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THE PARTICIPATORY ERGONOMICS AND ITS ROLE IN ACHIEVING BUSINESS MODEL INNOVATION:An analytical study of a sample of administrative leaders in private banks in the Middle Euphrates governorates

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Abstract : This research aims to reveal the role of the collaborative work environment, represented by (self-engagement in work, knowledge base, administrative support, and employee support), in achieving Innovation in the business model, represented by (Innovation in gaining value, Innovation in new proposals, and Innovation in creating value). The current study relied on a questionnaire tool to measure the level of availability of Participatory ergonomics and Innovation in the business model among administrative leaders in private banks in the Middle Euphrates governorates. The sample size amounted to (95) administrative leaders. The study relied on the descriptive analytical approach, and by using the special statistical packages in the program (SPSS.V.29), and the results of structural equation modeling, reliability coefficient, arithmetic means, standard deviations, relative importance, correlation matrix, and regression coefficient were extracted. The results of the study showed that the collaborative work environment represents a pivotal factor in enhancing creativity, as the results showed that private banks that encourage interaction and participation between administrative leaders and employees are more capable of developing innovative and flexible business models.

Keywords: Participatory ergonomics, business model innovation.

INTRODUCTION: The contemporary business environment is undergoing rapid transformations due to technological, economic, and social developments(Driessen et al., 2010). This has made Business Model Innovation a strategic necessity to ensure organizational continuity and enhance their competitiveness. In this context, Participatory ergonomics has emerged as one of the main drivers of innovation, contributing to the activation of a spirit of cooperation among employees and encouraging the exchange of ideas and experiences(Matthews et al., 2011). This opens new horizons for developing work methods and adopting innovative solutions. As a vital part of the financial sector, private banks face challenges related to intense competition, increasing customer demands, and changing market needs. Therefore, fostering Participatory ergonomics within these institutions is a pivotal entry point for creating an environment conducive to creative thinking and reshaping business models in line with economic and technological transformations(Guo et al., 2022). Administrative leaders play a fundamental role in establishing a culture of participation by empowering employees, encouraging them to present initiatives, and involving them in decision-making processes. Hence, this study gains its importance by analyzing the relationship between Participatory ergonomics and Business Model Innovation in private banks in the Middle Euphrates governorates. This study contributes to enriching the administrative literature and providing practical recommendations that help these banks achieve a sustainable competitive advantage.

PART ONE: SCIENTIFIC METHODOLOGY

First: Research Problem

Private banks in the Middle Euphrates governorates face increasing challenges as a result of rapid transformations in the business environment, such as technological advancements, changing customer expectations, and intense competition. This is in addition to the ongoing need to develop innovative business models that achieve efficiency, flexibility, and the ability to respond quickly to changes. Perhaps one of the most prominent factors that can contribute to addressing these challenges is fostering a Participatory ergonomics based on cooperation and the exchange of knowledge and ideas between management and employees. This allows for the generation of innovative solutions and the formulation of

business models more suited to market needs. However, the practical reality indicates that many private banks still rely on traditional management styles that limit the effective participation of employees in strategic thinking and decision-making processes. This leads to a lack of investment in available creative energies and limits opportunities for Business Model Innovation. Hence, the problem of this study stems from an attempt to answer the main question: "What is the role of the Participatory ergonomics in achieving Business Model Innovation among administrative leaders in private banks in the Middle Euphrates governorates?" This main question leads to a number of sub-questions, such as:

1- To what extent are the components of a Participatory ergonomics available in private banks?

2- How does participation contribute to enhancing the Innovation capabilities of administrative leaders?

3- What is the nature of the relationship between Participatory ergonomics and the development of innovative business models?

Second: Importance of the Research

1. The study contributes to enriching the administrative literature by shedding light on a contemporary topic: the relationship between Participatory ergonomics and Business Model Innovation, an area that has not received sufficient research in the Iraqi context.
2. The study highlights how a collaborative work environment contributes to generating innovative ideas and developing innovative business models within private banks.
3. The study's findings help decision-makers develop organizational policies that encourage teamwork and effective participation.
4. The study provides private banks in the Middle Euphrates region with practical recommendations for adopting collaborative management practices that enable them to harness the latent creative potential of employees.
5. It helps administrative leaders build an organizational environment that supports innovation and is capable of responding to environmental and technological changes.
6. It enables banks to develop more flexible and innovative business models, thus strengthening their competitive position in the financial market.
7. Providing practical recommendations that can contribute to improving leadership and internal communication methods, thus raising the level of institutional creativity..

Third: Research Objectives

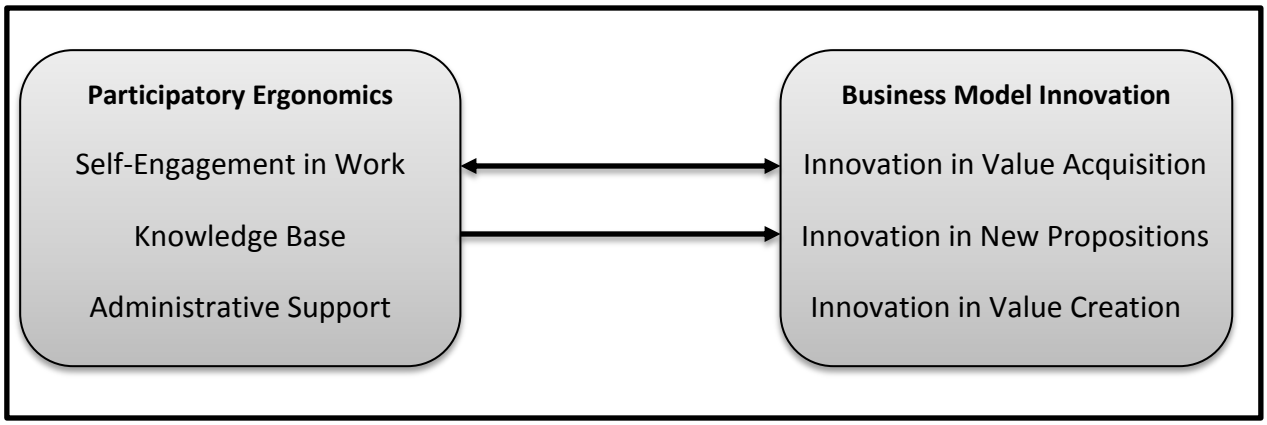
1. Diagnose the level of availability of the components of Participatory ergonomics among administrative leaders in private banks, and the extent of their impact on daily interactions and strategic decisions.
2. Analyze the impact of organizational participation and interaction in enhancing individual and collective Innovation among administrative leaders.
3. Explore the relationship between Participatory ergonomics and the development of innovative business models that help banks adapt to changes in the competitive and technological environment.
4. Provide a practical framework and recommendations for private banks on how to activate a Participatory ergonomics as a strategic approach to achieving innovation and excellence in business models.

Fourth: Hypothetical plan and development of hypotheses

After examining the problem and objectives of the study, clarifying its importance, and presenting its main hypotheses, measuring the nature and type of relationships between the collaborative work environment and business model innovation requires constructing a hypothetical study plan that expresses the nature of the direct influence relationship between the variables included in the study, as follows:

1- **The independent variable**: The Participatory Ergonomics variable was measured using the Matthews et al. (2011) scale, which includes four dimensions: self-containment, knowledge base, administrative support, and employee support.

2- **The dependent variable**: The business model innovation variable was measured using the Clauss,(2017) scale, which includes three dimensions: creativity in value acquisition, creativity in new proposals, and creativity in value creation. Figure (1) illustrates the hypothetical study plan.



There is a statistically significant correlation between the Participatory ergonomics and business model innovation. **Several sub-hypotheses branch out from this hypothesis, namely:**

- There is a statistically significant correlation between self-engagement in work and creativity in the business model and its dimensions.
- There is a statistically significant correlation between the knowledge base and creativity in the business model and its dimensions.
- There is a statistically significant correlation between administrative support and creativity in the business model and its dimensions.
- There is a statistically significant correlation between employee support and creativity in the business model and its dimensions.

B- Impact Hypotheses

There is a statistically significant effect of the Participatory ergonomics on business model innovation ,**Several sub-hypotheses branch out from this hypothesis, namely:**

- There is a statistically significant effect of self-engagement in work on business model innovation in all its dimensions.
- There is a statistically significant effect of the knowledge base at work on business model innovation in all its dimensions.
- There is a statistically significant effect of administrative support on business model innovation in all its dimensions.
- There is a statistically significant effect of employee support on business model innovation in all its dimensions.

Fifth: Research Community and Sample

The study community represented the private banks in the governorates of the Middle Euphrates (Diwaniyah, Muthanna, Babylon, Najaf and Karbala), which numbered (15) banks, namely (Cihan Bank, Iraqi Investment, Baghdad, Mansour Investment, Middle East, International Development for Investment, Ilaf Islamic, Across the World, United for Investment, Iraqi Union, Economics, Gulf, South, Islamic Countries, and Commercial Iraq). Despite the large size of the study community represented by the administrative leadership in the studied banks, and in light of the modest capabilities of the researcher and relying on the scientific and statistical determination of the sample size, the study used the random sample method in selecting the sample, and the private banks in the Middle Euphrates region were chosen to form a community to test the hypotheses and plan of the study, and the size of the study sample amounted to (95) leaders in the banks studied and the comprehensive survey method was used.

Sixth: Spatial, Temporal, and Human Boundaries of the Study

1- **Spatial Boundaries**

Represented by private banks in the Middle Euphrates Governorates (Diwaniyah, Babil, Karbala, Najaf, and Muthanna).

2- **Temporal Boundaries**

The study extended from mid-March 2025 to September 2025. This period served as the basis for collecting data and information related to the theoretical and practical aspects. It also included a period for distributing questionnaires to the studied sample.

3- **Human Boundaries**

The study population consisted of administrative leaders in private banks in the Middle Euphrates Governorates (Diwaniyah, Babil, Karbala, Najaf, and Muthanna). To test the study's hypotheses and achieve its objectives, (98) questionnaires were distributed to the studied sample.

Table (1) Study variables, sub-dimensions and adopted measures

Variable	Dimensions	NO.	Scale
Participatory Ergonomics	Self-Engagement in Work	3	Matthews et al.,2011
	Knowledge Base	3	
	Administrative Support	4	
	Employee Support	3	
	Total	13	
Business Model Innovation	Innovation in Value Acquisition	13	Clauss,2017
	Innovation in New Propositions	12	
	Innovation in Value Creation	7	
	Total	32	

Seventh: Data Collection Methods

A- **Theoretical Aspect Tools**:

To enrich the theoretical aspect of the research, we relied on books, magazines, periodicals, and university theses, as well as the Internet.

B- **Field Aspect Tools**:

Questionnaire Form: The study relied on a questionnaire as the primary tool for collecting the necessary data on the reality of the study variables in the banks studied.

Eighth: Statistical Methods Used in the Study

The researcher relied on a five-point Likert scale to distribute responses to the questionnaire. Therefore, to analyze the field aspect of the study, several statistical methods were used to process the questionnaires collected from respondents, using the Statistical Package for the Social Sciences (SPSS v.29):

1- Weighted Arithmetic Mean: Used to determine the average responses of sample members.

2- Standard Deviation: Used to determine the dispersion of the responses of the sample members from their arithmetic mean.

3- Relative importance: This determines the importance of each item in the scale compared to the other items.

4- Simple Pearson correlation coefficient: This is used to determine the correlation between the study variables.

6- Cronbach's alpha coefficient: This is used to ensure the reliability of the study scale and the consistency of the items among them.

PART TWO: THE THEORETICAL FRAMEWORK OF THE RESEARCH

First: Concept Participatory Ergonomics

The concept of the participatory work environment dates back to the work of Noro & Kogi (1984). The first to propose the term "collaborative work environment," Noro went on to further promote the concept at a workshop in Toronto, Canada, in 1984. It subsequently gained significant interest among practitioners and stakeholders, notably in the use of participatory work environment as a common term in work (Vink et al., 2005: 539). The concept of participatory work environment has since become popular among researchers worldwide, and is consistent with models of cross-cultural participation (Driessen et al., 2010: 3).

A Participatory ergonomics assumes that employees are experts in their field. Given the appropriate knowledge, skills, tools, facilities, and resources, they are better positioned to identify and analyze problems and develop and implement solutions that will be effective in reducing the risk of work-related accidents and improving productivity (De Macedo, 2015:102). A Participatory ergonomics is also based on a holistic work environment philosophy that ensures adequate attention to organizational design and management issues (Dale et al., 2016:468).

Broday (2020:239) emphasized that a Participatory ergonomics involves people being involved in planning and controlling a significant portion of their work activities, with sufficient knowledge and the ability to influence processes and outcomes to achieve objectives. There are several types of participation, including consultative participation, where employees or elected representatives express their ideas or opinions, and management makes decisions in line with those ideas (Abdollahpour & Hilali, 2022:61).

Another type is direct participation, in which employees have a certain degree of influence over decisions related to workplace changes (Rocha, 2023: 418 & Rodrigues). From the viewpoints of some researchers and writers in defining the concept of a collaborative work environment, from their own point of view. (Abdollahpour & Helali, 2022: 61) indicated that it is a means of engaging employees within the organization, supervisors, and other stakeholders in the workplace to jointly identify and eliminate hazards or risk factors in their workplace. (Xie et al., 2023: 2) defined it as the immersion of Employees planning and controlling part of their work activities, with sufficient knowledge and ability to influence both processes and results in order to achieve desired objectives.

Second: Importance of a Participatory Ergonomics

A collaborative work environment is an approach that focuses on the active participation of individuals at all levels of an organization, particularly employees, and empowers them through a practical learning approach and learning-for-change strategies. This can be instrumental in improving the quality of work life in organizations(Knudsen, 2011: 379). Employee engagement is also a key factor in the successful development and implementation of workplace inputs. Employees gain a greater understanding of their roles, enabling them to provide useful resources, which positively impacts their job satisfaction and performance by building trust and commitment (Nielsen et al., 2013: 329). A participatory work environment improves health outcomes and reduces the number of lost work days and costs associated with workplace injuries (Busck et al., 2010: 289).

A participatory work environment takes into account the specific benefits that employees bring to the table and the contributions they can make if the work environment is designed to facilitate that contribution (Uchiyama et al., 2013: 174). The common thread in a Participatory ergonomics program is that it utilizes one or more teams created to improve work design, and that workers are actively engaged (and others who will be impacted by the proposed changes) in the process so that their expert knowledge of their work is utilized (Nobrega et al., 2016:129).

Third: Dimensions of a Participatory Ergonomics

A Participatory ergonomics can be measured through four dimensions (Matthews et al., 2011: 363):

1- Self-involvement in work

This dimension refers to the degree to which employees perceive their ability to effectively influence decisions related to ergonomic design and analysis (Matthews & Gallus, 2005: 1479). This may include listening to the voice of employees and the scope of decision-making (Matthews et al., 2011: 363).

2- Knowledge base

This dimension is the extent to which employees feel they have knowledge of the organization's work environment that they can use to modify their workplace or the broader work environment (Matthews and Gallus, 2005: 1479). The knowledge base of the work environment can include an internal team trained in work environment analysis and design, or it can be provided by an external entity (such as an work environment consultant)(Matthews et al., 2011: 363).

3- Administrative Support

To adopt a collaborative work environment, it is essential that senior management be committed and supportive. When senior management is committed to a collaborative process, the results are more successful for the organization (Matthews & Gallus, 2005: 1479). The degree to which employees perceive that both executives and senior management have a genuine and supportive stake in developing a safer and more productive workplace through a collaborative workplace program(Selamat et al., 2021: 617).

4- Employee Support

This dimension reflects employees' willingness to participate, directly or indirectly, in workplace programs and to follow through on the implementation of design solutions resulting from the collaborative workplace program(Matthews & Gallus, 2005: 1479).

Fourth: Concept of Business Model Innovation

Business model Innovation is an evolution of the field of business model Innovation (Gassmann et al., 2014:3). The ability to create a repeatable and successful business model can increase an organization's resilience to changes in its environment and provide a sustainable competitive advantage (Kim et al., 2015:36). Business model innovation refers to the diversification of the entire structure of a business model or its components in response to environmental opportunities or threats, or as a diversification and innovation strategy (Srai et al., 2016:4). Consequently, the main areas of application of this concept have been organizational diversification (Srai et al., 2016:4) and entrepreneurship (You, 2022:18). From the examples of business model innovation discussed, four general aspects can be identified: startups, business

model transformation, business model diversification, and business model acquisition(Geissdoerfer et al., 2018:406). Business model innovation represents an alternative to business models that provide previously unavailable product or service offerings to customers and end users (Mitchell & Coles, 2004:17). Labbe & Mazet (2005:897) argue that business model innovation leads to a change in one or more dimensions of a business model (which researchers view as a combination of product-market, value capture, and revenue model), resulting in a new business model configuration, i.e., the creation and implementation of new elements.

Osterwalder & Pigneur (2005:24) Point out that business model innovation entails identifying a set of business model elements, basic modules, and their relationships, and that a business model designer can play with these to develop entirely new business models, or evolve a business model from basic models (which offer little value) to more advanced (and more valuable) models (Chesbrough, 2007:15). Lindgardt et al. (2009:2) argued that business model innovation represents the reinvention of two or more elements of a business model that contribute to delivering value in a new way. It can provide an indicator for organizations to emerge from the intense competition, where product or process innovations can be easily imitated. Romero & Molina (2009:3) note that business model innovation represents the continuous review of business models to prioritize value capture within the organization in response to actual and potential changes in perceived market conditions and the evolution of the organization's strategy as the business environment and customer needs change.

Fifth: The Importance of Business Model Innovation

Organizations seek to achieve business model Innovation by exploring new ways to define value propositions, create value, and retain it for customers, suppliers, and partners (Bocken & Geradts, 2020: 36). Furthermore, internal organizational development and reinvention have a strong relationship with business model Innovation and are of great importance in many situations, as they achieve the highest growth in the organization's profit margin (Gil-Gomez et al., 2020: 18).

The importance of business model Innovation is also evident in maintaining business survival and performance, as it is a source of competitive advantage for the organization, and achieving optimal performance results (Vaska et al., 2021: 3). Knowledge management capabilities, organizational agility, and senior management awareness also enhance business performance, and this relationship is explained by increased business model Innovation (Geissdoerfer et al., 2020: 2-3). Business model innovation also allows organizations to specialize and move more quickly to seize growth opportunities when they arise (Snihur & Bocken, 2020: 4).

Sixth: Dimensions of Business Model Innovation

Business model Innovation is measured through three dimensions (Clauss., 2017):

1- Innovation in Value Capture

Value lies in satisfying and fulfilling customer expectations. Customer expectations have become the focus of value capture and can be achieved when the relative amount of value is personally realized by the customer (Guo et al., 2022: 3). Innovation in value capture, on the other hand, includes four subcomponents: new capabilities, new technology/equipment, new partnerships, and new processes(Kraus et al., 2020: 4).

2- Innovation in New Propositions

Innovation in new offerings consists of four components: new offerings, new customers and markets, new channels, and new customer relationships (Kraus et al., 2020: 4). Innovation in new offerings is a key component of business model innovation, which is the reason consumers choose to purchase a product or service from a startup(Guo et al., 2022:3).

3- Innovation in Value Creation

The two elements of innovation in value creation are new revenue models and value cost structures (Kraus et al., 2020:4). The digital age has empowered individual consumers through the proliferation of product and service information available across digital platforms and social interactions, enhancing value structures(Guo et al., 2022:3).

Seventh: The Relationship between Research Variables

The relationship between a collaborative work environment and achieving innovation in business models is a reciprocal and interconnected one, with a strategic impact on organizational development and enhancing their competitiveness. A collaborative work environment represents an organizational framework that encourages employees to actively participate in decision-making, exchange knowledge, and collaborate collectively, creating an organizational climate that stimulates innovative thinking and the generation of new ideas (Driessen et al., 2010: 7). Work participation also enhances a sense of belonging

and shared responsibility, which motivates individuals to seek creative solutions to develop processes and services. According to modern theories of management and innovation, positive social interaction within the workplace contributes to creating knowledge flows that contribute to the design of flexible and innovative business models capable of adapting to environmental changes and market competition (Lindgardt et al., 2009: 4). Collaboration also provides a space for open dialogue and structured experimentation, which enhances organizational learning and encourages the transformation of innovative ideas into practical practices that enhance business value. Therefore, the collaborative work environment is not merely an organizational framework, but rather an enabling mechanism for organizational creativity that contributes to building business models based on sustainable innovation and continuous development (Gil-Gomez et al., 2020: 22).

PART THREE: THE PRACTICAL SIDE

First: Describing and Coding the Measuring Instrument

"Defining the measuring instrument in its current form, including its main variables and sub-dimensions, and coding it, is one of the most important steps upon which data analysis and statistical processing depend. It is an important step that facilitates the definition of variables and enhances the process of understanding the procedures for analyzing and testing them. Therefore, English terms will be used as a basis for establishing the codes for the variables and their sub-dimensions, as shown in Table (2).

Table (2): Description and coding of the measuring instrument

Variables	Dimensions	Symbol	NO.
Participatory Ergonomics ParErg	Self-Containment	SI	3
	Knowledge Base	KB	3
	Administrative Support	MS	4
	Employee Support	ES	3
Business Model Innovation BusModInn	Innovation in Value Capture	VCRI	13
	Innovation in New Proposals	VPI	12
	Innovation in Value Creation	VCAI	7

Source: prepared by the researcher.**Second: Reliability Test**

We note from Table (3) that the values of the stability coefficient for the main variables and their sub-dimensions ranged between (0.719 - 0.928), and these are high percentages based on the acceptable stability values (Hair et al., 2019: 775) and according to the answers of the sample members at the level of administrative leadership in the private banks, the study sample. Thus, the scales became ready for final application and are characterized by the accuracy, stability and validity necessary at the level of the field application environment.

Table (3): Cronbach's alpha test values for the study scales

Variables	Cronbach's alpha value for the variable	Dimensions	Cronbach's alpha value for the dimension	Questionnaire as a Whole
ParErg	0.904	SI	0.833	0.841
		KB	0.829	
		MS	0.719	
		ES	0.770	
BusModInn	0.919	VCRI	0.787	
		VPI	0.852	
		VCAI	0.811	

Source: prepared by the researcher based on the outputs of the SPSS v.29 program.

Third: Description and diagnosis of the Participatory ergonomics variable

The table (4)shows the results of analyzing the dimensions of the collaborative work environment based on the four statistical indicators: weighted mean, standard deviation, coefficient of variation, and relative importance, with the priority order for each dimension determined. It is clear that the dimension with the highest importance is self-containment, with a weighted mean of 3.826 and a relative importance of 76.52%, indicating that employees feel a high degree of acceptance and appreciation within the work environment, which enhances confidence and engagement in teamwork. The dimension of employee support came in second place, with a weighted mean of 3.652 and a relative importance of 73.04%, reflecting management's interest in encouraging employees and providing the necessary support to enhance their participation in decision-making. Administrative support came in third place, with a mean of 3.63 and a relative importance of 72.6%, indicating a good level of support from senior management for the processes of interaction and cooperation between individuals. The least evaluated dimension is the knowledge base, with a weighted mean of 3.424 and a relative importance of 68.48%, indicating the need to strengthen knowledge sharing and expertise transfer systems between Workers. In general, the weighted

mean (3.633) and relative importance (72.66%) showed that the level of the collaborative work environment falls within a relatively high level, reflecting a positive perception among respondents towards collaborative practices within the organization, with the potential to further develop the institutional knowledge aspect to support organizational creativity.

Table (4): Descriptive measures of the Participatory ergonomics variable

N:	Dimensions	Mean	S.D	C.V	Relative % Importance	Rank Priority
1	SI	3.826	0.638	16.68	76.52	1
2	KB	3.424	0.708	20.68	68.48	4
3	MS	3.63	0.567	15.62	72.6	3
4	ES	3.652	0.646	17.69	73.04	2
ParErg		3.633	0.533	14.67	72.66	-

Source: prepared by the researcher based on the outputs of the SPSS v.29 program.

Fourth: Description and diagnosis of the business model Innovation variable

The results of the table (5)indicate an analysis of the dimensions of creativity in the business model, through an evaluation of three main categories representing areas of organizational creativity. It is clear that the dimension with the highest importance is creativity in value acquisition, with a weighted mean of (3.397) and relative importance of (67.94%), and with the lowest level of statistical dispersion (coefficient of variation of 12.25%). This reflects the respondents' agreement that the organization possesses good capabilities in creating new opportunities to achieve value, whether through improving customer relations or developing methods of utilizing resources. The dimension of creativity in value creation came in second place, with a weighted mean of (3.38) and relative importance of (67.6%). This indicates the organization's pursuit of innovating new methods for producing goods or services, despite the presence of relative variation in the respondents' opinions (coefficient of variation of 20.80%), which may reflect the disparity in the application of creative practices between departments or administrative levels. While creativity in new proposals came in third place with a weighted mean (3.286) and relative importance (65.72%), which indicates an acceptable level of encouragement for new ideas and initiatives, it still needs greater reinforcement to increase creative participation by employees. Considering the overall weighted mean (3.354) and relative importance (67.08%), it can be said that the level of creativity in the business model falls within the average level tending to good, which indicates the availability of an organizational environment that supports creativity, but it needs more motivation and integration between the three dimensions of creativity to increase competitiveness and maximize added value in the organization.

Table (5): Descriptive measures of the business model Innovation variable

N:	Dimensions	Mean	S.D	C.V	Relative % Importance	Rank Priority
1	VCRI	3.397	0.416	12.25	67.94	1
2	VPI	3.286	0.511	15.55	65.72	3
3	VCAI	3.38	0.703	20.80	67.6	2
BusModInn		3.354	0.391	11.66	67.08	-

Source: prepared by the researcher based on the outputs of the SPSS v.29 program.

Fifth: Hypothesis Testing and Interpretation of Results

Table (6) shows the achievement of significant positive correlations between the main variables (participatory work environment and business model innovation). These values are significant at a significance level of (1%), which establishes a high level of confidence in the results of the relationship, estimated at (99%). This indicates the availability of a level of harmony and interconnection between the variables in practice, according to the sample's responses at the level of administrative leadership in private banks in the Middle Euphrates governorates of the study sample.

Table (6): Correlation relationships between the main study variables

Variables	SI	KB	MS	ES	ParErg
BusModInn	.662**	.495**	.635**	.536**	.617**

Source: prepared by the researcher based on the outputs of the SPSS v.29 program.

The coefficient of determination (R2) was high at (38%) and indicates the magnitude and variability of the dependent variable, business model innovation, (38%) of which is explained by the change in the collaborative work environment, and (62%) of the explanatory percentage is due to the effect of other factors not included in the study model. In addition, the strength of the impact of the Participatory ergonomics variable on the business model innovation variable was high as indicated by the standard parameter indicator (0.62), which means that the Participatory ergonomics variable affects the business model innovation variable by (62%) at the level of administrative leadership in private banks in the Middle Euphrates governorates of the study sample.

The influence coefficient is important here, because the value of the (C.R.) indicator was very significant with a significance level of (7.480) and a significance level of (0.000) as shown in Table (7). As a result, the level of business model Innovation will increase by (62%) due to the positive change by one unit from adopting the participatory ergonomics In the field, at the level of the application environment. As can be seen from the above, the variable participatory work environment has a significant moral effect on business model Innovation at the level of administrative leadership in private banks in the Middle Euphrates governorates of the study sample.

Table (7) Parameters for testing the impact of the Participatory ergonomics on business model Innovation

path			S.R.W	Estimate	S.E	C.R	R2	P-value
BusModInn	-->	ParErg	.617	.452	.060	7.480	38	***
SI	-->	ParErg	.831	.993	.070	14.243		***
ES	-->	ParErg	.842	1.020	.069	14.882		***
KB	-->	ParErg	.867	1.150	.069	16.590		***
MS	-->	ParErg	.788	.837	.069	12.202		***
VCRI	-->	BusModInn	.770	.818	.071	11.499		***
VCAI	-->	BusModInn	.832	1.070	.075	14.313		***
VPI	-->	BusModInn	.852	1.112	.072	15.499		***

Source: prepared by the researcher based on the outputs of the SPSS v.29 program.

Section Four: Conclusions and Recommendations

First: Conclusions

1. Accept the first main hypothesis, as a collaborative work environment is a pivotal factor in fostering creativity. The results showed that private banks that encourage interaction and participation between management and employees are better able to develop innovative and flexible business models.
2. Accept the second main hypothesis, as open communication and knowledge exchange between different levels of management contribute to creating an organizational climate that supports new ideas, enhancing banks' ability to respond quickly to changes in the business environment.
3. The study results show that empowerment and participation in decision-making are among the most prominent practices of Participatory ergonomics that raise levels of satisfaction and motivation, which positively impact individuals' willingness to contribute creative ideas.
4. The study results showed that weak participation or a lack of transparency in some departments limits the flow of creative ideas, leading to reduced opportunities for developing innovative and innovative business models.
5. The study results indicated that an organizational culture based on trust and cooperation forms the basis for the success of a collaborative work environment, as a supportive environment reduces resistance to change and increases acceptance of new initiatives.
6. The results confirmed that adopting a sustainable Participatory ergonomics contributes to building a long-term competitive advantage for private banks by improving the quality of banking services, increasing customer satisfaction, and enhancing corporate reputation.

Second: Recommendations

1. Promote open communication channels between management and employees through periodic meetings and internal interactive platforms that allow for the free exchange of ideas and experiences to support Business Model Innovation.
2. Empower middle management and employees to actively participate in strategic and operational decision-making, enhancing their sense of belonging and responsibility for work outcomes.
3. Adopt specialized training programs that focus on developing creative thinking and teamwork skills among management and employees to ensure increased levels of institutional Innovation.
4. Establish an organizational culture based on trust and cooperation through fair incentive policies and transparent practices that foster team spirit and reduce internal conflicts.

5. Establishing joint innovation units or teams, comprising individuals from various management levels, to develop and improve business models to suit the changing banking environment.
6. Adopting evaluation and reward systems linked to the level of participation and Innovation, to motivate individuals and teams that present initiatives that contribute to improving institutional performance and enhancing bank competitiveness.

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