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Methods for Designing Roles on the Automotive Upholstery Production Line: Training Efficiency, Quality Control, and Team Resilience

Maksym Hrunskyi¹*

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ABSTRACT

The study examined the role design on the automotive upholstery production line, a critical organizational element that enables effective interactions between employees, aids in their professional development, ensures product quality and enhances team resilience in the face of production overload. The aim of the study was to provide theoretical underpinning for the role design mechanism that enhances personnel training efficiency, quality control and team resilience. The study is of a theoretical and analytical nature. It presents a review, comparison, thematic analysis and synthesis of available data from various sources on the organization of production, human resource development, quality, and working teams. The author proposes the METHODS model, which regards the role design as an integrated system of organizational methods that form a single production effectiveness logic. The role design is considered not only as an element of the operational organization of work but also as a means to increase the adaptability, coordination and stability of the production line.

INTRODUCTION

In the automotive upholstery production environment, the line's performance is determined not only by the technological sequence of operations but also by the clarity of role design, the logic of functional distribution, and the quality of interaction among individual workers. An automotive upholstery line comprises a set of interdependent operations that require a high degree of coordination, precision, and consistency (Ismail *et al.*, 2002). Under such conditions, even minor shortcomings in the construction of the role structure can adversely affect the stability of the entire production process. In this context, role design should be viewed not as a secondary element of work organization but as one of the basic prerequisites for the coordinated functioning of the production line, since it is through role design that the predictability of operations, coordination of actions, continuity of the process, and the internal coherence of teamwork are ensured.

The practical significance of this issue lies in the fact that the quality of role design affects not only the formal distribution of duties but also the ability of the production system to quickly adapt new employees to the process, maintain a stable level of product quality, and preserve team performance under conditions of intensive production workload. Unclear role definition, blurred functional boundaries, or uncoordinated responsibility complicate personnel training, increase the likelihood of operational errors, weaken quality control, and reduce the team's resilience to change, overload, and production disruptions (Ulin & Keyserling, 2004). For this reason, role design should be understood not as a narrow issue of work organization but as an important organizational mechanism that links training efficiency, the reliability

of quality control processes, and the stability of the production team's functioning.

Despite the existence of a substantial body of scholarly work, this problem has been addressed only partially in contemporary academic discourse. Some studies focus on work and role design in production teams (Hackman & Oldham, 1976; Campion *et al.*, 1993), while others concentrate on personnel training (Maurer *et al.*, 2025), quality control (Tsou & Chen, 2005), ergonomic aspects of production (Falck *et al.*, 2010), or team resilience (Beloor & Nanjundeswaraswamy, 2024). At the same time, these lines of inquiry have largely developed separately, without sufficient integration within a single analytical framework. As a result, the scholarly literature lacks a comprehensive theoretical explanation of how role design on the automotive upholstery production line can function as an integrated organizational mechanism that simultaneously ensures personnel training efficiency, quality control stability, and team resilience under production workloads, changes, and operational disruptions.

In view of the above, the purpose of the article is to provide a theoretical substantiation of role design on the automotive upholstery production line as an organizational mechanism that ensures personnel training efficiency, stable quality control, and team resilience. To achieve this purpose, the study addresses the following objectives: to identify the organizational principles and methods that underlie role design on the automotive upholstery production line; to analyze the influence of role design on personnel training efficiency and quality control stability in the production process; and to determine how role design contributes to team resilience under production workloads, operational changes, and disruptions.

¹ Masterpiece Auto, Miami, Florida, United States

* Corresponding author's e-mail: maksym.hrunskyi.edu@gmail.com

Accordingly, the main research question of the article is how role design on the automotive upholstery production line can be theoretically understood as an organizational mechanism that ensures personnel training efficiency, stable quality control, and team resilience. Answering this question requires drawing on scholarly approaches to role design, production team organization, vocational training, quality control, and team resilience, which shapes the logic of the following literature review.

LITERATURE REVIEW

Role design in production teams should be considered within the broader context of work design, since it is precisely the structure of work that determines how functions, responsibilities, and expected outcomes are integrated into the everyday execution of production tasks. In the classical approach, Hackman and Oldham (1976) substantiated that job characteristics are not a neutral background to production activity, but rather a key factor in intrinsic motivation, engagement, and work performance. In this context, role design should be interpreted as a specified dimension of work design, within which not only the issue of task distribution is addressed, but also the problem of how the organization of work itself ensures predictability, stability, and the functional orderliness of task execution. This approach is especially significant in the production environment, where the quality of the final outcome depends directly on the coordination and reliability of interrelated operations. The further development of this logic shifts the analysis from the individual workplace to the work group. Campion *et al.* (1993) demonstrated that the characteristics of work groups are directly associated with their effectiveness, while productivity, employee satisfaction, and managerial assessments of performance depend to a large extent on the way group work is organized. It is particularly important that among the key factors, the authors identify elements related to job design and process design. This provides grounds for arguing that role design in a production team should be regarded not as a secondary administrative aspect, but as one of the basic mechanisms for shaping group effectiveness, since it is through role design that functions, interdependencies, and modes of coordination among workers are structured.

The synthesis of research on team effectiveness in organizational settings further reinforces this position. In their review, Cohen and Bailey (1997) showed that team effectiveness is shaped by the combination of task characteristics, group design, and organizational context, internal and external processes, as well as different dimensions of performance. Such an analytical framework is fundamentally important to the issues addressed in this article, as it enables viewing role structure not as an isolated characteristic of an individual worker, but as a component of a broader system of organizational and process conditions that determine the effectiveness of a production team. Accordingly, role design on a production line should be understood

as a way of structuring teamwork that combines the functional division of labor, process coordination, and collective effectiveness.

At the same time, the effectiveness of roles within a team cannot be reduced solely to the formal assignment of functions and procedures. Edmondson (1999) demonstrated that team learning and performance directly depend on psychological safety, that is, on the shared belief among team members that the work environment is safe for interpersonal risk-taking. For production teams, this is of particular importance because role structure functions only when it supports not only functional clarity but also the ability to ask questions, report mistakes, seek help, and correct one's own actions without fear of negative consequences. Thus, role design should be viewed not only as an instrument for distributing tasks but also as a condition for organizing interaction in which learning, coordination, and the prompt elimination of deviations become integral parts of team practice.

To conclude this theoretical block, it is appropriate to turn to the generalized model of teamwork proposed by Salas *et al.* (2005). The authors argue that effective teamwork is based on five key components: team leadership, mutual performance monitoring, backup behavior, adaptability, and team orientation, which in turn are supported by shared mental models, closed-loop communication, and mutual trust. In this context, role design must take into account not only the formal assignment of functions but also the team's capacity for mutual support, coordination, adaptation, and collective control of the production process. For this reason, role design should be defined as an organizational mechanism that transforms role structure into a practically effective system of production interaction.

In the literature on workforce training in the garment industry, training is increasingly viewed not as an isolated educational procedure but as a response to the industry's concrete production needs. In particular, Maurer *et al.* (2025) show that specialized training programs are formed where production requires the alignment of skills, performance standards, and institutionally supported training trajectories. In the context of this article, this means that the effectiveness of training on the automotive upholstery line depends directly on the extent to which the role structure aligns with the real requirements of the production process.

A similar logic is confirmed by studies of continuous improvement at the shop-floor level. Wickramasinghe and Wickramasinghe (2016) found that continuous improvement positively affects employees' job performance, and that the duration of lean production strengthens this effect. Calingo (2024) likewise showed that continuous improvement, realized through management empowerment and employee participation, is related to organizational performance through organizational learning. This makes it possible to view training not only as an initial adaptation but also as a continuous process integrated into the role organization of work and daily

production interactions.

In applied studies of sewing lines, the relationship between process organization and training effectiveness is even more clearly traced. Shakil and Parvez (2018), analyzing layout, process flow, and batch size in a sewing line, demonstrated that eliminating backtracking and optimizing batch sizes reduces transport and time losses and improves OEE. For the purposes of this article, this is important because process standardization makes the process more transparent, which in turn facilitates the mastery of operations and the assignment of roles to new workers.

Similar conclusions are found in studies of line balancing in garment assembly. Bongomin *et al.* (2020) showed that the use of the ranked positional weight technique makes it possible to improve line efficiency, reduce the number of workstations, and, at the same time, preserve the logic of operation sequencing and cycle time constraints. In the context of role design, this means that the rational distribution of operations across positions not only increases productivity but also creates a clearer functional structure, which is critically important for personnel training and adaptation.

Finally, in the automotive context directly relevant to this topic, Ismail *et al.* (2002) showed that increasing the productivity of a vehicle seat assembly line is associated with line balancing, the use of a simulation approach, the analysis of operating times, the optimization of the material handling system, and the development of an effective workstation layout. This makes it possible to draw an important conclusion: in the production of automotive seats, the effectiveness of personnel training depends directly on the level of production line structuring and the clarity of role and operational organization. Accordingly, the problem of training efficiency is directly linked to process stability and quality control.

In studies of quality control in automotive manufacturing, quality is increasingly regarded not as the result of final inspection, but as the consequence of a properly organized production process. Tsou and Chen (2005), analyzing an automotive seat assembly line, showed that quality improvement models are associated with evaluating the costs of poor quality and implementing embedded process improvement procedures. Within this logic, quality stability directly depends on how clearly control functions and responsibility for identifying and eliminating deviations are embedded in the role structure. This is consistent with Azouza and Masaud (2023), who found that the development of production process management has a positive and significant effect on quality control in industrial production.

The ergonomic dimension of quality further reinforces the theoretical propositions outlined above. Falck *et al.* (2010) demonstrated that poor assembly ergonomics is directly associated with deteriorating product quality in car manufacturing; therefore, product quality is determined not only by the product's technical characteristics but also by the conditions under which the worker performs

their role. This means that role design must necessarily take into account the ergonomic suitability of operations, since even a formally correct distribution of functions does not guarantee a stable result without proper execution conditions.

A systems approach to automotive textiles demonstrates even more clearly that quality in this field is shaped through the coordination of many elements of the production system. Sinha *et al.* (2015) emphasize that designing automotive textiles requires applying systems thinking, in which inputs, outputs, and feedback mechanisms play a key role. In the context of role design, this supports the conclusion that quality control in automotive upholstery must be integrated into the sequence of roles and operations rather than remain an isolated function of final inspection.

Research on the properties of automotive seat fabrics adds the necessary technical specificity to this line of reasoning. Ahirwar and Behera (2022) developed an objective method for evaluating the tactile characteristics (hand evaluation) of materials for automotive seats, showing that their quality properties can be measured through clearly defined parameters. For this article, this is important because the high requirements imposed on seat fabrics presuppose stable execution of operations and a clear allocation of responsibility for quality at different stages of production.

Similar conclusions can be found in studies of the mechanical characteristics of materials for automobile seat cover applications. Albini *et al.* (2019) show that even when recycled PET fibres are used, the material's mechanical properties remain critically important for its final application in automotive seats. This means that quality control in the field of automotive upholstery must be based on such an organization of roles that ensures precision, repeatability of operations, and reliable process control, rather than being limited to post-operation inspection alone.

In the context of production team resilience, studies that do not directly focus on role design are also significant, as they demonstrate the importance of accurately accounting for the interaction between the person, the product, and the working environment. Fojtlín *et al.* (2018), investigating the body-seat contact area for thermal sensation modelling, showed that the parameters of human interaction with the seating system are measurable with precision. For the purposes of this article, this means that the stability of role performance in automotive upholstery production depends on how accurately the human factor and the conditions of task execution are accounted for.

The role of work organization in maintaining operational stability is demonstrated more directly in studies of ergonomic interventions in automotive operations. Through several case studies, Ulin and Keyserling (2004) showed that technical and ergonomic changes in auto-component distribution processes help reduce overload and improve work performance. This confirms that team

resilience is determined not only by workers' individual endurance, but also by how roles, work actions, and operational conditions are designed.

A similar line of reasoning is supported by research on participatory ergonomics in textile manufacturing. Tompa *et al.* (2013) found that the implementation of ergonomic interventions in clothing manufacturing has not only organizational but also substantial economic effects, with the benefits exceeding the costs of implementing such measures. For this article, this is important because team resilience should be viewed not as a secondary social indicator, but as a production-significant outcome of properly organized work.

In more recent studies of automotive manufacturing, this interrelationship is formulated even more clearly. Ndlovu and Gupta (2025) emphasize that ergonomic interventions should be aimed at identifying risk factors associated with low productivity, fatigue complaints, and musculoskeletal disorders, as well as at improving workstations and processing techniques. This makes it possible to interpret team resilience as resulting from an organizational structure of roles and workplaces that simultaneously supports performance and ensures employees' well-being.

A broader organizational dimension of resilience is reflected in studies of quality of work life in the garment industry. Beloor and Nanjundeswaraswamy (2024) show that the key factors include training and development, job satisfaction, compensation and rewards, relations and co-operation, the work environment, and job security. In the context of this article, this means that team resilience cannot be reduced solely to the ability to withstand production workloads; it also depends on whether the role structure supports learning, cooperation, predictability of working conditions, and overall organizational stability. Despite the existence of substantial research in the fields of work design, team effectiveness, personnel training, quality control, ergonomics, and the resilience of production collectives, the scholarly literature still does not offer a comprehensive theoretical explanation of how role design on the automotive upholstery production line functions as a unified organizational mechanism that simultaneously ensures training efficiency, quality control stability, and team resilience. Existing studies generally address these aspects in isolation—either at the level of general job design and teamwork theory, or within research on training, ergonomics, line balancing, or quality improvement—which results in the absence of an integrated, industry-specific approach capable of combining these directions into a single logic of role organization in the context of automotive upholstery production.

Thus, the conducted literature review indicates that scholarly sources provide a sufficient theoretical foundation for understanding role design in production teams and separately illuminate its relationship with personnel training, quality control, ergonomics, and team resilience. At the same time, these lines of inquiry remain

fragmented, which does not allow for a full explanation of how role design on the automotive upholstery production line functions as a unified organizational mechanism that simultaneously ensures training efficiency, stable quality control, and team resilience. It is precisely this analytical gap that necessitates a theoretical and analytical study grounded in a systematic review, comparison, and conceptual synthesis of the scholarly literature, which shapes the logic of the following methodological section.

MATERIALS AND METHODS

The study is theoretical, analytical, and conceptual in nature. It does not involve the collection of primary empirical data, as its main purpose is to provide a theoretical substantiation of role design on the automotive upholstery production line as an organizational mechanism that integrates personnel training efficiency, quality control stability, and team resilience. The methodological foundation of the article comprises an integrative review of scholarly literature, a comparative analysis, and a conceptual synthesis of relevant academic sources.

Given the non-empirical nature of the study, participants or a sample were not formed in the traditional sense. The source base comprises scholarly works on role design, the organization of production teams, vocational personnel training, quality control systems, ergonomics, and maintaining team resilience. Thus, the research material in this study comprises a body of scholarly literature selected to align with the research's subject matter and objectives.

The material basis of the analysis was formed by scholarly articles and monographic works covering both the general theoretical aspects of job design, role design, teamwork, and group effectiveness, as well as the applied issues of training in manufacturing, quality control, ergonomics, and team resilience. A separate group of sources comprises studies directly related to automotive, textile, and garment production, enabling the adaptation of general organizational approaches to the specific features of automotive upholstery production processes. Such a combination of theoretical and industry-specific sources ensures the integrity of the analytical framework and its practical relevance.

The study was carried out in several successive stages. At the first stage, scholarly sources relevant to the issues of role design and its interrelationship with personnel training, quality control, and team resilience were selected. At the second stage, the literature was thematically grouped according to the study's logic: the theoretical foundations of role design; role design and personnel training efficiency; role design and quality control stability; and role design as a factor in team resilience. At the third stage, a comparative analysis of scholarly approaches was conducted, including the identification of their common and distinctive characteristics and their substantive generalizations. These stages and their conceptual outcome are shown in Figure 1, and the general structure

of the study methodology is presented in Table 1.

The analytical processing of the material was carried out

using comparative, thematic, and conceptual-synthetic approaches. Role design served as the central analytical category through which all other aspects of the study

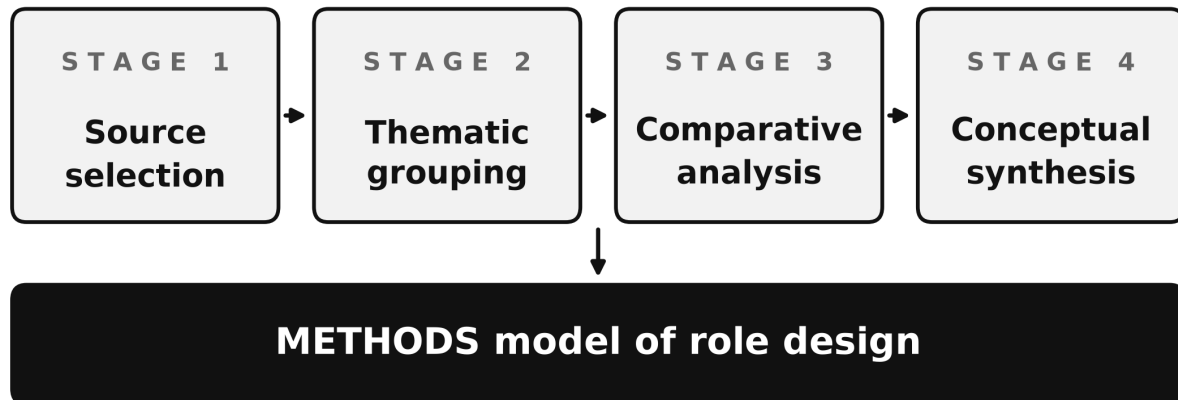


Figure 1: Methodological structure of the study

Table 1: Structure of the study methodology

Methodological block	Content	Function in the study
Research design	Theoretical, analytical, and conceptual nature of the study; no primary empirical data; integrative literature review, comparative analysis, conceptual synthesis	Defines the overall logic of the study
Source base	Scholarly works on role design, production teams, vocational training, quality control, ergonomics, and team resilience	Forms the source foundation of the analysis
Materials	Articles and monographs on job design, role design, teamwork, group effectiveness, training in manufacturing, quality control, ergonomics, and team resilience; separately, studies on automotive, textile, and garment production	Combines theoretical and industry-specific sources
Procedure	Selection of relevant sources; thematic grouping of the literature; comparative analysis; substantive generalization	Reflects the sequence of the study
Data analysis	Comparative, thematic, and conceptual-synthetic approaches; central category — role design; three analytical dimensions: training efficiency, quality control stability, and team resilience	Ensures interpretation of the literature and development of the METHODS model
Methodological constraints	Non-empirical nature; no direct testing of the METHODS model in real production; dependence on interpretation of existing sources	Defines the limits of the results' validity

were interpreted. The literature was analyzed along three key dimensions: personnel training efficiency, quality control stability, and team resilience. This analytical logic made it possible to consistently identify the organizational principles and methods underlying role design, trace its influence on training processes and production quality, and determine its significance for the formation of resilient production teams. The fourth and final stage of the study was the conceptual synthesis of the reviewed literature, which resulted in the development of the author's METHODS model.

The methodological limitations of the study stem from its non-empirical nature, as the proposed conclusions

and the METHODS model have not been directly tested under real production-line conditions. In addition, the study's findings depend on the interpretation and generalization of existing scholarly sources rather than on analysis of primary field data. Therefore, the proposed model is conceptual in nature and requires further empirical testing and validation in a practical production environment.

RESULTS AND DISCUSSION

Results

The first result of the study is the determination that role design on the automotive upholstery production line

should be based on several interrelated organizational principles and methods. The most fundamental of these is role clarity, that is, the unambiguous assignment of specific operations, boundaries of responsibility, and expected outcomes to each role. Equally important is the alignment of roles within a unified production sequence, since each operation acquires full meaning only through its systemic connection with preceding and subsequent stages. At the same time, effective role design cannot be reduced to a rigid division of labor; therefore, another of its principles is the combination of specialization with functional flexibility, which enables both maintaining precision in the execution of operations and preserving the adaptability of the production line. Of particular importance is the embedding of control and corrective functions within the role structure itself, in which each role implies not only the performance of a specific action but also responsibility for its quality, timeliness, and compliance with the overall logic of the process. Thus, role design emerges as an integrated organizational mechanism within which functions, coordination, responsibility, and control are combined into a unified system of production orderliness. The structure of the obtained results is summarized in Table 2, and the resulting author's METHODS model is presented in Figure 2. The second result of the study is the substantiation that role design directly affects personnel training efficiency and the stability of quality control. In terms of training, clearly structured roles reduce uncertainty for new employees, facilitate their adaptation, and make the transition into production more consistent and manageable. When a worker clearly understands the

boundaries of their function, the sequence of required actions, the connection between their own operation and other stages, and the criteria for proper performance, training proceeds more quickly and effectively, with fewer errors. A standardized role structure also facilitates skill transfer and provides a basis for cross-training, enabling employees to become better oriented to adjacent operations and to interact more effectively with one another. In terms of quality control, role design ensures stability because control functions are not confined solely to the final stage of inspection but are integrated into the very sequence of roles. Under such conditions, each role includes responsibility for maintaining quality parameters, identifying deviations in a timely manner, and preventing the transfer of defects to subsequent stages of the line. For this reason, personnel training efficiency and quality control stability should be regarded as two interrelated outcomes of a properly organized role structure that simultaneously ensures clarity of action, repeatability of operations, and appropriate process discipline.

The third result of the study is the conclusion that role design serves as an important factor in the resilience of the production team, since it is through role design that the predictability of interaction, the possibility of substitution, the redistribution of workload, and the continuity of work under conditions of change and operational disruptions are ensured. Team resilience in the automotive upholstery line is formed not only through individual endurance, but above all through an organization of roles that combines coordination, functional flexibility, workload alignment, and the stabilization of the production process. Thus, team

Table 2: Structure of the results section

Results block	Main content	Function in the article
Foundations of role design	Role clarity; alignment of interdependent operations; combination of specialization and functional flexibility; embedding of control and corrective functions within the role structure	Defines the organizational principles and methods underlying role design
Role design and training efficiency	Reduced uncertainty for new employees; improved adaptation; more consistent skill transfer; support for cross-training	Shows how role design contributes to personnel training efficiency
Role design and quality control stability	Embedding quality control into the sequence of roles; responsibility for quality parameters; timely identification of deviations; prevention of defect transfer	Explains how role design ensures stable quality control
Role design and team resilience	Predictability of interaction; substitution; workload redistribution; continuity of work under change and disruptions	Demonstrates how role design supports team resilience
METHODS model	Mapping of operations; Evaluation of competencies; Task-role structuring; Harmonization of workload and ergonomics; Operational embedding of quality control; Dynamic flexibility design; Stabilization through feedback	Integrates all results into the author's unified conceptual framework



Figure 2: METHODS model of role design for the automotive upholstery production line

resilience should be understood as an organizationally shaped capability arising from such role design that combines predictability, adaptability, coordinated action, and the maintenance of work continuity.

The generalization of all the results obtained made it possible to develop the author's METHODS model, which interprets role design as a sequential system of organizational methods. Its first element, Mapping of operations, covers the identification of operations, their sequence, and their interdependencies on the production line. The second element, Evaluation of competencies, involves assessing employees' competencies and training needs in accordance with the requirements of specific roles. The third component, Task-role structuring, refers to the structuring of tasks, roles, and boundaries of responsibility, while the fourth, Harmonization of workload and ergonomics, aims to align workload, operational complexity, and ergonomic requirements. The fifth element, Operational embedding of quality control, involves embedding quality control into the role system itself, whereas the sixth, Dynamic flexibility design, ensures functional flexibility, substitution, and team adaptability. The final component, Stabilization through feedback, reflects the need for continuous monitoring, adjustment, and improvement of the role structure through feedback mechanisms. Within this model, role design does not appear as a set of isolated managerial decisions but as an integrated mechanism that combines training, quality, and team resilience within a single logic of production effectiveness.

The study's general results showed that the foundations of role design for the automotive upholstery production line are role clarity, the alignment of interdependent

operations, the combination of specialization with functional flexibility, and the embedding of control functions within the role structure. A connection was also established between role design and personnel training efficiency, quality control stability, and the production team's resilience. The outcome of systematizing these results was the development of the author's METHODS model, which integrates the key organizational methods of role design into a unified conceptual framework.

Discussion

As shown in the theoretical block of the literature review, research on work design, group effectiveness, and teamwork provides the general conceptual foundation for understanding that work structure directly influences team performance. In this context, the principles of role design identified in the study make it possible to interpret role design on the automotive upholstery production line not as a purely administrative distribution of functions, but as a basic mechanism for organizing production interaction. Clarity of responsibility boundaries, alignment of interdependent operations, the combination of specialization with functional flexibility, and the embedding of control functions form such a role architecture in which coordination becomes not an externally imposed requirement, but an inherent property of the process itself. This conclusion directly aligns with Hackman and Oldham's (1976) propositions on the design of work, as well as with the conclusions of Campion *et al.* (1993) and Cohen and Bailey (1997) regarding the relationship between work structure, group characteristics, and team performance. At the same time, unlike the more general approaches considered in the literature review, this article

specifies role design as an industry-specific production mechanism for coordinating operations precisely on the automotive upholstery production line. The theoretical significance of this result lies in the fact that the article brings general concepts of role design back into a specific industrial context and demonstrates their explanatory power at the level of a real production system.

The second result also directly corresponds to the two analytical blocks of the literature review—training efficiency and quality control stability. The literature review showed that studies of production training, standardized work, line balancing, quality control, and ergonomics have developed mainly as related, but not fully integrated, fields. The relationship established in this study between role design, personnel training efficiency, and quality control stability indicates that these two dimensions should be considered within a single organizational logic. If the role structure is clear, standardized, and internally coordinated, it simultaneously facilitates employee adaptation and creates the conditions for stable compliance with quality parameters. This interpretation is consistent with the studies by Maurer *et al.* (2025), Wickramasinghe and Wickramasinghe (2016), Shakil and Parvez (2018), and Bongomin *et al.* (2020) regarding the importance of standardization, line balancing, and continuous improvement for production training. It also directly corresponds to the works of Tsou and Chen (2005), Falck *et al.* (2010), and Sinha *et al.* (2015), which, in the literature review, were considered the theoretical basis for a process-based understanding of quality. Thus, the discussion brings two distinct blocks of the literature review back to a common conceptual center and shows that role design is precisely what integrates training and quality control into a single organizational system. The practical significance of this conclusion lies in the fact that role management can serve as a common foundation for both personnel training and embedded quality control.

The third result likewise directly develops the fourth block of the literature review devoted to team resilience, ergonomics, well-being, and quality of work life. While the literature review showed that team resilience is usually associated with flexibility, working conditions, and organizational support, the results of this article clarify that these characteristics acquire systemic significance specifically through role design. The identified relationship between role design and team resilience indicates that team resilience in the production environment has not only a behavioral or psychological nature, but also a distinctly organizational one. Predictability of interaction, the possibility of substitution, workload redistribution, and the maintenance of work continuity are formed through a properly designed role system. This interpretation is consistent with the studies of Ulin and Keyserling (2004), Tompa *et al.* (2013), and Ndlovu and Gupta (2025), which in the literature review were used to substantiate the relationship between ergonomic and organizational interventions, performance, and well-being. It also corresponds with the conclusions of Beloor and

Nanjundeswaraswamy (2024) regarding the significance of quality of work life, training, co-operation, and the work environment for employee stability in the garment industry. Therefore, in this respect, the discussion returns directly to the previous review and shows that team resilience can be understood as a consequence of role design, rather than merely a derivative of working conditions or individual adaptability. This expands the theoretical interpretation of resilience in production teams and, at the same time, outlines a practical approach to organizing roles under variable workloads and operational disruptions.

Finally, the METHODS model directly completes the logic of the entire literature review, as it integrates the four thematic directions consistently developed there: theoretical foundations, training efficiency, quality control stability, and team resilience. If the literature review showed that these directions exist in scholarly literature in a largely fragmented manner, then the METHODS model serves precisely to address this research gap. Unlike the scattered approaches examined in the previous review, it combines Mapping of operations, Evaluation of competencies, Task-role structuring, Harmonization of workload and ergonomics, Operational embedding of quality control, Dynamic flexibility design, and Stabilization through feedback into one sequential system of organizational methods. In theoretical terms, this means that role design can be described as an integrated mechanism for production effectiveness; in practical terms, this means that the model can serve as a guideline for organizing production lines, personnel training, embedded quality control, and maintaining team stability. At the same time, the obtained results should be interpreted in view of the limitations of the study: the article is theoretical and analytical in nature, does not include an empirical verification of the METHODS model on a specific production line, and is based on the synthesis of existing literature rather than on the analysis of primary field data. For this reason, the proposed model requires further empirical testing and applied case studies.

Conclusion

The study substantiated that role design on the automotive upholstery production line is a key organizational mechanism that links work organization, personnel training, quality stability, and the team's ability to maintain performance under workload, change, and operational disruptions. Its main foundations are role clarity, coordination of interdependent operations, the combination of specialization with functional flexibility, and the embedding of control functions within the role structure. Well-designed roles reduce uncertainty for new employees and facilitate skill transfer, ensure the repeatability of operations and compliance with quality parameters, and make substitution and workload redistribution possible, which supports team resilience. These findings were integrated into the METHODS model, which presents role design as a single system of organizational methods rather than a set of fragmented managerial decisions. The model offers a conceptual

basis for organizing upholstery lines, developing training systems, and implementing process-based quality control. As the study is theoretical, future research should test the METHODS model empirically in real production conditions and assess the long-term effects of role design on productivity, quality, and team adaptability.

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