomy, relatedness, and fairness, which activate strong threats and rewards in employees' brains, thus influencing their behavior [9]. Rock and Cox [10] (p. 3) argue that "humans have a fundamental need to belong, are incredibly sensitive to their social context, and are strongly motivated to remain in good standing with their social group and avoid social exclusion". Meeting these needs is the way in which an organization can not only focus on performance but also treat employee well-being as significant.

Although the SCARF model [9] has gained increasing attention in recent years due to its potential to explain social drivers of human behavior in the workplace [10–12], previous research seems to be fragmented in analyzing the way HRM could shape employee experience in terms of the five SCARF elements [9–12]. Moreover, little attention has been given to the way sustainable HRM practices interact with these psychological needs in shaping positive psychosocial experiences of employees. However, although sustainable HRM is recognized as a strategy for promoting long-term employee engagement and well-being [6,8,13], the existing literature often fails to link it explicitly to the neuroscience-based SCARF framework [11]. Addressing the mentioned gap in the literature, the paper highlights the need for an integrated approach that connects sustainable HRM practices with the SCARF model to better understand how organizations could foster a positive psychosocial experience for employees. The paper aims to reveal the role of sustainable HRM practices in shaping the positive psychosocial experience of employees through the lens of the SCARF model. Although the core focus of the paper is on the positive impact of sustainable HRM practices on psychosocial experiences of employees, it is nonetheless admitted that HRM practices might also have negative effects. Therefore, it is necessary not only to strengthen sustainable HRM practices but also to eliminate harmful HRM practices. With this intention, the following research questions were formulated to guide this study: (1) How do employees perceive SCARF dimensions in the workplace, and how do these dimensions manifest in a positive or negative way? (2) Which HRM practices are sustainable and strengthen the positive psychosocial experiences of employees through the lens of the SCARF model? (3) Which HRM practices are harmful and shape the negative psychosocial experiences of employees through the lens of the SCARF model? To identify both sustainable and harmful HRM practices affecting the psychosocial experiences of employees, qualitative research was carried out, conducting 50 interviews with STEM workers.

This paper contributes to the scientific literature by offering a novel integration of the SCARF model with the concept of sustainable human resource management. Specifically, the paper enriches the literature in the SCARF model stream by identifying how sustainable HRM practices influence employee experience through the five SCARF elements—status,

certainty, autonomy, relatedness, and fairness. The study extends the application of the SCARF model beyond its traditional contexts, emphasizing that social concerns are a primary motivator for human behavior.

The paper is structured as follows: the next section reviews relevant literature on sustainable HRM and the SCARF model, followed by the methodology, the findings, and a discussion of the results in light of existing research. Finally, the conclusions are provided, addressing the limitations and focusing on further research avenues.

2. Literature Review

2.1. Sustainable HRM Practices

Recently, organizations have realized the importance of sustainability in the context of their business activities and also HRM [13]. The concept of sustainability refers to the "three pillars" approach, which includes three dimensions: economic, social, and environmental [14]. These dimensions, in conjunction with the attributes of sustainability, form the fundamental basis for a new approach to people management, which is called sustainable HRM [15–18]. Sustainable HRM represents a contemporary departure from traditional HR practices [13], advocating for greater care of employees. Ren et al. [19] state that sustainable HRM should be conceptualized not merely as a set of isolated practices but as a life-span career construction process that acknowledges the scarcity of human resources and seeks to balance employees' professional and personal lives through integrated HRM systems.

The starting point for discussing the importance of sustainability to HRM was the observation that people at organizations were "consumed", rather than "reproduced" [20], and HRM practices were mainly exploitative in their nature, focusing solely on performance while neglecting employee well-being [2]. Meanwhile, the concept of corporate social responsibility deals with the responsibility of organizations for their impact on society as a whole, arguing that organizational success is no longer based solely on financial performance; social and environmental performance for both the present and the future need to be taken into consideration [21]. As such, sustainable HRM has been suggested for addressing the shortcomings of HRM by offering a long-term approach, by admitting the influence of different stakeholders within and beyond organizations, and by acknowledging the tensions that are associated with HRM practices and desirable organizational outcomes [6,22,23].

Despite numerous attempts to define sustainable HRM, there is still no common agreement on its meaning [8,18]. However, according to a commonly used definition, sustainable HRM refers to "the adoption of HRM strategies and practices that enable the achievement of financial, social and ecological goals, with an impact inside and outside of the organization and over a long-term time horizon while controlling for unintended side effects and negative feedback" [24] (p. 90). In this definition, two highly important elements revealing the essence of the construct are covered. The first refers to the recognition of multiple, potentially contradictory, economic, ecological, and social goals such as human sustainability [25] or ecological sustainability [26]. Applying paradox theory, Ehnert [27] identified three key paradoxes of sustainable HRM: tensions between deploying human resources efficiently and maintaining their capabilities; tensions between economic rationality and relational rationality (here, the main aim is to maintain social legitimacy by acting in a responsible way); and tensions between short- and long-term effects. Moreover, Poon and Law [15] argue that tensions should be placed at the center of sustainable HRM analysis, as stakeholder demands contrast with each other.

Thus, the second element deals with complex interrelations between HRM systems and their internal and external environments, with a particular emphasis on relationships

that control externalities [28]. An externality is something that does harm to employees, their family members, and the living standard of society as a whole [29]. As such, sustainable HRM highlights the synthesis paradox, through which organizations can improve organizational performances through high-performance work practices (HPWPs), as well as attempt to "reduce" the harm of those HPWPs on employee well-being because these two polarities are not mutually exclusive, but they are mutually reinforcing [30]).

Prior research has sought to specify the characteristics or practices that differentiate sustainable HRM from mainstream HRM. As regards characteristics, they describe what HRM should look like in order to deserve a "sustainable" description. However, the academic literature offers varying interpretations of what constitutes sustainable HRM, both in terms of conceptual attributes and practical implementation. Zaugg [31], regarded as one of the leading scholars in the theory of sustainable HRM, proposed the following characteristics of sustainable HRM: flexibility, employee participation, value orientation, strategy orientation, competency and knowledge orientation, stakeholder orientation, and building mutually trustful employee–employer relationships. Meanwhile, Ehnert [32] introduced some other characteristics, such as exploring short-term, as well as long-term, effects, as well as side and feedback effects, extending the notion of success by considering economic, social, and ecological objectives, considering moral and ethical positions as well as economic arguments, fostering the ability of HRM to develop and sustain the HR base and environments from within, and balancing paradoxes, dualities, dilemmas, and tensions. Several years later, Ehnert [27] argued for six characteristics of sustainable HRM, namely long-term oriented, impact-control oriented, substance and self-sustaining oriented, partnership-oriented, multiple-bottom-lines-oriented, and paradox-oriented. A couple of years later, based on a qualitative study with top managers in Finland, Järlström [23] introduced four dimensions as sustainable HRM characteristics: justice and equality, transparent human resource practices, profitability, and employee well-being. Finally, drawing on literature from a range of works linking sustainability and HRM and following the essence of corporate sustainability, Stankevičiūtė and Savanevičienė [6] proposed 11 characteristics of sustainable HRM: long-term orientation, care for employees, care for the environment, profitability, employee participation and social dialogue, employee development, external partnership, flexibility, compliance beyond labor regulations, employee cooperation, fairness, and equality. While the specific characteristics of sustainable HRM vary across studies, a common understanding is that these practices are generally underpinned by the imperative to prevent harm to employees and promote conditions that support their long-term psychological and professional sustainability.

Given the broad and diverse nature of the concept, it becomes essential to identify the core directions towards which sustainable HRM practices should be oriented to ensure that no harm is being done to employees and to consistently support and nurture their overall well-being. Building on this need for direction, Guerci and Pedrini [33] argue for four clusters of sustainable HRM practices, namely sustainability-driven change through caring (practices regarding work–life balance, health, benefits, and employees' well-being), sustainability-driven change through social inclusion (practices regarding diversity management, ergonomic workplace conditions, and a reduction in stress), sustainability-driven change through the development of competencies (practices for career counseling, training, education, and mentoring), and sustainability-driven change through career growth (practices regarding career opportunities, employees' satisfaction, and motivation and talent management). Meanwhile, the conceptual model of sustainable HRM by Esen and Süral Özer [34] covers such practices as selection and recruitment, training and development, performance evaluation and rewarding, human rights, and occupational safety and health. Recently, Mariappanadar [28] proposed a framework with high-performance work

practices, which includes bundles of HRM with sustainability characteristics, such as a pro-environment approach, stakeholder compassion, ethics of care for well-being, and social consciousness. These characteristics should be embedded in employee selection, employee training, performance management, job design, and rewards as a part of the bundle of work practices.

Following Stahl [5], HRM practices can be considered sustainable insofar as they contribute to social welfare, environmental protection, and long-term economic prosperity, and they can be deemed unsustainable if they harm social, environmental, and economic well-being. The social dimension of sustainable HRM will largely involve concern for employees' well-being, not just in terms of their health but also in terms of organizational justice and job security. All three dimensions (social, environmental, and economic) of sustainable HRM have both internal and external elements, covering HRM aspects associated with the way people within an organization are treated and the way in which the needs of external stakeholders are addressed [5].

Let us sum up. Although researchers emphasize different characteristics of sustainable HRM, a common thread emerges: the core intention is to avoid harm to employees and to promote their long-term psychological and professional well-being. Sustainable HRM practices, therefore, should be evaluated not only in terms of their strategic alignment with the business strategy but also in terms of how they are experienced by employees and what psychosocial experiences they induce. In light of this, it becomes relevant to integrate the concept of sustainable human resource management and Rock's neuroscience-based SCARF model, which offers a structured perspective for assessing the way in which sustainable HRM practices may affect the key social and psychological experiences at work.

2.2. Exploring the Psychosocial Experiences of Employees Through the SCARF Model

Psychosocial experiences are described as the psychosocial exposures and psychological states in an individual's inner and outer world [35]. Recently, the SCARF model, which presents the key domains of psychosocial experiences in the workplace, has been increasingly used in scientific literature. The SCARF model explains the biological foundations of processing interactions between people in different contexts [9]. The acronym SCARF, originating in neuroscience leadership research, stands for a set of five elements, namely status, certainty, autonomy, relatedness, and fairness [9]. These five domains of experience activate strong threats and rewards in people's brains, and this, in turn, influences human behaviors [10].

Status refers to one's sense of importance relative to others [10] or, in other words, to an individual's perceived position within the social hierarchy [36]. Status might be defined broadly as employees' structural locations, prestige, and power to influence others in their jobs [37]. Status also refers to the focal employee's perception of their relative position within an organization or group, and it also encompasses the degree of prominence, respect, and influence they hold in the eyes of others [38]. The perception of status in the workplace plays a critical role in shaping employees' emotional and physiological responses due to the neurochemical activity in the brain [9]. When an individual perceives an increase in their status—such as feeling more valued or recognized than peers—this can trigger the release of reward-related neurochemicals like dopamine [39]. Conversely, a perceived decrease in status may activate a threat response, linked to stress-related neurochemicals such as cortisol [39]. It is generally agreed that status matters, arguing that people, including employees at work, are inherently sensitive to any potential or real reduction in status [36]. It is extremely easy to trigger a status change, for instance, suggesting that someone has been ineffective at completing a project task [9]. As status matters, usually, people will unconsciously strive to avoid situations where their status is threatened to protect their

view of self [40]. In sum, the perception of being valued more highly than others tends to be more rewarding than the perception of being less valued. Accordingly, HRM practices might focus on increasing the degree of importance compared to others.

Certainty applies to one's need for clarity and the ability to make accurate predictions about the future [10]. Certainty is about the perceived ability to predict the future [41]. When people encounter familiar situations, their brains conserve energy by going into autopilot mode, and this can allow the person to do two things at once; however, if the brain faces confusion, the threat response arises [9,36]. Incidentally, people differ in their need for the level of certainty; moreover, they differ in their ability to tolerate unclear future situations and outcomes [10]. Furthermore, uncertainty is perceived as worse than knowing wrongly [12]. In the organizational context, workplaces can be full of uncertainty in terms of job demands or economic difficulties, and accordingly, employees might expend a lot of energy scanning the environment for threats. On the other side, the workplace can bring a high level of certainty when procedures are clear and organizational policy meets the requirements of fairness. In this case, the brains of employees apply a reward response [36]. Applying sustainability lenses in people management might strengthen certainty and avoid the feeling of lacking the ability to predict the future.

Autonomy describes a sense of control over the events in one's life and the perception that one's behavior affects the outcome of a situation [10]. Autonomy is about having choices and being able to make choices [36]. When a person feels like their autonomy is supported, a reward response is triggered in the brain; conversely, a threat is triggered when the perception of autonomy is threatened [42]. People have a fundamental need for personal control [10], and they can tolerate a high degree of stress if they believe they have control over it [9]. Autonomy is perceived as a job resource [43] and is in itself rewarding: an employee may leave a well-paid position for one that pays less but grants more autonomy [36]. The workplace might provide a high level of autonomy, showing trust in employees and avoiding micromanagement [12]. However, a low level of autonomy in the workplace, for instance, in the form of no time or no space flexibility, has a negative effect on employees' perceptions of dignity and leads to dissatisfaction [12]. Under such circumstances, sustainable HRM practices might increase autonomy while ensuring employee participation, social dialogue, and flexibility in performance management or career management.

Relatedness refers to one's sense of connection to and security with another person [10]. Relatedness applies to the degree to which people feel safe and connected with others [36]. It is about being able to decide quickly whether someone is in ("in-group preference") or out ("out-group bias") of one's social group [9]. In the workplace, a sense of relatedness is highly important. Cooperation and support for coworkers and line managers serve as antecedents to positive attitudes and behavior of employees [44]. As sustainability aims to increase the sense of connection with others, different sustainable HRM practices might play a significant role in increasing this feeling.

Fairness is about just and non-biased exchanges between people [10]. It is also about the expected balance in all social interactions [41]. The perception of unfairness generates strong emotions and strong threat responses [9]. Workplaces are usually characterized as having a high level of unfairness, in terms of different rules for different groups, inconsistent disciplinary procedures, or someone not "walking the talk" [45]. As one of the principles of sustainable HRM refers to fairness, sustainable HRM practices have the potential to lower the level of unfairness.

When employee experience is treated as highly relevant to organizational and human sustainability, the added value of the SCARF model does not come into question. More specifically, several benefits can be underlined. First, the SCARF model improves employ-

ees' capacity to understand and ultimately modify their own and other employees' behavior in different social situations. As such, employees can become more adaptive. Second, the SCARF model provides a clear, easy-to-remember language, which again enables people to be more adaptive. Third, the SCARF model improves the quality of everyday interactions with colleagues and other stakeholders [10].

Given the growing relevance of neuroscience-informed approaches in understanding human behavior at work, the SCARF model offers a structured framework for analyzing the psychosocial experiences of employees. Table 1 provides a summary of theoretical and empirical research findings related to the SCARF model.

Table 1. Overview of theoretical and empirical contributions related to the SCARF model.

Contribution	References	Detailing
Theoretical contribution	[9,10,39,42,46]	SCARF model development
	[11]	Systematic literature review
Empirical contribution	[12]	B2B sector: linkage between employees' perception of SCARF and intention to leave an organization (quantitative study)
	[41]	Educational sector: linkage between students' perception of SCARF and motivation (quantitative study)
	[36]	Healthcare sector: linkage between employees' perception of SCARF and engagement (quantitative study)
	[47]	Public sector: linkage between employees' perception of SCARF and engagement (quantitative study)

As the SCARF model is still a relatively new construct, significant attention has been devoted to exploring its neurological foundations and understanding how brain activity is related to emotional states, thereby underscoring the importance of the five SCARF elements in shaping an individual's psychosocial experiences. Despite this, empirical research on the SCARF model remains limited. It is worth noting that all identified studies are quantitative, primarily focusing on the consequences of employee perceptions of the SCARF elements. These studies mainly investigate how such perceptions influence employee motivation, engagement, and intentions to leave an organization. Consequently, the existing research predominantly examines the outcomes of employee perceptions of SCARF, while the role of workplace factors in shaping these perceptions remains largely unexplored. Given that HRM practices play a critical role in influencing employee behavior, it is essential to further investigate the impact of HRM practices on the SCARF experiences of employees, an area that has yet to receive sufficient attention in the literature.

3. Materials and Methods

3.1. Context of the Study

With the growing interest in applying the SCARF model in different fields, it is noticeable that quantitative research dominates. Quantitative research has enabled the substantiation of the impact of SCARF components on an individual's intrinsic motivation and engagement [36,41,47]. However, there is a lack of research on the factors that influence SCARF. Moreover, here, it would be appropriate to use a qualitative approach that allows for an in-depth understanding of the phenomena in context, as well as for the reason that it "involves verbal description of real-life situations" [48] (p. 26). It is particularly valuable when searching for new insights to assess the phenomena in a new light when there are no past data. It should also be noted that previous studies on this topic have been conducted in different areas: in health care [36], education [10,41,49], and government organizations [47]. According to Hu et al. [50], at the macro level, factors such as county de-

velopment level, economic quality, and governmental capacity for intervention significantly influence public health outcomes. These may, in turn, shape organizational environments conducive to positive psychosocial experiences, thereby facilitating employee motivation and engagement across sectors. Further, the rapid development of technologies nowadays poses enormous challenges and opportunities for all industries, especially in STEM fields. From artificial intelligence and machine learning to advanced manufacturing processes and biotechnology, technologies are constantly improving, offering new challenges and opportunities for STEM workers. Moreover, the European Commission Communication on STEM Education notes that the EU faces a shortage of qualified STEM graduates that hinders EU competitiveness [51]. This growing concern is reflected in other recent studies, which highlight a declining interest among young people in pursuing STEM careers [52], pointing to a widening gap between labor market needs and the workforce supply. Given these trends, it becomes increasingly important to explore ways of making STEM careers more attractive to younger generations. In this context, it is particularly important to develop sustainable HRM practices that would ensure positive psychosocial experiences of STEM workers, which, as substantiated by the previously mentioned empirical studies [36,41,47], affect their motivation and engagement. Thus, considering the above arguments, STEM workers as a target group and a qualitative approach provide new insights into revealing the role of sustainable HRM practices in shaping the positive psychosocial experience of STEM workers.

3.2. Data Sample and Collection

A qualitative research method using semi-structured interviews was applied in this research. Information with an open invitation to take part in the research was spread via LinkedIn. The following requirements were set for the participants: the participants had to be STEM workers up to 40 years old and to have at least one year of working experience. Semi-structured interviews were conducted with fifty STEM workers in Lithuania. The interviews lasted from 45 min to 1 h and 20 min. The study included 19 (38%) male participants and 31 (62%) female participants. The age structure was distributed as follows: 8 participants were younger than 25 years, just starting their careers and often combining them with studies; 11 participants were 26–30 years old, 14 participants were 31–35 years old, and 17 participants were 36–40 years old. The participants represented all STEM fields, science, technology, engineering, and mathematics, working in both business and scientific institutions.

During the interviews, a pre-prepared instrument—a semi-structured interview plan—was used. An example of the interview is provided in Table 2. Naturally, more questions were asked in order to better comprehend some of the facts that the respondents indicated. The participants were given time to think and recall situations. However, if the participant had not encountered an increase or decrease in certain psychosocial experiences, questions were asked about the next SCARF dimension.

Table 2. Examples of interview questions.

SCARF Dimensions	Questions Regarding the Impact of HRM Practices on STEM Workers' Psychosocial Experiences
Status	• How could you describe your status at work? • Describe a situation where human resource management practices strengthened/weakened the sense of status. • Tell us more about the situation; how did it all go? • How did this situation affect your sense of status?
Similar questions were asked to reveal the impact of HRM practices on certainty, autonomy, relatedness, and fairness.	

3.3. Data Analysis

All interviews were recorded and later transcribed. According to Nowell et al., thematic analysis enables the systematic identification and interpretation of meaningful patterns (themes) across diverse data sets and provides deep, nuanced insights into participants' experiences, beliefs, and social contexts [53]. Therefore, it is an effective method for revealing the way in which HRM practices shape positive or negative psychosocial experiences of employees through the lens of the SCARF model by identifying the impact of a specific HRM practice on each of the SCARF elements. Thus, thematic analysis was used for data processing while the data were divided into codes and subcodes, which allowed for a better interpretation of patterns ("themes") within qualitative data [54]. In the scientific literature, the data coding process is divided into first-cycle coding, primarily focused on initial coding that summarizes the content of the data, and second-cycle coding, taking the initial codes from the first cycle and starting to organize them by identifying themes and making sense of the data in a more structured way [55]. Researchers also distinguish a wide variety of coding methods [55]. For the first-cycle coding, two grammatical coding methods were chosen—subcoding and simultaneous coding. Subcoding allows for a deeper and more detailed understanding of the data. In the present study, the following coding logic was used:

- Theme: main topic (SCARF, HRM practices).
- Category: a sub-group within the theme that represents a broader dimension (for instance, specific SCARF domain, specific HRM practice).
- Characteristic: specific attributes or features that describe the category.

In the study, simultaneous coding was also used, which means that multiple codes or themes were applied to the same piece of data, often at the same time. It allows researchers to capture the complexity of data by categorizing them under more than one theme or idea simultaneously. Coding and data visualization were performed using the MAXQDA 24 software.

4. Results

This section summarizes the perceptions of STEM workers' status, certainty, autonomy, relatedness, and fairness; it also discusses the HRM practices that shape positive or negative psychosocial experiences, and it finally identifies the consequences that reveal the STEM workers' attitudes toward work or behavior at work. Finally, a summary of the most harmful and sustainable HRM practices is provided, highlighting which, within the framework of this empirical study, are shaping positive psychosocial experiences and which are detrimental, shaping negative psychosocial experiences. It also illustrates the work attitudes or behaviors that have resulted from various HRM practices, highlighting the significance of psychosocial experiences in the work environment.

4.1. Employees' Perception of SCARF

The thoughts expressed by STEM workers concerning how they perceive status, certainty, autonomy, relatedness, and fairness are summarized in Table 3, grouping characteristics unique to each category. When discussing the perception of the SCARF categories, the participants frequently mentioned a number of characteristics.

Table 3. The characteristics and categories that relate to employee perception of SCARF.

Theme	Category	Characteristic, *N* *
SCARF	Status	Position associated with responsibility *(N = 27)* Professionalism *(N = 13)* Self-realization *(N = 4)* Financial status *(N = 3)*
	Certainty	Employability *(N = 15)* Certainty that you will cope with tasks *(N = 12)* Certainty about the future *(N = 10)* Perception that you are not alone *(N = 9)* Knowing what results are expected or how to perform a task *(N = 7)* Financial safety *(N = 7)*
	Autonomy	Independent decision-making *(N = 42)* Time management *(N = 9)* Working individually, separately from others *(N = 3)*
	Relatedness	Good microclimate *(N = 23)* Teamwork, common goal *(N = 13)* Respect *(N = 12)* Close relations with manager, colleagues *(N = 11)* Subordination compliance *(N = 4)*
	Fairness	Reward based on merit *(N = 20)* General rules for all *(N = 19)* Transparency *(N = 8)* Recognition of contribution *(N = 7)* Equality *(N = 4)*

* *N*—number of mentions.

Status. STEM workers' status perceptions were grouped into five characteristics: financial status, self-realization, professionalism, position associated with responsibility, and recognition. Most often, status was perceived as the scope of responsibilities in a position and recognition by managers or colleagues. A position was understood as the whole of the integrated functions and tasks that the position holder must perform and the rights and responsibilities granted to them: "it is a certain position, because realistically functions, tasks, and responsibilities at work all depend on the position" (R2, Pos. 7). Although status provides a certain prerogative, the holder of the position must take advantage of the opportunities provided to them, demonstrating their professionalism and gaining recognition from managers: "you feel good in your field, you do your work in a quality manner and everybody, including the employer, value you" (R31, Pos. 11). However, participants emphasized that status should not be identified with position without reservations: "position and status can be completely different" (R13, Pos. 6), and "status could be associated with an ideal, authority figure who perhaps does not hold special power legally, but people come to them to consult" (R38, Pos. 10). This highlights how crucial subject-matter expertise was to status shaping. Moreover, status was associated with self-realization: "status at work probably means that you are at the right place, in the right position, where you can best realize yourself, reveal [your potential] and help the entire team" (R30, Pos. 4). Several participants (R3, R5, R10) mentioned financial status that showed the organization's formal recognition of employees' professionalism. However, for STEM workers, status was mostly associated with the chance to show their professionalism and receive recognition for it.

Certainty. STEM workers associated certainty with knowing what results were expected or how to perform a task, certainty that they would cope with tasks, the perception

that they were not alone, certainty about the future, financial safety, and employability. Concerns regarding certainty in the workplace were significant to STEM workers. They apply specialized knowledge in science, technology, engineering, and mathematics to solve complex problems and drive innovation, so knowing what results are expected or how to perform a task was critically important, as it allowed them to better understand the essence of the task: "Certainty in work is when you know what results are expected and can refer to them when presenting your work. Knowing what outcomes should be attained gives you certainty". (R34, Pos. 21). However, no less important was the sense of certainty in one's ability to cope with the assigned tasks: "when I know what is entrusted to me and that I am able to do it" (R7, Pos. 17) because "certainty is most associated with myself, with my knowledge; when I know what I am doing, I know the assigned task very clearly, <. . .> when I have enough time to complete the task, when I can prepare, organize, and think over the solution, then I feel certain" (R10, Pos. 12). Certainty was also associated with the perception that they were not alone: "you know that you have a strong team behind you and they will support you. If you make a wrong decision, everyone will find a way to solve the problem together" (R27 Pos. 9). Along with certainty in the workplace, a broader sense of certainty was also highlighted, with a focus on the future. Certainty about the future, the ability to predict the future, allowed, according to the participant (R48), "to have a vision of the future and believe in it", to feel financial safety, and to be assured of one's employability. In summary, STEM workers associated certainty with both immediate certainty in the workplace, which guarantees successful performance, and with long-term certainty, which is linked to an individual's sustained career.

Autonomy. Autonomy encompasses three characteristics. STEM workers particularly emphasized independent decision-making, which involves both the freedom to make decisions and the ability to independently choose methods and ways of working: "you know your goals, and you choose the way and paths to achieve that goal, tasks" (R13, Pos. 11). Through an emphasis on independent decision-making, a clear understanding of the boundaries of responsibility decisions was demonstrated: "giving freedom to act within the framework of your responsibilities" (R42, Pos. 23). The next characteristic of autonomy was time management, which is associated with the ability to plan one's time (R41, R42, R46) and choose one's pace of work (R9). The third characteristic—working individually, separately from others—revealed the specific approach of STEM workers to autonomy, emphasizing the individual nature of work but also understanding the necessity of integrating individually performed tasks. Respondent 34 defined autonomy as the ability to work under self-directed conditions, highlighting both individuality and the need for collaboration:

> Autonomy is working under individual conditions, mainly working individually, where each person has divided the tasks that they perform into their positions and finally everything is combined into one. However, to work autonomously means to work separately. (R34, Pos. 32)

Nonetheless, STEM workers perceived autonomy quite similarly, emphasizing the freedom to make decisions within the limits of their competence and independent choice of methods and ways of working.

Relatedness. Relatedness for STEM workers was associated with the importance of maintaining subordination compliance and respectful relationships between colleagues and managers to ensure a stress-free and tension-free work environment: "it is important to maintain subordination and respect on both sides" (R50, Pos. 23). Another participant emphasized that this contributes to emotional well-being: "so that there is no stress, tension, or fear" (R10, Pos. 15). Teamwork and mutual assistance were also emphasized as essential components in shaping a positive work environment: "if I need help in some area, my

colleagues could cover it" (R14, Pos. 37). Moreover, trust was considered the highest value: "your team trust each other; you say half a word, and they know and do it" (R13, Pos. 18). Close relations with colleagues and managers were also valued; "people came to you and they came not because they had to, but because they believed in you, because they wanted to" (R18, Pos. 21), and "relationships at work are such that colleagues can talk, for example, about personal matters" (R37, Pos. 30). A good microclimate was important for employees to feel valued and willingly go to work: "you can enjoy relationships with the people you work with" (R2, Pos. 56). In sum, relatedness for STEM workers included subordination compliance, teamwork, close relations with managers and colleagues, respect for each other, and a good microclimate.

Fairness. Fairness for STEM workers included five characteristics. General rules for all emphasized that all workers should be evaluated according to the same rules and criteria: "the same mistakes or the same achievements and two different workers—this should be responded to in the same way" (R1, Pos. 62) because "the same rules apply to everyone" (R7, Pos. 40). The transparency expectation specified that all rules and agreements should be clearly stated and known by employees: "clear agreements and compliance with them" (R46, Pos. 36). Reward based on merit emphasized that fair remuneration should correspond to the work performed and results: "fairness here is the proportion between how much you work and what you get for it" (R36, Pos. 72) and "what was agreed upon was done" (R47, Pos. 24). Recognition of contributions was not limited to financial incentives but also included emotional recognition as a fairness characteristic: "it's enough for them to come and say… 'You, you did a really great job here'" (R6, Pos. 42). Finally, the equality characteristic pointed out that it was important to be sensitive to different groups at work: "Fairness is a slippery slope. There are very different [people] at work, different races, something else, and there can be a very thin line when you can offend someone" (R17, Pos. 32). These characteristics presupposed a fair, clear, and transparent work environment in which employees could feel valued and respected.

4.2. HRM Practices in Shaping the Psychosocial Experience of Employees

This chapter explores the way in which human resource management practices affect the psychosocial experiences of employees. It first presents sustainable HRM practices that shape positive socio-psychological experiences of STEM workers and then reviews harmful HRM practices that shape negative socio-psychological experiences of STEM workers.

4.2.1. The Role of Sustainable HRM Practices in Shaping Positive Psychosocial Experience of Employees

STEM workers described a variety of practices that shaped their positive psychosocial experiences. These were grouped into six categories, identifying key characteristics that had a positive impact (Table 4).

Table 4. Characteristics and categories that disclose the sustainable HRM practices' theme.

Theme	Category	Characteristic, *N* *
Sustainable HRM practices	Onboarding	Manager mentoring *(N = 3)* Peer mentoring *(N = 2)*
	Career management	Job enrichment *(N = 6)* Promotion *(N = 2)*
	Employee development	Edge-cutting competence development *(N = 5)* Learning in the workplace *(N = 4)* Manager's support during studies *(N = 2)*

Table 4. *Cont.*

Theme	Category	Characteristic, *N* *
Sustainable HRM practices	Reward	Recognition *(N = 7)* Bonuses *(N = 4)*
	Performance management	Goal-oriented coaching *(N = 12)* Outcome control vs. process control *(N = 7)* Constructive feedback *(N = 5)*
	Employee relations	Authentic leadership *(N = 15)* Communication *(N = 14)* Informal events *(N = 4)*

* *N*—number of mentions.

Onboarding. Onboarding plays a pivotal role in shaping the positive psychosocial experience of employees by fostering trust in the organization and involvement from the first steps in the organization. STEM workers emphasized the importance of support from both managers and colleagues during integration into the team. Positive psychosocial experiences were formed when the manager clearly expressed her expectations but at the same time demonstrated a warm reception of the employee: "the manager <. . .> invited me and said that she was glad that I joined the team and trusted me, that I had complete freedom of action, and the most important thing was the result" (R1, Pos. 12). This not only gave the employees the authority to act and encouraged them to strive for good results but also strengthened their self-confidence and allowed them to feel their status. The onboarding stage is complex, and both organizational and substantive issues often arise. Therefore, it is critical to feel the support and readiness of colleagues to help: "you can ask; they will always answer" (R8, Pos. 14)—this shows trust and open dialogue, which is essential for the success of the onboarding process and at the same time forms a sense of relatedness.

Career management. Career management covered two characteristics: job enrichment and promotion, which are important for employees' professional growth and form positive psychosocial experiences. Job enrichment gives employees a chance to take on challenging tasks that improve their sense of status through the trust shown by the manager and the opportunity to realize their professional skills: "assigned complex, exceptional tasks, which were perhaps even a huge challenge for me, <. . .> it was a confirmation of my status <. . .> it was a big responsibility for me, and I liked it, and at the same time it was scary, but that's how I see my growth". (R10, Pos. 12). Promotion also plays an important role in the formation of positive psychosocial experiences while strengthening employees' self-confidence and their commitment to the organization. However, although STEM workers emphasized the importance of promotion, it was not the position itself that mattered most, but the trust shown in their professionalism. As one respondent explained:

> The feeling of status was probably strengthened when they offered me a high position, which I thought I was not worthy. I did not have that much experience, but they trusted me. It was probably recognition, trust, and empowerment, and at that time, I felt excellent. (R21, Pos. 6)

These examples show that both job enrichment and promotion are essential elements of career management that contribute to employee growth and a better psychosocial experience in the organization. However, job enrichment was especially important for STEM workers, as it enabled them to demonstrate their professionalism, which increased the sense of autonomy and status.

Employee development. Positive employee development practices were grouped into three characteristics. One of the characteristics was the manager's support during studies, which strengthened the employees' certainty that they would be able to combine work and studies: "Certainty appeared when I planned to enroll in a master's degree program and my boss said, 'We would support, help as much as we can, protect you and everything would be fine', which gave me that assurance". (R27, Pos. 11). This showed how important it was for managers to support employees in combining personal and professional goals. Edge-cutting competence is essential for STEM workers, as it allows them to adapt to technological changes, promote innovation, solve complex problems, and remain competitive. Therefore, programs for improving employees' professional skills in a specific field implemented in organizations strengthen the sense of status due to increasing professionalism: "It was proposed to expand my knowledge in that specific field through courses that the company pays for. This is a very nice gesture in terms of development, that you can further deepen your knowledge in that area". (R22, Pos. 10). Learning in the workplace was the third characteristic, which is inseparable from the everyday life of a STEM worker trying to meet the requirements in the context of rapidly changing technologies. However, it was important for employees that their contribution was noticed and recognized, strengthening both the sense of status and fairness:

> We had a lot of difficulty installing new machines. <. . .> I myself had a lot of stress because the production process changed. I had to learn new things, but I learned them quickly. I received praise from my manager, whereas now I advise others <. . .>. They raised my salary and I think I have such a good status as an employee. (R5, Pos. 18)

In sum, learning in the workplace was crucial for STEM workers, as it enabled them to continuously update their skills, adapt to new technologies, and apply edge-cutting knowledge to challenging decision-making, fostering both personal and professional growth. Good practices of employee development are associated both with formal employee development systems within an organization and with managers' support and approach to employee development, which allows employees to have positive psychosocial experiences and stay competitive and aligned with industry advancements.

Performance management. Effective performance management ensures that STEM workers' skills, knowledge, and contributions align with organizational goals. It involves three characteristics. Outcome control was preferable to process control for STEM workers because it focuses on the final results, allowing the workers the flexibility to use their expertise in solving complex problems:

> I got a complex task and he [the manager] didn't tell me what, when and how I had to do it. He just told me what the expected result was and what I should get. Everything else I could decide for myself. (R10, Pos. 9)

Outcome control instead of process control implies a sense of autonomy and increases self-confidence and professionalism. As one participant shared,

> He [the manager] trusted me when he let me do certain tasks according to my capabilities <. . .>, and then I did it myself, as I thought [was the right way], and then at the end he pointed the mistakes to me. Then I corrected them. That really boosts self-confidence; you feel professional. (R29, Pos. 19)

With outcome control, STEM workers are held accountable for achieving specific goals or results, rather than judged on how they perform each step of the process. This allows them to have autonomy and flexibility in their approach. However, to ensure sustained success and growth, constructive feedback becomes crucial. It helped the workers

understand not just whether they achieved the desired outcomes but also how they could improve their job crafting:

> He [the manager] commented on everything that he thought needed to be changed, what needed to be done differently, and made his arguments clear. <. . .> I felt like an equal partner when the manager gave advice, because, of course, he had more experience, but he also listened to you. And then you understand what and why you need to change. (R38, Pos. 38)

Effectively delivered feedback not only shows the areas that need to be improved but also recognizes the achievement of an employee: "when there is an assessment, <. . .> and when it is not just comments on unsuccessful or failed activities, but when it is also about what was successful" (R19, Pos. 20). Meanwhile, goal-oriented coaching ensures that independently performed tasks are guided throughout the pursuit of goals:

> At first, I was afraid that I would have to perform a task when I did not know exactly what was being asked of me. However, at every step, the manager simply asked if I understood what I was doing, if I knew what I was doing, if I understood, and explained what was expected of me. Although we were critically pressured to do [the work] as quickly as possible, the manager was always there to ask. At that moment I felt good that even though the boat was sinking, even in a critical situation, the manager still found time to ask how things were going, to advise, to explain. (R9, Pos. 20)

Thus, performance management based on outcome control instead of control of process, constructive feedback, and goal-oriented coaching shape especially the sense of autonomy and status of STEM workers.

Reward. Reward management is based on both material and emotional incentives for employees for their efforts and contributions. This was also revealed in the three highlighted characteristics. A transparent remuneration system implied the motivation of the workers to strive to demonstrate greater achievements, expecting a fair reward:

> There is a reward system that is public, transparent and everyone can see what they must do and how they will be evaluated for it. When there is such a clear [reward] system, then justice is strengthened. (R26, Pos. 28)

Bonuses, for instance, bonuses at the end of the year for successful performance (R22; R37) implied fairness and encouraged employees to achieve even higher results. Recognition was also an essential part of the reward system because it included not only financial incentives but also psychological recognition: "official awards, such as, for instance, statuettes or the title of the employee of the year, also contribute to employee evaluation and job satisfaction" (R2, Pos. 71). Examples of good reward practices revealed that rewards were closely linked to the shaping of the sense of fairness.

Employee relations. For STEM workers, who often deal with complex, novel tasks, authentic leadership encourages open communication, empowers individuals to share their ideas without fear of judgment, and promotes a culture of continuous learning and problem-solving, and it fosters an environment of trust, transparency, and integrity. This was revealed during the interviews:

> The first thing was that she [the manager], was confident in herself and through this confidence she placed trust in her team. So [it was very important], this moment, when she radiated confidence, kept her word—she always kept our agreements, she never showed that she was the manager and you were the subordinate, it was the communication of equals. Moreover, the communication

> covered not only work. During the meetings, we used to talk both about work and general things in life. (R1, Pos. 22)

Communication plays a vital role in shaping positive psychosocial experiences in the workplace. Open, transparent, and effective communication fosters trust, reduces misunderstandings, and creates a sense of relatedness:

> Communication is needed <. . .> on all matters, be they financial or pertaining to a striving for a vision or about the results. Communication must be sincere <. . .> when it [communication] is sincere and open, it mobilizes the people for a common goal. (R3, Pos. 20)

Moreover, informal events build stronger interpersonal relationships, enhance team cohesion, and create a sense of belonging:

> Team building, let us say, when drinking coffee together <. . .> over the last few years this tradition has grown on all of us. Everyone has common subjects to talk about with others, [they can] ask how do you do <. . .>. It is a very good thing, that building of internal environment from small things, encouraging to meet for coffee in the kitchenette, <. . .> it used to be, like, for example, with simple documents, when you come to inquire, but it seems as if you are asking for a favor. Now, to the contrary, everybody knows that we are here for each other, but together we are as one. (R16, Pos. 25)

Thus, trust-based communication with colleagues and authentic leadership contributed significantly to shaping the workers' belonging to the organization and strengthening the sense of relatedness.

4.2.2. The Role of Harmful HRM Practices in Shaping Negative Psychosocial Experience of Employees

STEM workers described a variety of practices that shaped their negative psychosocial experiences. These were grouped into seven categories, identifying key characteristics that had harmed STEM workers' psychosocial experience (Table 5).

Table 5. Characteristics and categories that disclose harmful HRM practices.

Theme	Category	Characteristic, *N* *
Harmful HRM practices	Onboarding *(N = 3)*	Formal approach to onboarding *(N = 3)*
	Career management *(N = 7)*	Non-transparent succession planning *(N = 4)* Promotion issues *(N = 3)*
	Layoff, resignation from work *(N = 6)*	Unexpected layoff *(N = 4)* Disrespectful behavior of the manager *(N = 2)*
	Employee development *(N = 4)*	Refusal to support the employee's initiative to study *(N = 3)* Lack of guidelines for competencies development *(N = 1)*
	Reward *(N = 16)*	Non-transparent remuneration system *(N = 8)* Non-recognition of contribution *(N = 5)* Financial reward not matching the merit *(N = 3)*
	Performance management *(N = 20)*	Process control vs. outcome control *(N = 9)* Ineffective goal setting and task allocation *(N = 8)* Unclear performance evaluation criteria *(N = 2)* Lack of feedback *(N = 1)*
	Employee relations *(N = 34)*	Regressive leadership *(N = 31)* Lack of communication *(N = 3)*

* *N*—number of mentions.

Onboarding. The examples of harmful onboarding practices mentioned by STEM workers covered just one characteristic: a formal approach to onboarding. Formal training, using one-way communication, through which the lecturer or mentor presents dry facts about the organization, workplace, processes, or equipment and technologies used without encouraging new workers to ask questions and discuss, slows down professional and social adaptation. The following quote reflects a situation where onboarding practices, such as post-probation interviews, are conducted in a manner that appears superficial and uninspiring:

> They hold interviews after the probation period and everything is done as appropriate, but you realize that the interviews are just a formality. They just copy the same things over and over again—so you are happy, very happy, so all is good and fine. <. . .> However, they are not interested in listening, showing genuine interest and maintaining a relationship. (R48, Pos. 28)

Thus, formal onboarding does not build relatedness and does not foster a sense of status.

Career management. Career management encompassed two characteristics: promotion issues and non-transparent succession planning. STEM workers wondered why their opinions were not valued in their career planning, sometimes insistently, without clarifying the workers' career expectations or explaining career prospects: "There was constant pressure to study for a doctorate <. . .> and that pressure, I don't know, caused almost the opposite reaction" (R2, Pos. 21). Even stranger was the feelings of workers when confronted with the fact of promotion:

> The director just decided, and after 3 months he made me a manager, without even asking me. In that sense, this was so surprising to me, such an attitude towards the employee, that he just told me to lead the team. (R44, Pos. 23)

Promoting an employee can boost their sense of status and inspire them, but it can also devalue their status if their opinions are ignored. Disappointment was also caused by promotion without the granting of autonomy:

> They appointed me to a high position, but I was nonetheless suggested what to do and how to do it. <. . .> It's a bit annoying, that lack of autonomy and constant instructions or advice, concern about what and how to do, because it undermines my sense of status, because I myself know what needs to be done. (R10, Pos. 6)

These examples showed that career management could not be based only on the manager's opinion; the expectations of workers had also to be taken into account. Moreover, promoting someone must involve more than just giving them a position; it must also involve providing them with more authority to act. The second characteristic—non-transparent succession planning—revealed that organizations sometimes lacked clear succession-planning principles. The principles based on which the workers were offered an opportunity to occupy higher positions were unclear, and one participant also mentioned a case of nepotism (R10). Employees were confused when they discovered that they were supposed to be raising their own replacement but were unsure of their career opportunities: "They tell you, 'Well, look, here you will get help'—you develop your career, and one day you realize that your confidence is wavering because you can be pulled out at any time" (R13, Pos. 25). Career management, without assessing employees' expectations or without clear succession planning principles, shapes negative psychosocial experiences, hurting different SCARF components but especially harming the sense of status.

Layoff, resignation from work. STEM workers experienced negative experiences related to dismissal or voluntary resignation. There were instances where workers were

unexpectedly notified that their contracts were being terminated or not renewed, which went against their sense of status and fairness:

> Maybe it just hurts. . ., but I put in a lot of work, and somehow I expected to be appreciated and maybe promoted to a higher position. However, I was not appreciated, the contract was not extended. I put in a lot of work, and somehow I was left feeling like a half-broken shell. (R37, Pos. 7)

It was also noted that the behavior of the manager when notifying an employee of dismissal was crucial since they should also express gratitude to the employees for their contribution to the company and outline the reasons for the dismissal. If this is not done, employees encounter negative experiences:

> They didn't notify me in advance [about the dismissal]. It was done in a single day. If they at least came and told me. No. They put a sheet [in writing]. I thought the manager lacked the competence to fire the employees, but I was neither the first nor the last, it turned out. I haven't forgiven him yet. It's just that the form could have been different. (R11, Pos. 22)

If, in these examples, STEM workers emphasized the fact of unexpected dismissal as a career shock, in other cases, they noted the disrespectful behavior of the manager, which in both cases occurred when workers decided to leave their jobs voluntarily. Disrespectful behavior is associated with lowering an employee's self-confidence, reducing their sense of security and status, but relatedness also suffers, especially in these situations.

Employee development. STEM workers discussed the practices that negatively affected psychosocial experience, which were ascribed to one of the two characteristics. Participants were disappointed by the refusal of managers to support their initiatives to study. This was related not only to the refusal to pay for studies—"the manager kept procrastinating and finally said, 'No'" (R49, Pos. 31)—but also to a skeptical attitude towards the goal of obtaining a master's degree: "So, why do you need it? You can learn everything here" (R7, Pos. 10). This leads to a decrease in relatedness: "Then you think, well, are you here needed at all? <. . .> You only exist here" (R7, Pos. 10). STEM workers also missed guidelines for competencies' development. The lack of clear guidelines and advice on what competencies needed to be developed to achieve better results indicated the absence of employee development systems, which did not imply a strengthening of STEM workers' sense of status.

Reward. Reward-related harmful practices were characterized by three characteristics. Financial rewards not matching merit reduced the sense of fairness:

> I think I was a little unfairly evaluated for the set-up of the new equipment. I coordinated everything with XXX suppliers, and my bonus was ridiculously small. We worked a lot of overtime because we stayed up all night. Of course, they paid for it, but the bonus was nonetheless symbolic. (R5, Pos. 56)

However, STEM workers tended to focus more on the lack of recognition of contribution, rather than financial reward issues:

> Instead of saying just one word, 'Wow, you did a great job', one word would have been enough, or 'You did a good job', he said: 'You could have done more'. Well, in that sense, it's impossible to do more, so he understands that himself, but somehow he behaves in the opposite way. (R6, Pos. 46)

The actual emphasis on the recognition of contributions extended the previously expressed ideas about the crucial role of expert skills in the careers of STEM workers, helping them take on more challenging and rewarding roles and leading to greater job satisfaction and personal growth. The next characteristic was related to the participants'

statements about the non-transparent remuneration system, which particularly affected the sense of fairness. Unclear bonus payment principles (R3; R15) and opacity in the remuneration system and, at the same time, a lack of confidentiality not only caused the feeling of unfair treatment but could also cause disagreements between employees: "Two professionals doing the same job and the same hours of work received different salaries. I don't like such things. Because if we do the same job, it would be good if everyone got the same" (R21, Pos. 30). In sum, harmful reward practices had the most negative effect on the sense of fairness.

Performance management. Performance management covered four characteristics. A lack of feedback, when a worker had never had any conversation with a manager during his entire working time in the company (R9), and unclear performance evaluation criteria resulted in a sense of uncertainty. Nonetheless, the most negative psychosocial experiences were caused by an orientation toward process control instead of outcome control and ineffective goal setting and task allocation. Process control reduced workers' autonomy and caused an unpleasant feeling that they constantly had to think about each step instead of being able to freely focus on the results:

> I had to fill in the time tables at work, what I did and how long it took <. . .>. I didn't like that kind of control. It was exhausting for me, because you always have to think about what you did there and you have to allocate time [for that]. <. . .> That's what weakened the sense of autonomy. (R37, Pos. 27)

It was very important for STEM workers to understand the task and know exactly what they had to do. Therefore, unclear task formulation and insufficient time to delve into the essence of the task shaped the sense of uncertainty (R49). Workers felt even worse when tasks were being passed on to others:

> The manager gave me a task that was new to me, and it took me a long time to read how to perform the task correctly and not to make any mistakes. The manager simply did not have the patience, did not give me time to prepare, and simply passed the task on to someone else without saying anything. In that situation, I felt humiliated because he [the manager] looked at me as inferior and said that I could not perform certain tasks. He did not even give me a chance, as I had not even started on this task. (R9, Pos. 6)

Practices related to performance management were often mentioned as causing negative psychosocial experiences, especially violating the sense of status, and reducing autonomy and certainty.

Employee relations. A lack of communication and destructive leadership summarized the negative psychosocial experiences that STEM workers went through when collaborating with colleagues and managers. Participants emphasized that a lack of information or poor communication weakened the sense of certainty, and the resulting miscommunication reduced relatedness:

> Poor communication weakens relatedness because miscommunication occurs. Then one or the other starts getting nervous because they don't communicate—one just talks about the table, the other—about the chair, and that's it. (R3, Pos. 34)

However, the most negative experiences for STEM workers were caused by destructive leadership. Participants mentioned the destructive behavior of managers when insulting comments were provided to them (R37, R24) or the "divide and rule" principle was employed (R6, Pos. 39), which reduced the sense of relatedness. Furthermore, public criticism was particularly painful for employees, especially if it was not so much constructive as emotional:

> It weakened both your sense of status and certainty when you were criticized in public in front of everyone. This public scolding is demeaning, and not only because it humiliates you in the eyes of other colleagues, but you also start to distrust yourself and feel uncertainty. (R10, Pos. 12)

Employee relations, according to STEM workers, were a critical area of HRM; improperly developing employee relations could harm all SCARF components, but relatedness and status in particular could suffer significantly.

4.3. An Outline of the Research Results

The findings of the qualitative study revealed harmful and sustainable HRM practices that shaped negative and positive psychosocial experiences, respectively. Figure 1 depicts the HRM practices that have an impact on STEM workers' sense of status, certainty, autonomy, relatedness, and fairness. Relationships that were mentioned less than three times were omitted from the creation of Figure 1. The thickness of the lines indicates how often STEM workers mentioned the respective relationships. All SCARF characteristics are presented in Table 2, and characteristics and categories that disclose sustainable HRM practices are shown in Table 4, while characteristics and categories that disclose harmful HRM practices are listed in Table 5.

As can be seen in Figure 1, employee relations is one of the key HRM practices that negatively affected all SCARF components, especially relatedness and status. The formation of negative psychosocial experiences was most influenced by destructive leadership and a lack of communication. Meanwhile, employee relations and, more specifically, constant communication, employee information, and especially authentic leadership, had an effect on the formation of positive psychosocial experiences. Thus, employee relations, and in particular the understanding and implementation of leadership behavior by managers, can form both positive and negative psychosocial experiences of STEM workers. Paradoxically, while discussing positive and negative practices of employee relations, the participants brought up the same characteristics—communication and leadership—albeit in different ways. By offering positive or negative examples, they revealed the impact of sustainable and harmful HRM practices on psychosocial experiences. Therefore, it is crucial to eliminate destructive leadership behaviors, develop constructive leadership, and improve communication and employee information on both strategic and tactical issues while establishing sustainable employee relations practices.

Another HRM practice that is of great importance for the formation of positive psychosocial experiences of STEM workers is performance management. Results-oriented control, goal-oriented coaching, and constructive feedback formed STEM workers' sense of status, increased certainty, and created a perception of autonomy. Conversely, when the focus was directed to process control instead of outcome control, and workers were given unclear work goals and unspecific tasks, this had a strongly negative impact on STEM workers' sense of status, autonomy, and uncertainty. As can be seen in Figure 1, performance management can be both sustainable and harmful, as it all depends on whether control is directed at results or the process and the extent to which goals are formulated clearly and tasks are distributed effectively. Thus, the mirror reflection emerges again. Promoting sustainable performance management practices requires a shift from process control to results control, giving STEM workers the freedom to act and the opportunity to apply their expert knowledge and skills. Furthermore, a clear formulation of goals and the provision of detailed tasks give STEM workers enough time to delve into a task and complete it independently. This highlights the importance of sustainable HRM practices that prioritize task-oriented performance management—ensuring clear goals, meaningful

feedback, and autonomy—which are crucial for supporting STEM workers' sense of status, certainty, and motivation.

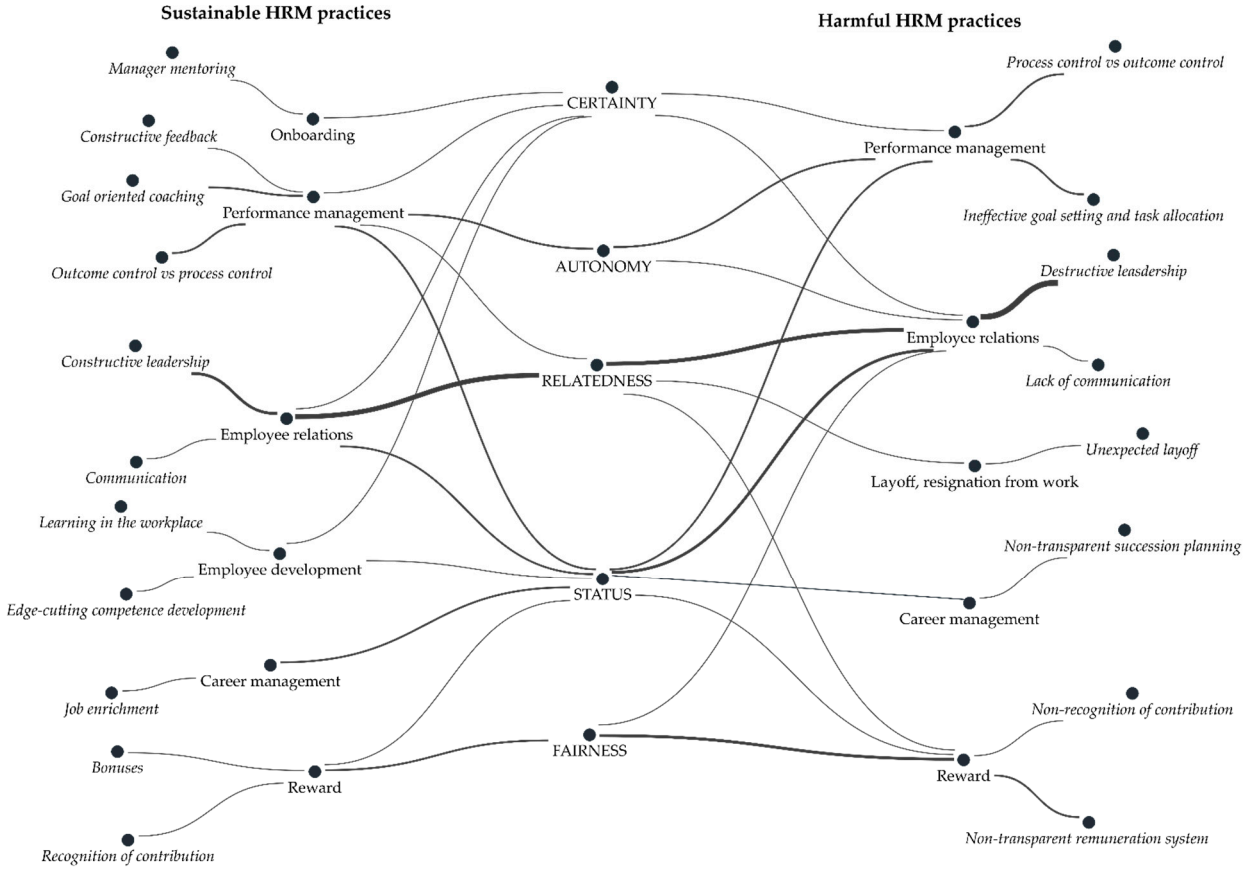

Figure 1. The impact of sustainable and harmful HRM practices on STEM workers' psychosocial experiences.

The way in which reward management practices are implemented can have either a significant positive or negative impact on the sense of status and especially fairness. However, it also has a negative impact on relatedness. It should be noted that the recognition of contributions was of great importance for STEM workers, primarily emphasizing moral, rather than financial, rewards. In the meantime, if bonuses had a positive effect as a financial evaluation of STEM workers' achievements, then negative psychosocial experiences were especially shaped by a non-transparent remuneration system. When ensuring sustainable reward management, it is essential not only to establish a clear and transparent remuneration system but also to consistently recognize employee contributions—especially through non-financial, moral rewards that reinforce fairness and relatedness. Such practices strengthen the perception of equity and trust, which are fundamental to sustainable HRM and long-term employee engagement.

The study revealed the links between career management practices and the sense of status. Sustainable career management practices can be attributed to job enrichment, which strengthens the sense of status. Meanwhile, non-transparent succession planning weakens the sense of status. Thus, when promoting sustainable practices, it is necessary to develop a succession plan in an open and clear manner. It involves identifying and developing internal candidates for key roles while ensuring that the criteria, processes, and expectations are communicated openly to all stakeholders, including current managers and potential successors.

STEM workers identified sustainable employee development practices only. Edge-cutting competence development and learning in the workplace were the key activities that ensured employee certainty, firstly by enabling them to effectively perform the tasks set in the workplace and secondly by strengthening their sense of status and increasing self-confidence due to growing professionalism.

Onboarding was the next practice that was characterized by sustainability. STEM workers emphasized that mentoring from their manager was very important to them both during work and social integration into the organization. This positively affected their certainty in mastering new tasks, new equipment, and new work methods and adapting to the organization's microclimate.

The study also revealed critical HRM practices, which were described only as harmful examples. STEM workers drew attention to the formation of negative psychosocial experiences when an employee was dismissed from work. As a matter of course, it is never a positive experience when an employee is dismissed at the initiative of the employer. However, a number of participants mentioned unexpected dismissals and identified insufficient communication with workers as the main reason for the formation of negative psychosocial experiences. That is, regardless of the negative aspect of the event itself, in the case of dismissal, communication with the worker is very important, such as thanking them for their contribution to the results of the organization and ensuring their employability. An example of a sustainable dismissal practice could be outplacement.

5. Discussion

This paper aims to reveal the role of sustainable HRM practices in shaping a positive psychosocial experience of employees. Qualitative research using semi-structured interviews with STEM workers in Lithuania allowed an understanding of the characteristics of psychosocial experiences inherent to STEM workers that are conditioned by the specifics of their activities. Moreover, the research findings enabled the discovery of how HRM practices shape the sense of the SCARF dimensions.

Perceptions of SCARF domains by STEM workers. The results of the study revealed the understanding of STEM workers' status, certainty, autonomy, relatedness, and fairness, which, on the one hand, is in line with the definitions of Rock and Cox [10] but, on the other hand, reveals key SCARF characteristics that are critical to STEM workers. A literature review showed that status refers to one's sense of importance relative to others [10]. However, STEM workers tend to place more emphasis on their own perception of their importance at work and the extent to which their colleagues or managers acknowledge their professional competence than on comparing their importance to others when talking about perceptions of status. STEM workers often have advanced technical skills, which imply a unique perception of status. They emphasize interesting and challenging tasks and the opportunity to feel and be recognized as professionals instead of the importance of the position in the hierarchy itself.

Certainty is associated with the ability to predict the future [10,42]. The results of the study are in line with this statement: perceptions of the ability to predict the future stated by the STEM workers are reflected in such characteristics as certainty about the future, employability, and financial safety. However, certainty in the workplace is also very important for STEM workers. Knowing what results are expected or how to perform a task and having certainty that they can cope with tasks are essential characteristics for STEM workers. Thus, STEM workers associate certainty with both immediate certainty in the workplace, which guarantees successful performance, and long-term certainty, which is linked to an individual's sustained career.

STEM workers particularly emphasize independent decision-making, which includes both the freedom to make decisions and an independent choice of methods and ways of working. This is consistent with the definition provided in the literature review, which describes autonomy as the ability to have and make choices [38]. This overlap suggests that STEM workers value autonomy as a necessity not only for the freedom to make decisions but also for the ability to choose the appropriate actions and methods that best suit their work and personal goals.

STEM workers' perception of relatedness is most associated with a good microclimate, teamwork, informal relationships, and respect. This supports the insights gleaned from the literature review that being "in group" means that relationships go beyond formal agreements and are based on mutual trust and respect [9]. However, the distinctiveness of STEM workers' perception of relatedness can be considered a characteristic of subordination compliance, thus emphasizing different roles and their contribution to final results.

On the topic of fairness, the research results correspond to and extend the theoretical definition of fairness, which is a non-biased exchange between people [10]. Such highlighted characteristics of fairness as general rules for all, transparency, and equality are consistent with scholars' concerns that different rules, unequal reward policies, or inconsistent disciplinary procedures are often applied to different groups or workplaces within an organization [36]. However, in addition to the fact that fairness is related to rewards based on merit, the recognition of contributions, in which the social aspect of fairness has been emphasized, is also a very important characteristic of fairness for STEM workers.

Discourse on HRM practices in shaping psychosocial experiences of STEM workers. Quantitative studies have substantiated the impact of SCARF elements on an individual's intrinsic motivation and engagement [12,36,42,47,49] but have not examined which HRM practices affect the employees' sense of status, certainty, autonomy, relatedness, and fairness. Thus, the existing research examined the outcomes of employee perceptions of SCARF, while the role of workplace factors in shaping these perceptions remained unexplored. Given that HRM practices play a critical role in influencing employee behavior, the present study revealed specific HRM practices that affect psychosocial experiences and, based on them, allowed the authors to formulate insights on how to develop sustainable HRM practices that enable them to shape the positive psychosocial experiences.

The research disclosed that employee relations have a crucial impact on the sense of status, certainty, and relatedness. According to scholars, confidence can be strengthened through open and clear communication [38]. Explaining to employees what processes are taking place in an organization and what decisions are planned to be made increases their trust in the organization [42]. This was supported by research results, emphasizing that open communication gives STEM workers confidence, allows them to avoid misunderstandings, and strengthens relatedness. STEM workers most often mentioned constructive or destructive leadership, linking it to both positive and negative psychosocial experiences. Previous studies have confirmed correlations between positive leadership and employee engagement and motivation and have also confirmed correlations of the reverse phenomenon, i.e., that destructive leadership increases burnout and reduces engagement [56]. Therefore, it is especially crucial to eradicate harmful leadership behaviors and encourage "constructive leadership that includes visionary, relationship-oriented, moral, and task-oriented leadership behaviors" [56] (p. 134) while developing sustainable employee relations practices. As was also highlighted in recent theoretical developments, sustainable HRM practices—particularly those that promote constructive leadership and continuous employee development—play a vital role in shaping positive psychosocial experience that enhances overall organizational performance [26].

Promoting sustainable performance management practices requires a shift from process control to results control. It is critical for STEM workers to control their work process and to be able to choose work methods and ways of working. This is in line with theoretical insights that the ability to control events and environment, as well as their workplace, and their work results increases the sense of status and autonomy [9,12,38]. However, this does not mean that the employees should be left alone with the problems they encounter at work. STEM workers identified goal-oriented coaching as one of the important characteristics of sustainable performance management. However, if coordinating and clarifying plans, goals, and expectations were more closely linked to certainty in the scientific literature [41,42], for STEM workers, these were associated with a successful way to realize their autonomy, which enhances their sense of status. The results of the study also revealed the specifics of STEM workers' perception of constructive feedback. Unlike, for example, students who associate constructive feedback with an emotionally pleasant experience [57], STEM workers emphasized the importance of using facts during feedback and expected feedback to be associated with the knowledge developed during the conversation that could be used to solve a specific work issue. At the same time, the recognition of achievements is an integral part of feedback, which is very necessary for STEM workers; however, there must be a clear relationship between contributions and rewards.

When establishing sustainable reward management practices, it is first of all necessary to create a clear and transparent remuneration system and not to forget to recognize employees' achievements, noticing their efforts and praising them. The study confirmed theoretical insights [36] that public recognition for achievements or competence positively affected the sense of status. A non-transparent remuneration system was identified by STEM workers as one of the biggest obstacles, which confirmed the importance of adhering to fair policies and clear procedures and agreements [36]. Speaking about fairness, workers emphasized both positive and negative experiences that have resulted from recognition or non-recognition. This shows the importance of recognition and confirms the statement of Murayama [58] that "intrinsic rewards, compared to extrinsic rewards, are potentially self-enhancing and, thus, more sustainable".

An analysis of career management practices revealed their links to the sense of status. Although the scientific literature assumes that an unexpected promotion can be a positive career shock [59], STEM workers would still prefer open and clear succession planning. Sustainable career planning is related to identifying and developing internal candidates for key roles while ensuring that the criteria, processes, and expectations are communicated openly to all stakeholders, including current managers and potential successors.

The scientific literature emphasizes giving employees the opportunity to choose how to organize their educational process [9,12]. STEM workers identified sustainable employee development practices, underscoring edge-cutting competencies' development towards strengthening their sense of status and certainty and stressing the benefits of learning in the workplace.

Symbolically, sustainable human resource management begins with onboarding practices that form positive experiences and ends with the employee's dismissal from the organization. An effective onboarding process that emphasizes professional adaptation and social inclusion helps new employees quickly adapt to an organization's culture and work specifics. Furthermore, a responsible and respectful dismissal process gives employees the opportunity to leave with self-esteem intact and positive experiences in terms of relatedness.

The implementation of HRM practices within organizations is shaped by their internal policies, which in turn are influenced by nationally emphasized priorities. Recently, there has been a growing focus on employee well-being through additional social benefits.

As shown in large-scale empirical studies, state-supported preventive health programs have proven effective in enhancing individual health outcomes [58]. Many countries officially recognize the importance of such programs as part of their public health and labor policies, while organizations often incorporate social benefits in employee motivation systems [60,61]. This is in line with the study's findings. Participants highlighted the importance of social security as a key element of their overall well-being, which strongly aligns with the SCARF component of certainty, indicating that stable and predictable support systems significantly contribute to their psychological safety at work.

In sum, the study revealed sustainable HRM practices that shape positive psychosocial experiences but also highlighted a number of harmful practices that must be eliminated in order to strengthen the STEM workers' sense of status, certainty, autonomy, relatedness, and fairness. The results of this study provide valuable insights for organizations to better understand how HRM practices can enhance the positive psychosocial experiences of STEM workers through the lens of the SCARF model. By focusing on the areas of status, certainty, autonomy, relatedness, and fairness, organizations can tailor their HRM strategies to create a work environment that promotes employee well-being and engagement. Furthermore, these insights allow organizations to purposefully develop sustainable HRM practices that not only increase employee engagement but also contribute to their long-term professional sustainability. By implementing sustainable HRM practices, HRM professionals can ensure that STEM workers remain motivated, engaged, and committed, thus improving employee retention and fostering their resilience.

6. Conclusions

The findings of this study highlight the pivotal role of HRM practices in shaping the psychosocial experiences of employees. Recognizing the importance of psychosocial experiences of employees, the paper employed the neuroscience-based SCARF model, which has recently become increasingly used in HRM studies, to understand the factors influencing the formation of positive psychological experiences.

Previous research on the emerging topic of SCARF has provided a number of valuable theoretical insights, allowing outlining the status, certainty, autonomy, relatedness, and fairness. Empirical studies have confirmed that positive SCARF experiences positively affect employee motivation and engagement, while negative SCARF experiences imply burnout and decreasing motivation and engagement. Meanwhile, the present study revealed that HRM practices and their characteristics have both positive and negative effects on employees' psychosocial experiences.

The paper contributes to the scientific literature in several ways. Firstly, the paper promotes the SCARF model following the notion that social concerns are a primary motivator for human behavior. Moreover, the results of the qualitative research revealed the STEM workers' perceptions of status, certainty, autonomy, relatedness, and fairness. Second, the paper enriches the literature in the SCARF model stream by identifying the sustainable HRM practices that shape the employee experience in terms of status, certainty, autonomy, relatedness, and fairness.

The paper provides several practical implications. The revealed HRM practices and their characteristics, which form both positive and negative psychosocial experiences, allow an understanding of how to arrange sustainable HRM practices in order to strengthen the sense of the SCARF dimensions of STEM workers. Admittedly, it is necessary to take into account the work culture formed at each organization and implement a consistent policy of sustainable HRM practices.

This study also involved certain limitations. The focus on STEM workers, while offering specific insights into this group, may limit the generalizability of the findings to

other sectors. Moreover, as participants shared life-wide career experiences, often covering work at different organizations, it was not possible to consistently analyze the outcomes based on organization types or industries. In addition, the study was qualitative in nature, which, although rich in detail, presents challenges for broader generalization. The sampling method may also have introduced bias, as participants decided for themselves whether to participate in the research or not.

These limitations point to several avenues for future research. The use of the developed semi-structured interview questionnaire with diverse occupational groups could allow comparisons of how different types of employees perceive the SCARF dimensions and how HRM practices influence their psychosocial experiences. Furthermore, although the national context is important in explaining the impact of sustainable HRM practices on psychosocial experiences, the results of the study can be applied to countries with similar business cultures. However, expanding this research across various national contexts would also reveal the influence of cultural and institutional factors on the impact of sustainable HRM. Additionally, there is a need for future studies to examine how specific workplace factors and HRM practices actively shape the SCARF experiences of employees—an area that remains underexplored in the literature.

Finally, given the novelty of this research field, a further discussion of the role of sustainable HRM in shaping positive psychosocial experiences would be useful.

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Abbreviations

The following abbreviations are used in this manuscript:

SCARF	Status, Certainty, Autonomy, Relatedness, and Fairness
HPWS	High-Performance Work Practices
HRM	Human Resource Management
R	Participant

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