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Design and Test a Model for the Systemic Decision-Making Process in the Conditions of the Corona Crisis for SME by Using the Method of Grounded Theory and System Dynamics.

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Abstract

Exploratory studies in understanding the impact of decisions on the survival of small and medium-sized businesses during the corona disease crisis in line with the research goals and based on the non-linear and dynamic conditions caused by the high speed of environmental changes prevailing in this space compared to the development of a system dynamics of the decision process taking action was taken. These businesses, on the one hand, are fragile against crises due to their limited financial ability, and on the other hand, with their high flexibility and quick decision-making power, they have the ability to adapt to the existing conditions. In order to create this model, it is necessary to identify the problem and in order to answer the research questions, it is necessary to develop a theory based on the opinions of experts and the available data from the Grounded Theory methodology. This theory explains all the effective factors in the field of decision-making in these businesses in Iran and the causal relationships that govern them and are affected by the existing background conditions and environmental interventionists. Based on this, by formulating special strategies for each business, it is waiting for imaginable consequences, such as creating opportunities based on strengths, applying a new attitude in the continuation of business life or transformation in processes and re-engineering the business structure. The purpose of developing this model is to prove and develop the theory presented in the quantitative expression of controlling background factors and identifying the impact of environmental interventionists on the decision-making process and measuring the dynamics of organizational elements over time in small and medium-sized businesses under the conditions of the Corona crisis. have been. Considering the ability of the mathematical method of dynamism and analyzing the results of the system dynamics as scenarios that are applied to the organization in the form of decisions made and by controlling their feedback, it is possible to show their effects on the pillars and resources of the organization in the form of quantities before implementation. The results showing the survival of businesses in benefiting from the appropriate number of human resources and applying the necessary motivation to make them belong to the organization, preparing for sudden changes and continuing the path of providing products and services and benefiting from innovation and creating value for customers in line with It is an aggressive strategy.

Keywords: *Decision-making, Corona disease crisis, Small and medium businesses, Grounded Theory, System Dynamic*

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Introduction

The theory resulting from the exploratory research method is the decision-making process with a systemic view in the field of small and medium businesses in the conditions of the Corona crisis. In order to analyze and formulate this theory, due to the special conditions of this crisis, including the sudden occurrence of the disease and its rapid epidemic in the world, including our country, and the rapid changes caused by its epidemic in different social, economic and even cultural levels, the researcher faced a new and multidimensional problem. The lack of previous experience and information and research resources in this regard necessitated the extraction and recording of events and opinions of experts from different angles of the effects and consequences of this crisis facing these conditions. Therefore, according to the consultation and considering the systemic approach and taking into account all the factors involved in this crisis, the data methodology approach of the grounded data was used as a qualitative topic in response to the research questions. This theory needs to be able to describe the decision-making process in small and medium-sized businesses in the conditions of the Corona crisis and face it with non-linear behaviors caused by the speed of environmental changes and the dynamics that govern this space. In such a way that she has the ability to identify and express the conditions and characteristics and factors influencing decision making in these businesses in the conditions of the Corona crisis. Secondly, by taking into account the causal relationships between them and making effective the different background and context conditions inside and outside the business structure, as well as taking into account the internal and external interveners, the organization is able to recognize the need for appropriate and timely change. This theory must include strategies that are suitable for different conditions and characteristics in every business .Controlling the results of these strategies can be considered as the feedback of the decisions made by the managers and leaders of these businesses. This theory states that the decision-making process for business survival requires the existence of strategies that can include creating opportunities based on strengths, applying a new attitude in the continuation of business life, transformation in business processes and creating organization agility. And re-engineering the structure and re-structuring of the business. In picture (1) this theory is revealed. (Borhani, 1402) In order to validate this theory, it is used based on the criteria of believability, transferability, reliability and verifiability, and this is achieved based on the calculation of the Kappa factor. So that all related categories have a credit of more than 75%. Sampling the qualitative part of 10 CEOs of manufacturing and service companies has been used as experts. (Borhani et al., 1402) However, measuring the results of this theory requires more expressive quantitative criteria. Although the statistical, inferential and descriptive analyzes rely on distributed questionnaires, the statistical population includes all production, service and educational businesses, with the presence of about 190 CEOs, production and financial managers of these companies through responding to Questionnaires have participated in the analysis of quantitative statistics. (Borhani et al., 1402) supporting the necessary correlation and factorial confirmation are repeated factors. This model allows managers to evaluate the effects and consequences of the decision on the pillars and resources of their business by considering the delays and by getting feedback from what is adopted. Examining these results and applying appropriate behavior in the direction of adding resources and reducing the destructive effects on them in a safe transition from the conditions of the Corona crisis will guide the business organization. Although the study of system dynamics in this area with the presence of

factors of employees, customers, suppliers, bureaucracy and tax laws and regulations, financial issues, shareholders, technical details and processes, sales prices during the European economic crisis in 2008 is limited. But the gaps in the previous researches can be attributed to the lack of a non-linear view and not taking into account the dynamics governing the factors involved in the decision-making process or the lack of analysis of all the factors affecting it simultaneously in the economic ecosystem of Iran and with regard to pointed dynamics in the conditions of the Corona Crisis. Overcoming the above challenges shows the importance and necessity of the present research. Non-linear thinking and dynamic view of phenomena and consequences is the neglected point of managers' decisions in businesses and commercial and non-commercial organizations. Ignoring the inherent dynamics of phenomena leads to making poor quality decisions, which instead of solving a problem, creates new and complex problems and gives wings to the existing challenges. (Mashayekhi, 2018)

In order to fill these gaps and to develop system dynamics, the necessity of a contingent and systemic view is inevitable. In order to receive the results of the consequences of the decision and evaluate them in consecutive periods of time, the dynamics method can be a suitable solution for detecting the dynamics and checking the feedbacks. Dynamics methodology, which was proposed by Forrester in engineering sciences in the sixties, and then in the following years, it was used by her and other researchers, including Sterman and Mashayekhi, in the field of humanities and economics. This method solves the desired model and provides its answer in the future with a non-linear view and with regard to the dynamics governing the business system with mathematical techniques.

By identifying various factors affecting the problem, by drawing causal models and formulating the cycle of causality between the factors and then combining them with each other, the researcher succeeded in presenting a causal model that governs the decision-making process in the conditions of the Corona crisis in small and medium-sized businesses. Further, by forming the state and flow model, it enabled the identification of information flow between endogenous and exogenous factors. The result is a systemic model that, by applying changes in its various parts, provides the ability to determine the result and outcome of the decision on the main pillars, variables and resources of the business, including human resources, sustainable income, the decision-making potential of the organization and to evaluate the knowledge and ability of the organization in the form of quantities. It is obvious that the analysis of different scenarios gives the manager the ability to identify positive and negative consequences with quantitative indicators before making a decision in the real business environment and to make the best and most reliable decisions to overcome the crisis of the Corona virus. This model and the results derived from it in order to develop exploratory concepts and the development of qualitative theory of research as a combined method of Grounded Theory and dynamics with the help of secondary analysis of qualitative data can reveal other hidden factors in the business structure. The analysis of the system dynamics clearly shows the understanding of the behavior of the system that is affected by the structure. Carrying out the model validity evaluation cycle and completing the qualitative theory can finally provide a model that matches the reality of the decision-making process in the structure of small and medium businesses in crisis conditions.

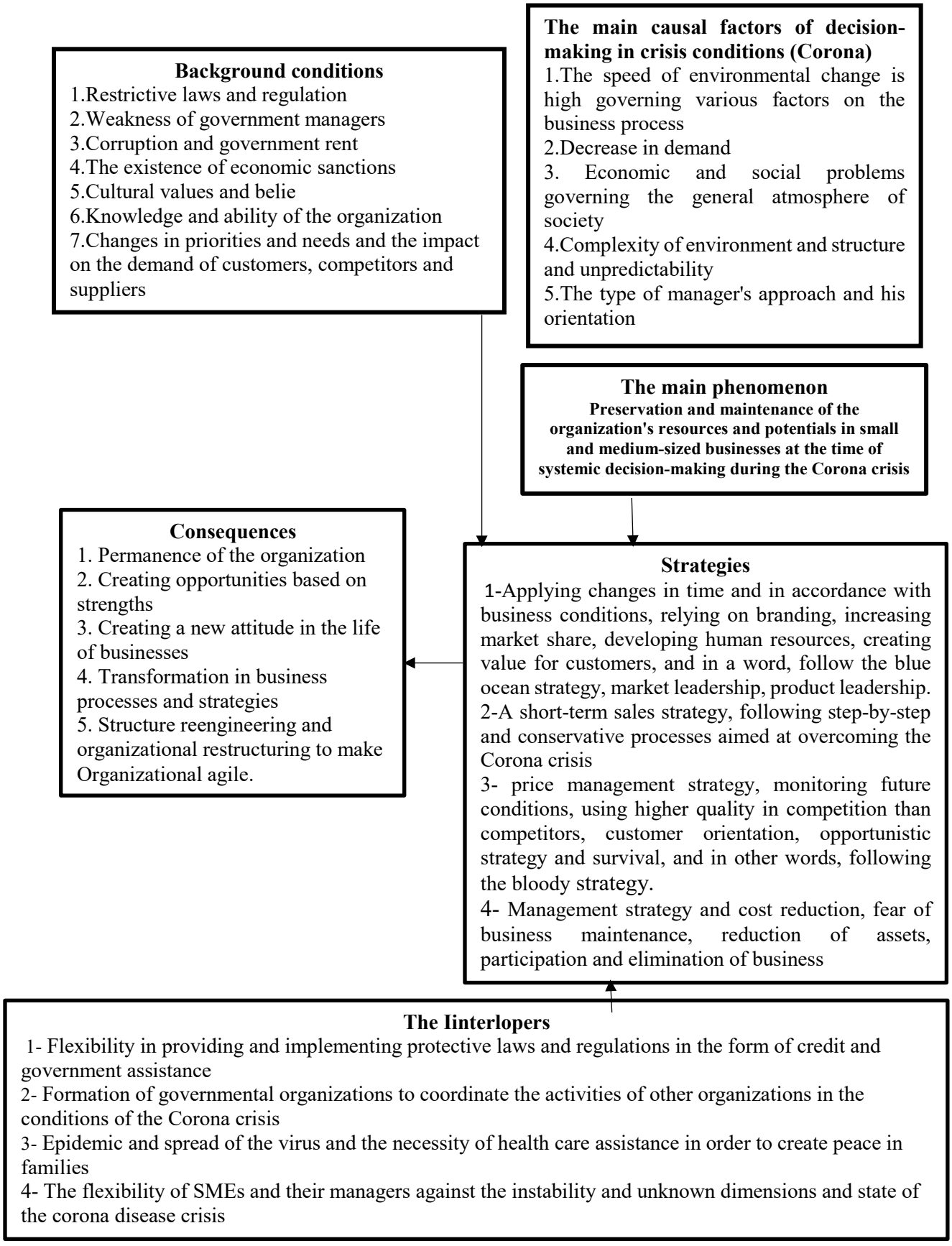
An Overview of the Theoretical foundations of Research

In the theoretical statement of this research, we should first address the approach of researchers in the field of decision-making from a systemic point of view in the conditions of the Corona crisis. Decision-making in crisis conditions, which itself implies the existence of ambiguity in the clear determination of

priorities, ambiguity in cause-and-effect relationships, ambiguity resulting from the ability and participation of the members involved in the decision-making process. (Alwani, 1393:129)

Also, systemic thinking eliminates the risk of limiting the manager to a single task and makes it possible for the manager to consider his goals related to the set of macro goals of the organization. (Khalkhali, 2013) In the analysis of the system dynamics, a period of time is considered for the activities. During this time, there is a delay that will have an endogenous effect on other activities, and not considering this delay creates obvious differences in the model. (Curie, 2020) Therefore, in the theory that there are different and different factors and considering our causal relationships between them, it can be seen that even the mere effect of the passage of time can change the conditions of the problem, and this is why the importance of looking at the dynamic's method is clearer. It is to measure the effects of the decision in the simulation resulting from dynamics on different scenarios and to evaluate the scenarios taken from the simulation results (Haji Ebrahimi Farashah et al., 2020). For example, in the situation of the corona disease crisis, businesses face a reduction in business activities, issues related to human resources and employees and supply chain are important and effective for small and medium-sized businesses, because they are more vulnerable due to less capital reserves. And on the other hand, in these companies, due to their greater flexibility, a new strategy such as sustainable business is emerging through the use of digital technology. (Pablo Duplos, 2020) is one of the effective exogenous factors of the presence of commercial and non-commercial risks caused by the Covid-19 pandemic, including global, economic, government, customer, industry and human resources risks. (Davari, 2019) Therefore, the formulation of the system dynamics should be comprehensive enough by taking into account all the aforementioned factors, and on the other hand, it should be compatible with reality. The difference in the quality of people's understanding of the real world and their decisions in interacting with the real

Comprehensive Model (1)



World depends on the quality of the model they create and use from the real world to understand it. (Mashayekhi 2018: 42) For this purpose, the mathematical model is considered. The characteristics of the mathematical model include the need for mathematical skills and knowledge to create it, without ambiguity and availability for criticism, lack of limitations in the number of factors, internal consistency, and assurance of inference in mathematical models. And the limitation in assumptions for the implementation of analytical solution capability can be mentioned as the weak point of mathematical models. (Mashayekhi 2018, 57) The ultimate goal of this model is to understand the behavior and results of the model and its similarity with what exists in the real world, as well as the simulation of new policies and changes in the structure of the model, the behavior and results of the model towards the desired behavior to change. (Mashayekhi 2018, 58)

On the other hand, management and social systems are more influenced by endogenous communication than exogenous communication, and the internal policies of shaping their performance are more effective. (Teymuri, Nur Ali, Walizadeh, 2017, 24)

To compensate for these weaknesses, it is necessary to change its assumptions about linear relationships, open model systems, pure rationality, etc., which are rarely observed at the policy level. Methodology is needed to adjust these assumptions. In other words, a method that can simulate and analyze non-linear relationships and closed-circuit systems under limited rationality is considered. (Teymuri, Nur Ali, Walizadeh, 2017, 27) Simon believes that the capacity of the human mind to formulate and solve complex problems is very small compared to the size of the problems whose solution is required for objective rational behavior in the real world or even a reasonable approximation to such objective rationality. (Teymuri, Nur Ali, Walizadeh, 2017, 36) The methodology of system dynamics with its causal philosophy and the goal of gaining deep insight into the functioning of the system has a lot of emphasis on looking inside the system. In this methodology, issues are not viewed as issues that are created by external factors, but issues are considered as issues that are created by the internal structure of the system. (Teymuri, Nur Ali, Walizadeh, 2017, 58)

In order to prove the theories of business development and crisis management and special emphasis on the internal dynamics of crises in small and medium-sized businesses, a combination of the perspective of dynamics, the life cycle of the company, crisis management, tolerance management and the continuation of the concerned business and has been used. (Vojetko, 2019) Although in previous researches, various factors affecting the crisis have been investigated separately, but a serious weakness in this research is the lack of a comprehensive examination of all the factors involved in a model. With system dynamics, it is possible to examine the decision-making process in times of crisis in small and medium-sized businesses with the presence of factors of employees, customers, suppliers, bureaucracy and tax rules and regulations, financial discussions, shareholders and capital. Also, by taking into account factors such as production capacity, technical details and processes, product quality and sales price, along with applying the conditions of disasters caused by crises, the speed of environmental changes, the use of change and innovation, it can be combined and managed appropriately, taking into account resistance and analyzed risk tolerance in business. (Vojetko, 2019) The study shows that the characteristics of crises are mostly related to internal factors and processes and policies regarding employees, production capacity and quality of products, and of course, another part is related to external factors such as competition, customers and the market, the

level of innovation, suppliers, they include technology, rules and regulations, and types of products. (vojetko, 2019) Factors such as flexibility and degree of changeability against the demands of customers, organizational leadership, motivation, reputation of the organization, ability to deal with inconsistencies, insight of employees and management, time to respond to customers' needs, and independence of the organization's performance are among the other effective internal factors of the organization. (vojetko, 2019) This model enables the researcher to study and analyze the possibility of knowing the effects of possible management decisions when a real crisis occurs. With the help of it, testing different management policies as a laboratory that provides dynamic modeling and this provides the possibility of assessing the degree of flexibility and business continuity. (Vojetko, 2019) The final result of these studies is a rare combination of decision-making topics, crisis recognition and especially the corona disease crisis and its characteristics in the space of small and medium-sized businesses based on extractive theory and in the form of presenting a simulation model of the real behavior of these organizations. In this model, based on the theory based on the main categories in order to answer the research questions, such as maintaining human resources, providing stable financial resources, knowledge and ability of the organization to create change and in line with the survival of the organization, making decisions with the presence of background conditions and it evaluates the intervenors governing the crisis of Corona disease. Examining the quantitative answers obtained from the analysis of the model and comparing it with the existing facts and determining the existing gap between the reality and the results of the model, it is possible to develop exploratory concepts by identifying additional features in line with the development of the theory. Here we see a combination of two theories of Grounded Theory and dynamics. So that by using the theory of secondary analysis of data, while strengthening the dynamic mental model, the research theory is also improved. (Akam, Goni, and Creswell, 2011) Now that the researcher is familiar with the theoretical foundations of dynamics in the field of decision-making in the context of the Corona crisis in businesses, the researcher oversees the development of the model based on the qualitative theory.

Research Methodology

What was extracted from the grounded data method is a theory that is expressed in a systematic way right and timely decision making of small and medium business managers in the conditions of the Corona crisis will be provided with a central focus on the categories of knowledge and ability of the organization, manpower and sustainable income. Focusing on these titles is possible by adopting appropriate strategies with the prevailing conditions of every business with the main goal of its survival. These strategies are based on factors such as restrictive laws and regulations, the weakness of government managers, corruption and government rent, the existence of economic sanctions, changes in the conditions and characteristics of suppliers, competitors and customers, cultural values and beliefs as background categories that can be formulated. On the other hand, the impact of intervening factors such as protective laws and regulations, fear of epidemic crisis, support aid, costs, commitment and belongingness of the personnel towards the organization is taken into consideration. In addition, management's desire and tendency to change through the use of knowledge and the management of the aforementioned factors in relation to the needs of customers and creating value for them makes it possible to formulate strategies. Now, according to the changing conditions of the environment, we can hope that appropriate consequences will result from these policies

depending on the conditions and characteristics of each business. Acceptable and appropriate consequences can be in the path of business survival by creating opportunities, relying on strengths, applying a new attitude in the continuation of business life, transformation in business processes and creating organizational agility, or reengineering the structure and restructuring of the business organization. This theory was trusted by experts in a quantitative evaluation based on the data obtained from the questionnaire compiled and distributed among the statistical community using statistical analysis that confirmed the necessary correlation and factorial confirmation of the above factors. However, this research is based on the dynamics governing the model and the possibility of analyzing quantitative trends and inferring feedback from policies on the sources and elements of the observer business, compiling system dynamics based on the superscript theory. Therefore, to do this, it is inevitable to go through the following 7-step process. 1- Defining the problem and understanding the time frame, the behavior of concepts and variables. 2- conceptualizing the system and explaining the dynamic hypothesis. 3- Model formulation and mathematical simulation of the relationship between variables. 4- Analyzing the behavior of the model and evaluating its ability in different conditions and obtaining answers and comparing the behavior of the model with the real behavior and proving the reliability and conformity of its general behavior with reality. 5-Evaluating the model and determining the consistency and accuracy of evaluating the sensitivity of the model to changes and parameters. 6- Using the model in analyzing policies and predicting environmental conditions that may arise and obtaining the appropriate solution. 7- Using the model to evaluate the adopted policies and analyze different scenarios in the uncertain situation of the Corona crisis. Based on the dynamics methodology stated by determining the main variables as level variables that can be measured in this model and its ups and downs will confirm the response of the system structure and on the other hand by determining the contextual and background factors and intervening factors that are auxiliary variables in Modeling is considered. Therefore, according to the 7 steps mentioned, by compiling the subsystems for each of the level variables and their causal relationship with the auxiliary variables, which is called by the name of their causal model, the modeling of the subsystems continues. These sub-systems include the causal model of manpower, the causal model of stable income, the causal model of knowledge and the ability of the organization, and finally the causal model of managerial decision-making potential.

Causal Model of Human Power

This model expresses the cause-and-effect relationship between the factors involved and related to the human resource level variable.
On the one hand, manpower is a direct factor in increasing production capacity, which in turn increases income and strengthens the organization's ability. (ring R1) The earning capacity of the organization provides the possibility of spending on education and learning, which in turn strengthens succession and the growth of human resources. (Ring 2R)
The issue of leaving work due to the effect of corona disease or other organizational factors that we see in the field of human resources was separated and included in the model.

The Causal Model of Sustainable Income:

Another level variable that was identified in this research is the organization's income. The income is self-sufficient for manpower and necessities for the production of goods and services. This income can be spent on research and development, advertising and education.
Strengthening the field of research and development strengthens the performance, product diversity and flexibility of the organization. These items create value for the

customer. Attracting customers strengthens the demand and consequently increases the income. (ring R3) Spending money on advertising will also strengthen demand and more sales and provide stable income. (ring R4) In this model, demand is considered as a factor that comes from outside the organization, and production capacity is considered as a factor that comes from within the system. In the causal model of income, it is essential that the effect of spending is visible in different parts of the organization's structure, including research and development, training, and advertising. Observing this issue enables the manager to evaluate whether to continue or stop the cost policy. The picture below (3) shows a more comprehensive expression of the causal model of income.

Causal Model of Organization's Knowledge and Ability

The category of knowledge was taken into consideration as the third level variable in the developed model of dynamics. The ability of the organization implies commitment to change from the manager and leadership of the organization. This will lead to the emergence and growth of research and development in the organization.

This area leads to the improvement of things such as performance evaluation, technology, production diversity, product quality and flexibility of the organization .As mentioned before, these things will create value for the customer and increase demand and income growth, which will increase the ability of the organization. (ring R5) On the other hand, improving the ability of the organization strengthens the risk tolerance, which leads to the opportunism of the organization. (ring R7) The strength of resistance against inconsistencies and the result of the described incremental loops will increase the knowledge and ability of the organization.

The Causal Model of Managerial Decision-making Potential

In the compiled system dynamics, the level variable that shows the ability and decision-making skills of management in small and medium-sized businesses is named as decision-making potential. In other words, all the resources of the organization include the level variables of manpower, stable income and knowledge and the ability of the organization to serve this level variable. On the other hand, the characteristics of small and medium businesses such as limited bureaucracy and fast decision-making speed in these organizations are related to this potential. The power of risk-taking, opportunism, along with other characteristics, express the title of agility of small and medium-sized businesses. In the next step, these subsystems are connected together in a cause-and-effect relationship and provide a composite causal model.

The integration of causal thinking and the creation of an expressive mathematical connection between categories in the form of relationships and state equations makes it possible to get a virtual impression of the organization's real behavior. Therefore, based on the interpretation of the causal relationships between the factors involved in the above causal models, the relevant mathematical equations are compiled. These equations are obtained based on the key performance indicators of each variable and its impact on other variables. The obtained mathematical relations are given in the appendices section. Then by comparing the results of the model with the real data in order to calibrate the model, by changing the equations we get the best results meaning the least difference with the real data. What was obtained from this process is the state and flow model. In this model, which is an inference from the causal model, it will be possible to apply delays and policies in the form of mathematical functions. Based on the internal dynamics of the variables, the impact of each of them on each

other can be seen and analyzed in the form of examining the trends in the charts. The presence of positive feedback loops shows the behavior in the graphs. While negative feedback loops exhibit asymptotic behavior, which are considered control loops or the goal of atmosphere. These loops interact with each other and may change their capabilities after crisis conditions. (Teymuri, Nur Ali, Valizadeh, 2017, 213)

After formulating the initial state and flow model consisting of level variables, auxiliary variables and rate variables and adjusting their relationship in the form of mathematical equations that exist between them, the logical and causal relationship governing the elements of the model is completed. In some of the variables, based on separate data, the communication diagram is set as a look up, such that when and to what extent they play a small role. By applying decisions, which are the policies that are imposed on the model, and with the

Findings

Validation of the model

After formulating the initial model and applying various conditions to it, including changes in the number of manpower and creating motivation in personnel, laws and regulations, capacity, quality and innovation of products and services of businesses and providing the necessary training along with learning and the level of managerial potential the obtained results are in line with previous researches. These results indicate that businesses should avoid rapidly reducing their production and service capacity by increasing the level of technology in the field of production and service capacity and despite the readiness of managers in the face of the decrease in demand affected by the conditions of the Corona crisis. On the other hand, the capacity of production personnel is directly related to the dismissal of employees or their quitting their jobs for various reasons, including disease epidemics, retirements, or salary reductions affected by the crisis. From another point of view, by hiring new human resources, the business will face a decrease in the quality of the product or service provided, which is necessary to compensate for the quality of products and services by increasing training and learning in order to achieve the desired balance. The impact of suppliers' performance in crisis conditions will follow the ability to change the actual production capacity, new orders and desired orders. That, outsourcing affects product quality and total costs on the one hand, and on the other hand, it can reduce necessary investments in crisis situations. The field of sustainable financial resources, the demand trend is partly related to external factors, such as temporary crisis conditions, but on the other hand, it is related to internal factors of the organization, such as pricing, product quality, research and development, marketing, and delays in fulfilling orders. During the crisis, the decrease in demand leads to more separation of human resources in organizations, and this reduces costs and can be profitable for a period of time, but managers should not be caught in the trap of this profitability in the long term. It should be noted that in the calibration of the model structure, it should be done in such a way that the reaction of management decisions is observed and the initial values of the main parameters are provided. (Vojetko, 2019) The visible trends in the attached diagrams clearly show the validation of the model, both from the point of view of compliance with the results of previous research and its compliance with the conditions of the economic environment of the place where the research is conducted.

Analyzing the sensitivity of the model to different scenarios

Analyzing the sensitivity of the model to different scenarios is one of the main pillars of the research. In the first step of the basic scenario, the result of the behavior of the model is compared with the actual behavior of the

organization. In this scenario, there is no change in internal and external factors, so the behavior is stable, and therefore the balance between demand and capacity is evaluated. In this scenario, with the occurrence of the Corona crisis, all the level variables will face a drop, which can be seen in the diagram number (1). In the next step, the conditions of the model were investigated by applying delays. The result of applying delays to the model created fluctuating conditions. The results show that delay is very effective in attracting customers. The effect of delay in satisfaction had a great effect on human resources. Next, by checking the sensitivity of the model by reducing or increasing other variables, its effectiveness was tested, which confirms the conventional sensitivity. The emergence of the corona crisis will lead to a challenge in manpower and, as a result, in production capacity. In this situation, by applying the scenario of increasing the number of manpower, the production capacity will increase and it will have the ability to increase income. In this test, the initial number of manpower was increased from 10 to 20, it was observed that the dropout rate decreased in each peak, and the sales in each peak continued to decrease, and of course, the production capacity will increase. Although it shows a slight decrease in each peak, but overall, it is an increase and the ability of the organization is added, which also confirms the point of view of the managers that if the number of human resources is less than a certain limit, the organization faces the problem of disintegration. Therefore, the decrease in demand affected by the Corona peaks will cause a decrease in manpower. This process should not continue as a long-term management decision. Because despite the reduction of costs, it affects the potential of the organization and will cause problems. Examining the limit conditions of the model, it is clear that in each successive peak of Corona, the number of people leaving work decreases. This conclusion may be affected by the recognition of the human resources about the situation and overcoming the fear of the epidemic, and in a way, it shows the stability of the human resources with the conditions that have arisen. This scenario is represented in diagrams (2). In the next scenario, which confirms that with the first Corona pulse, the demand will decrease and of course the production capacity will also decrease due to the above reasons. Now, by increasing the commitment of the organization's management to change in the form of taking advantage of privileges related to research and development, using technology and applying corrective methods, we will witness the ability to increase the capacity to produce positive results. The presence of advertising in accompanying the organization with the problems and challenges of the crisis in the society and using the brand in the conditions of the society's focus on the crisis can ensure the survival of the organization's name in the mind after the crisis. This scenario can be seen in diagrams (3). In the third scenario, by applying changes in existing conditions outside the organization, including reducing the effects of restrictive laws and regulations and weakness in governing laws and their executive managers, and on the other hand, by increasing protective laws and regulations and compensating rights, and by applying better conditions to raise the poverty line. It was investigated in the community. Factors within the organization such as human resources, stable income face a limited increase, although the turnover is reduced and the income increases. In this regard, the survival and ability of the organization does not change, which is a confirmation of the importance of the manager's view and emphasis on the endogenous factors of the organization. Diagrams (4) show the application of these conditions. Specifically, the organization's ability to be affected by change can be accompanied by a mutation, so that if this

mutation in any period coincides with the peaks of Corona, for example, it will increasingly provide the ability and growth of the organization. All these things will be in line with increasing the knowledge level of the business organization. Diagrams (5) show the effect of increasing the organization's knowledge in other elements of the organization. In order to motivate the personnel, the direct cost is not included, but according to the conditions and vision of the management and financial facilities, it is possible to show satisfaction among the personnel. This self-satisfaction increases managerial decision-making skills and reinforces motivation and ultimately increases the ability of the organization. Diagrams (6) show the increase of motivation in the organization. Education by itself is not effective, when it leads to learning, it will be effective and management decision-making skills will be added from learning. The potential of managerial decision-making skills is effective on human resources and will affect financial issues through organizational credibility and directly affect the ability of the organization. This potential shows change in line with its dynamics, and change causes the growth of knowledge. Therefore, this variable of managerial decision-making skills is effective on all organizational resources. Therefore, we expect to see an increase in other elements of the organization with multiple levels of this variable. As we have seen in reality, this potential seems to be able to affect the sales price, learning, costs, salary increase, production facilities, organizational resistance in the corona conditions of the organization. Diagrams (7) provide a realistic representation of the effect of learning on the elements of the organization.

In the last scenario, by applying management decision-making skills, we can see its effective reduction. Then its effect on the price of the product was tested. As a result, the human power also increased and the ability of the organization also grew, and it clearly showed the ability to increase knowledge. Of course, the costs also increase, although we expect a decrease in costs, but we see their increase, and this is proof that when the organization has growth in its main resources, the costs will also have a growth rate. Cost reduction in a situation where growth is stopped should be considered a defensive strategy, but in a situation where an offensive strategy is on the agenda, cost growth is a natural thing. Graphs (8) show the effect of increasing opportunism in applying the adopted strategies. By increasing the effectiveness of managerial decision-making skills, we see an increase in satisfaction. Increasing self-satisfaction increases the potential of human resources and increases costs and causes a slight decrease in income. This variable increase in managerial decision-making skills led to an increase in production equipment. This in itself caused the growth of human resources and reduced work abandonment. The results of the model analysis showed no effect on the demand, which is normal. It did not have much effect on the costs, the income decreased to some extent, but the organizational ability and knowledge increased. Also, it had no effect on the conditions of Corona. In examining the effect of competitors and the country's conditions and restrictive and supportive laws, they found that managerial decision-making skills did not have much effect. This result expresses the fact that when the organization is faced with an onslaught of crises from outside the organization, the manager cannot make a decisive impact on the huge consequences of that crisis on the structure of the organization. In such a way that it affected all the extraction effects from the previous tests.

In comparing and matching the results of the background research with the results of this research, despite the differences in the nature of the Corona crisis in terms of serious challenges related to human resources with

other crises, the following can be mentioned: Vojetko (2019) provides a similar conclusion that when the crisis occurs, the initial growth of demand is low and, as a result, the business faces a financial shock.

As a result of the crisis, the business is faced with a decrease in the standard performance of the workforce, and as a result, it causes a decrease in the quality of the product.

Also, the decrease in demand causes a decrease in the labor force and a decrease in the production capacity, which in a way decreases the cost and increases the profitability of the business. He further points out that to compensate for such external shocks caused by the crisis, she recommends better management of human resources, quality control of the product and the creation of reserves in advance.
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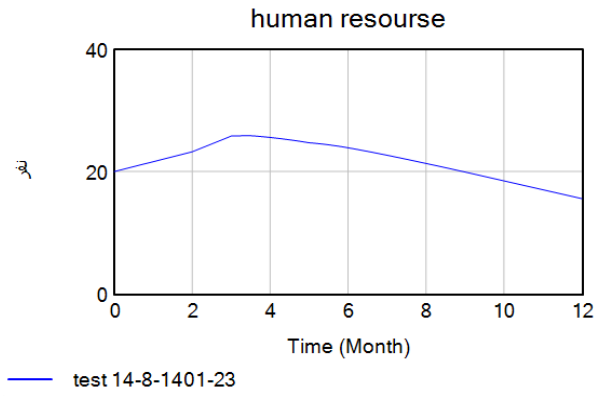
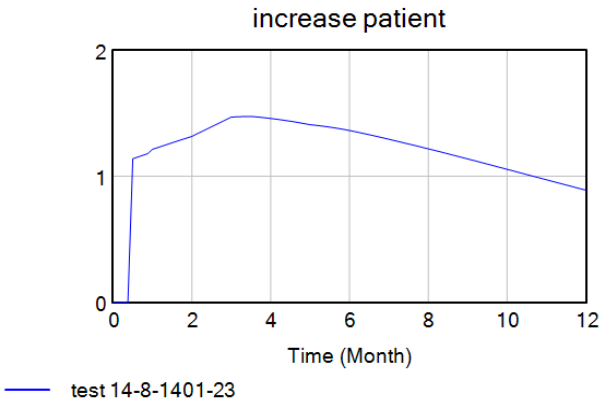
Conclusion

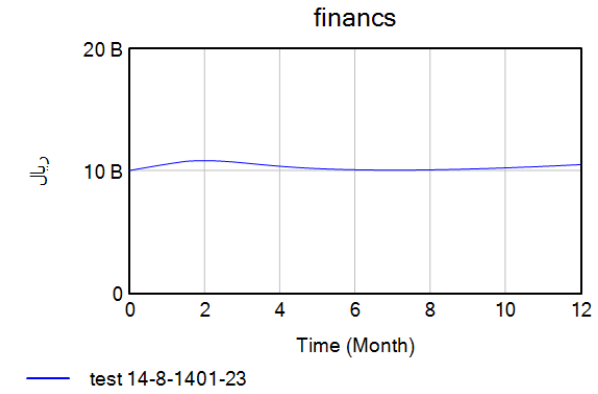
The result of the final optimization of the system dynamics compiled by performing various tests had the ability to answer the quantitative theory of the research. What was obtained from the findings confirmed the effectiveness of the model from changes in various parameters, both in the exogenous and endogenous fields. The answers of this model, as always claimed by dynamics, show the trends well. Based on the systemic view, the effects of any change that occurs in the management field can be seen in other sources of the organization. Exogenous governance changes can have noticeable effects in the processes of small and medium businesses. The final conclusion of the research in order to survive in business in the conditions of the Corona crisis will show the use of the right number of human resources and the application of an aggressive strategy in order to increase the capacity of production and services. Accompanying the business managers in the challenges caused by the crisis, motivating the personnel, provides their belonging to the organization. The benefit of businesses from applying changes in processes and strategies, technology with the help of research and development foundations provides the ability to innovate and create value for customers. Preparedness and resistance to inconsistencies, risk-taking, opportunism and organizational agility are indicators of safe transition from crisis. Here, it is necessary to remember that although the effort in this research was to avoid the researcher's biased views.

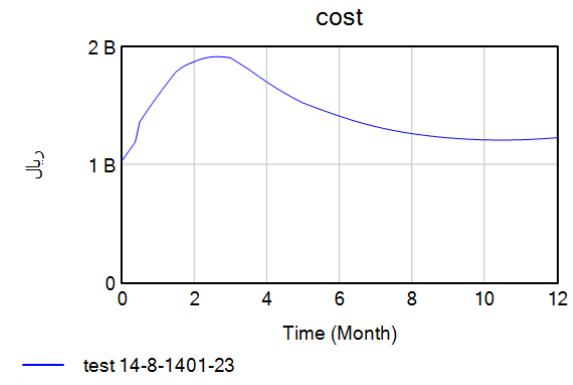
Here, it is necessary to remember that although the effort in this research was to avoid the researcher's biased views, the extraction model is always under the threat of this weakness. On the other hand, this model is the result of the researcher's mental conclusion and the dynamics governing it, which is expected to be different with the continuation of research activities in this direction in order to strengthen the model and make it responsive in different crises.

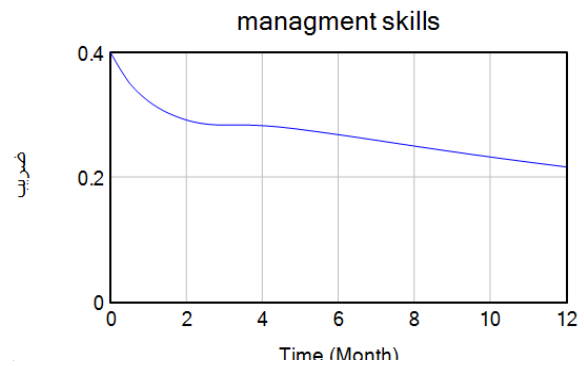
1- **Diagrams of the main indicators of system dynamics of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis without changing its structural characteristics.**

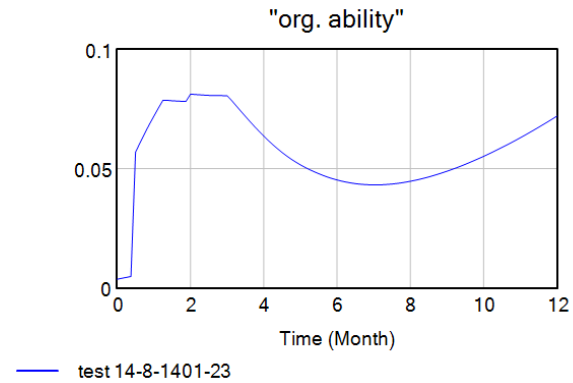


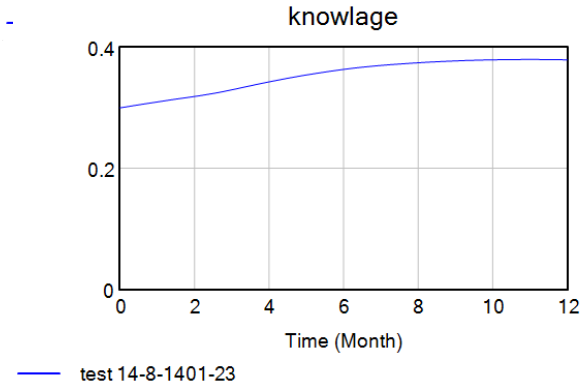


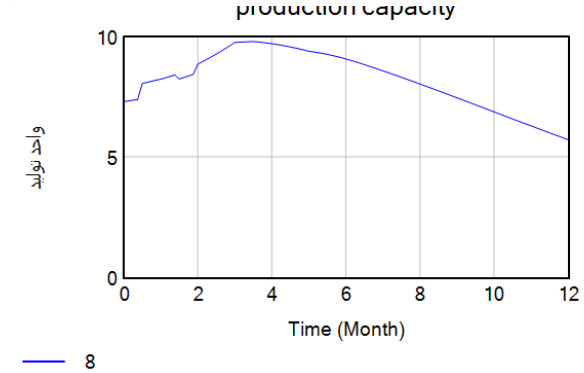




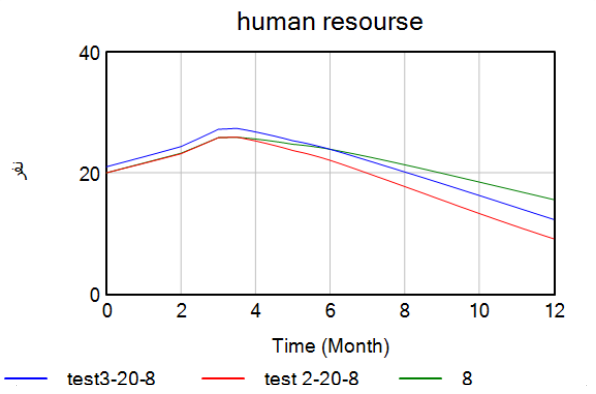


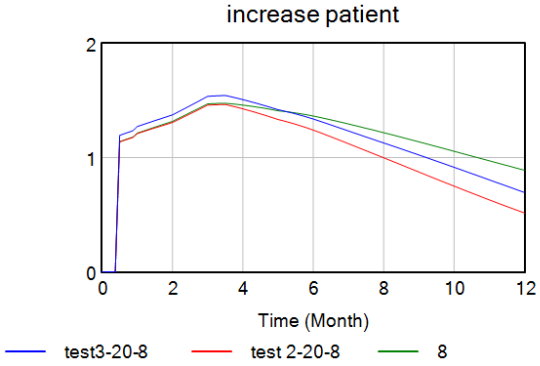


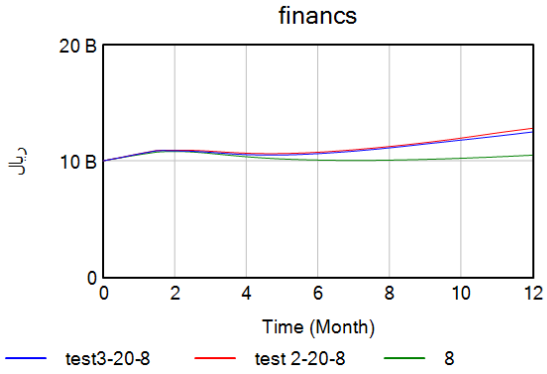


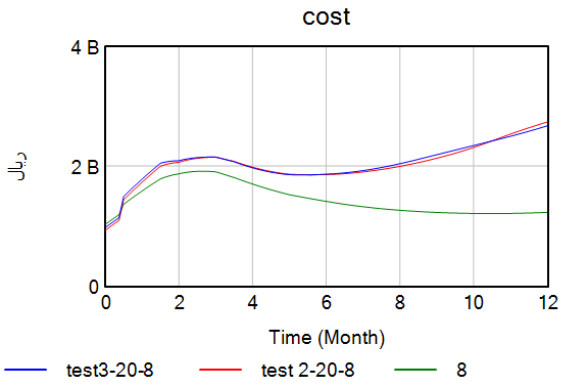


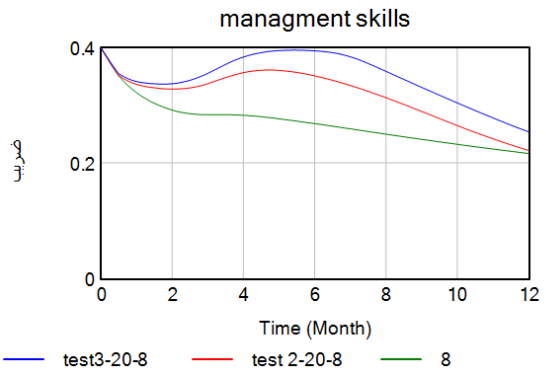
2- Diagrams of the main indicators of the system dynamics model of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis by applying changes in the initial number of human resources

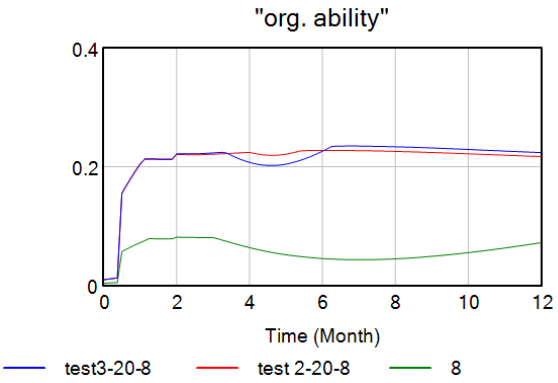


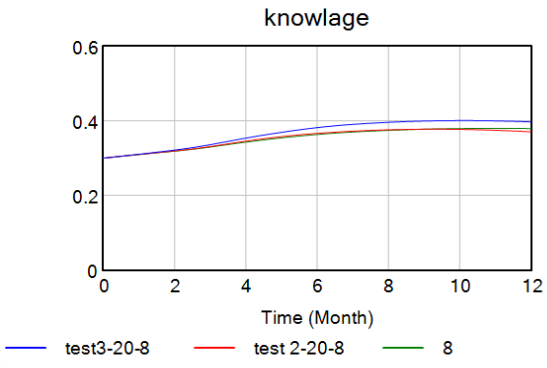


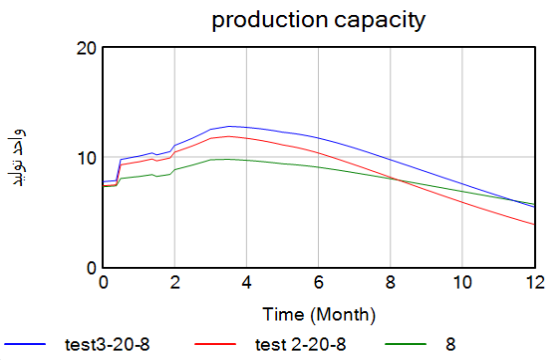




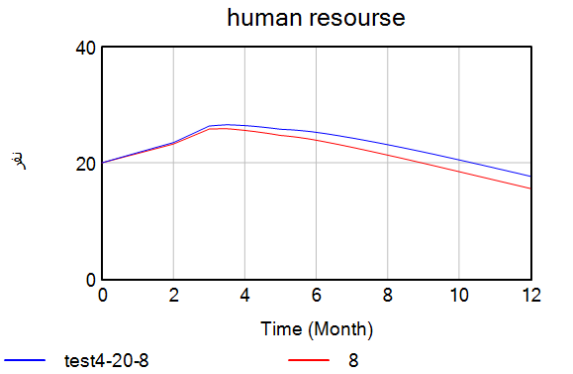


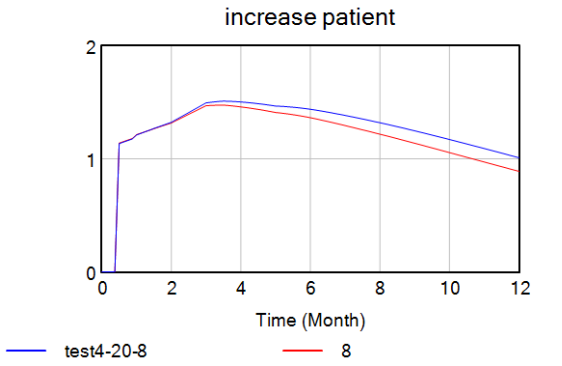


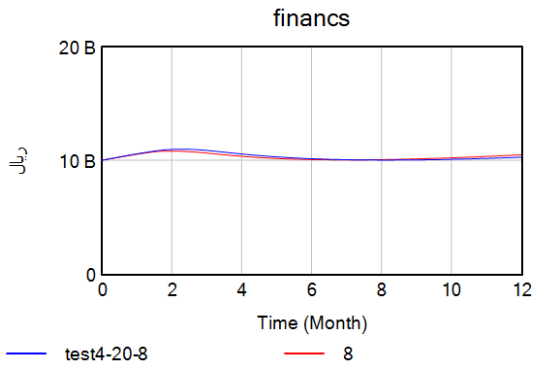


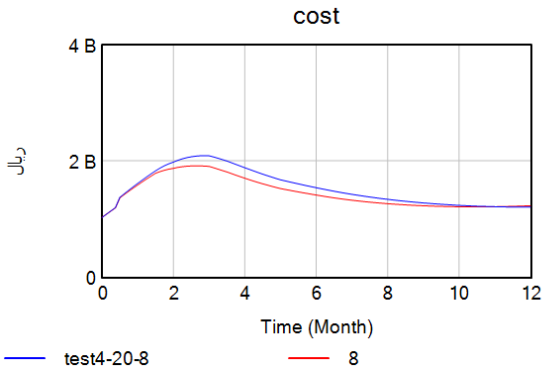


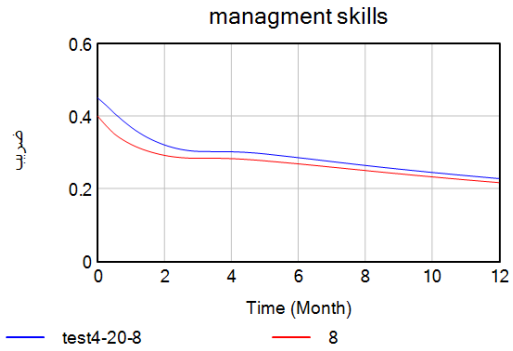
3- Diagrams of the main indicators of system dynamics model of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis by applying changes in the effectiveness of research and development

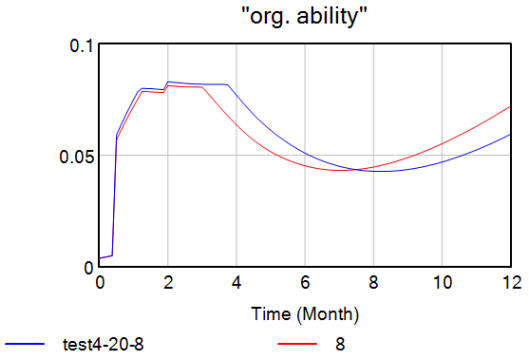


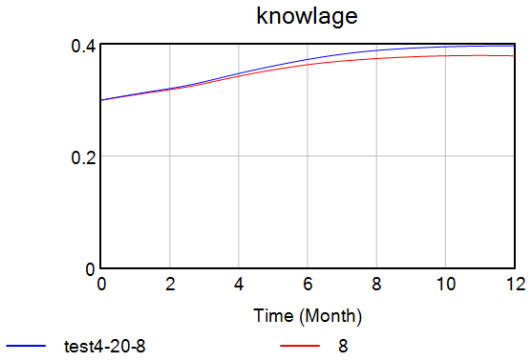


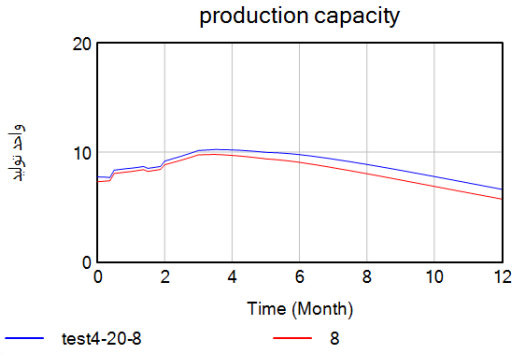




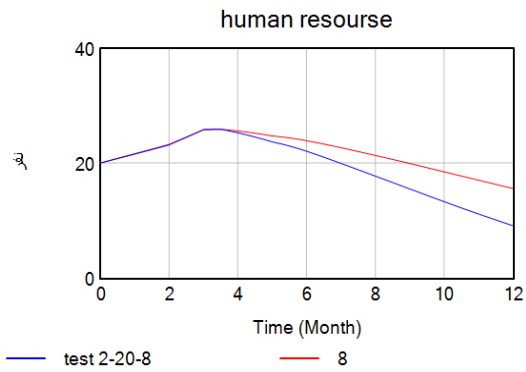


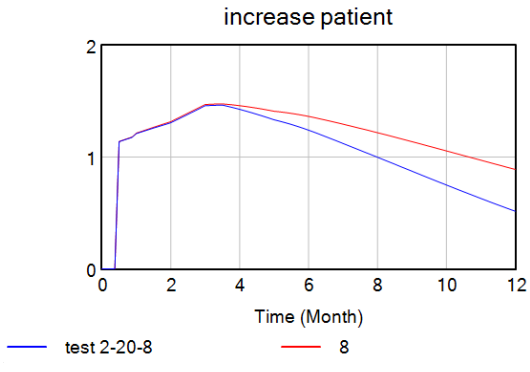


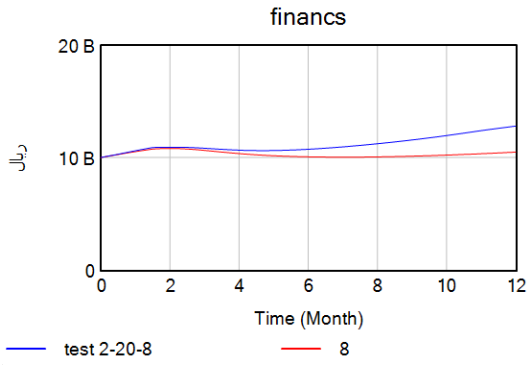


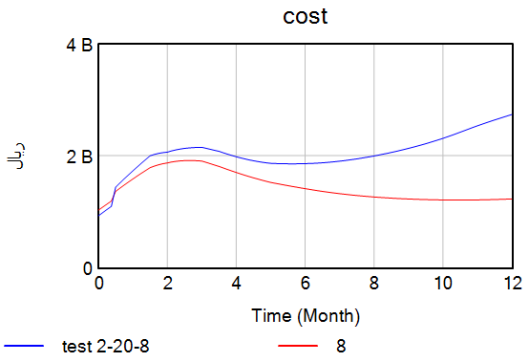


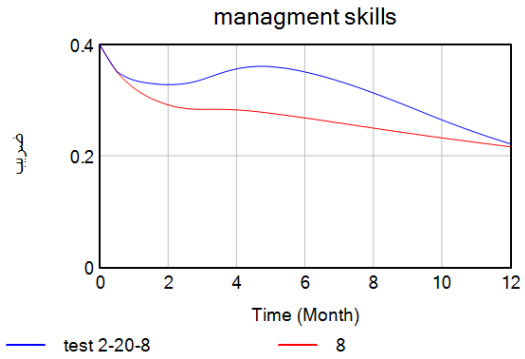
4- Diagrams of the main indicators of the system dynamics of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis with changes in protective and restrictive laws

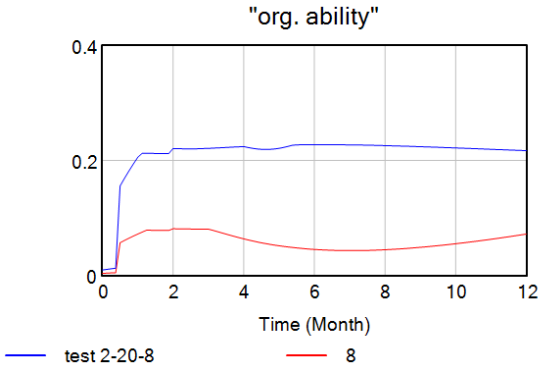


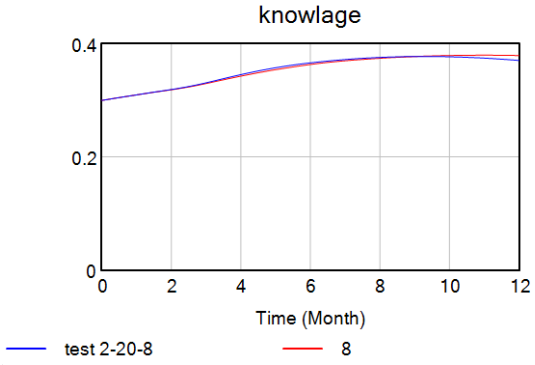


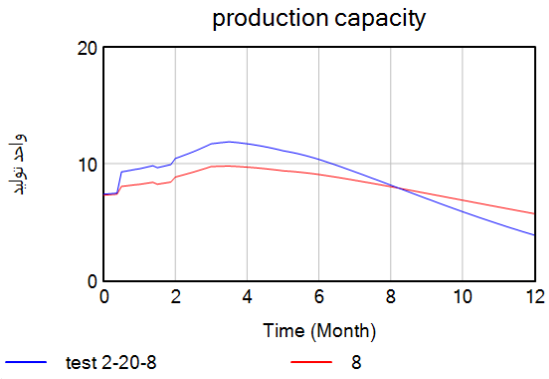




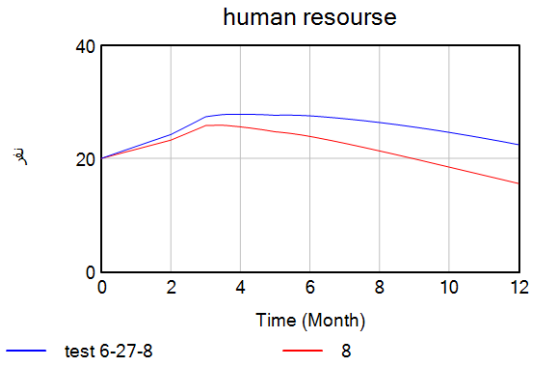


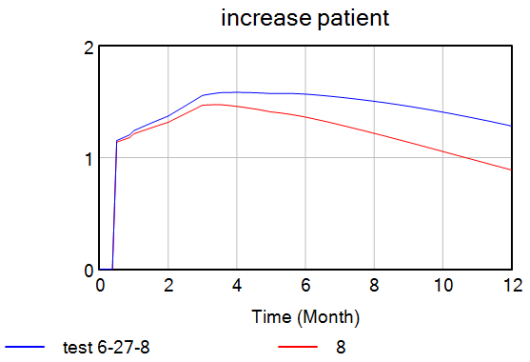


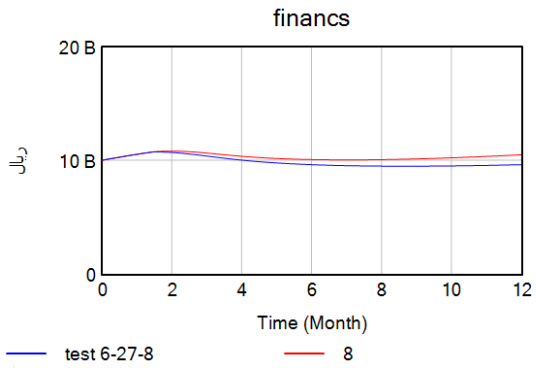


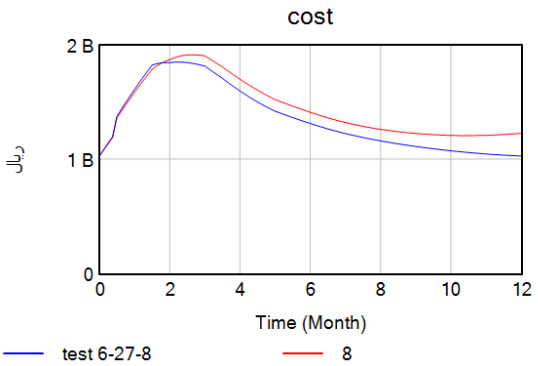


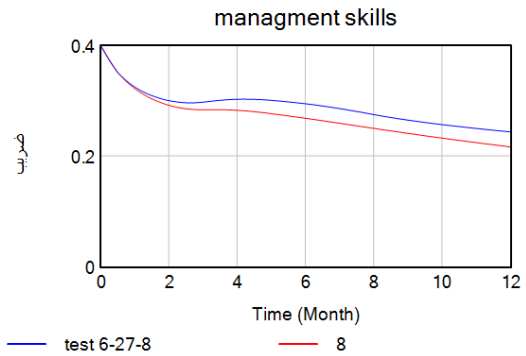
5- Diagrams of the main indicators of the system dynamics of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis by increasing the initial amount of knowledge of the organization

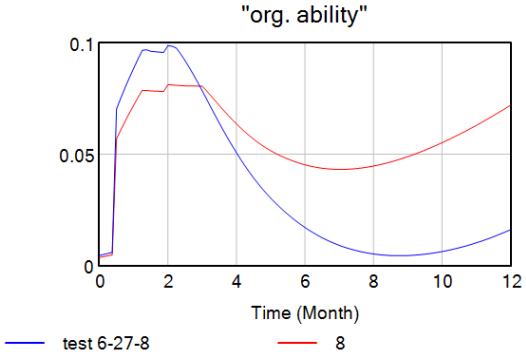


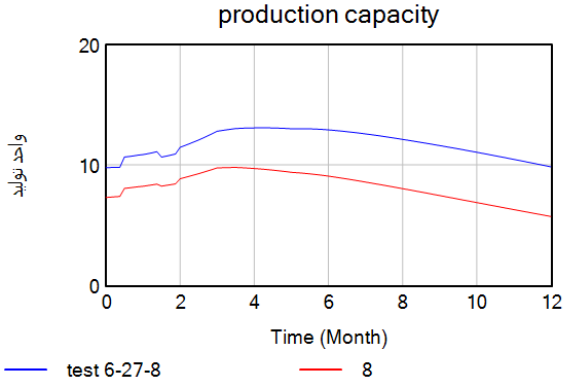


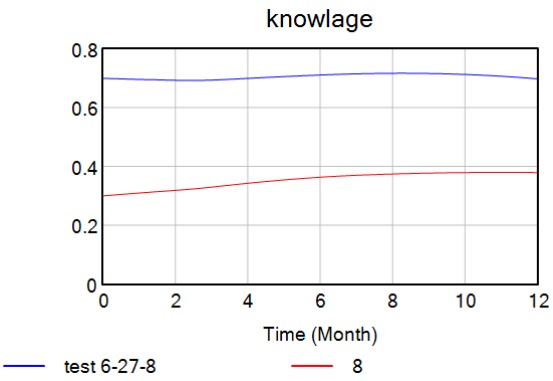




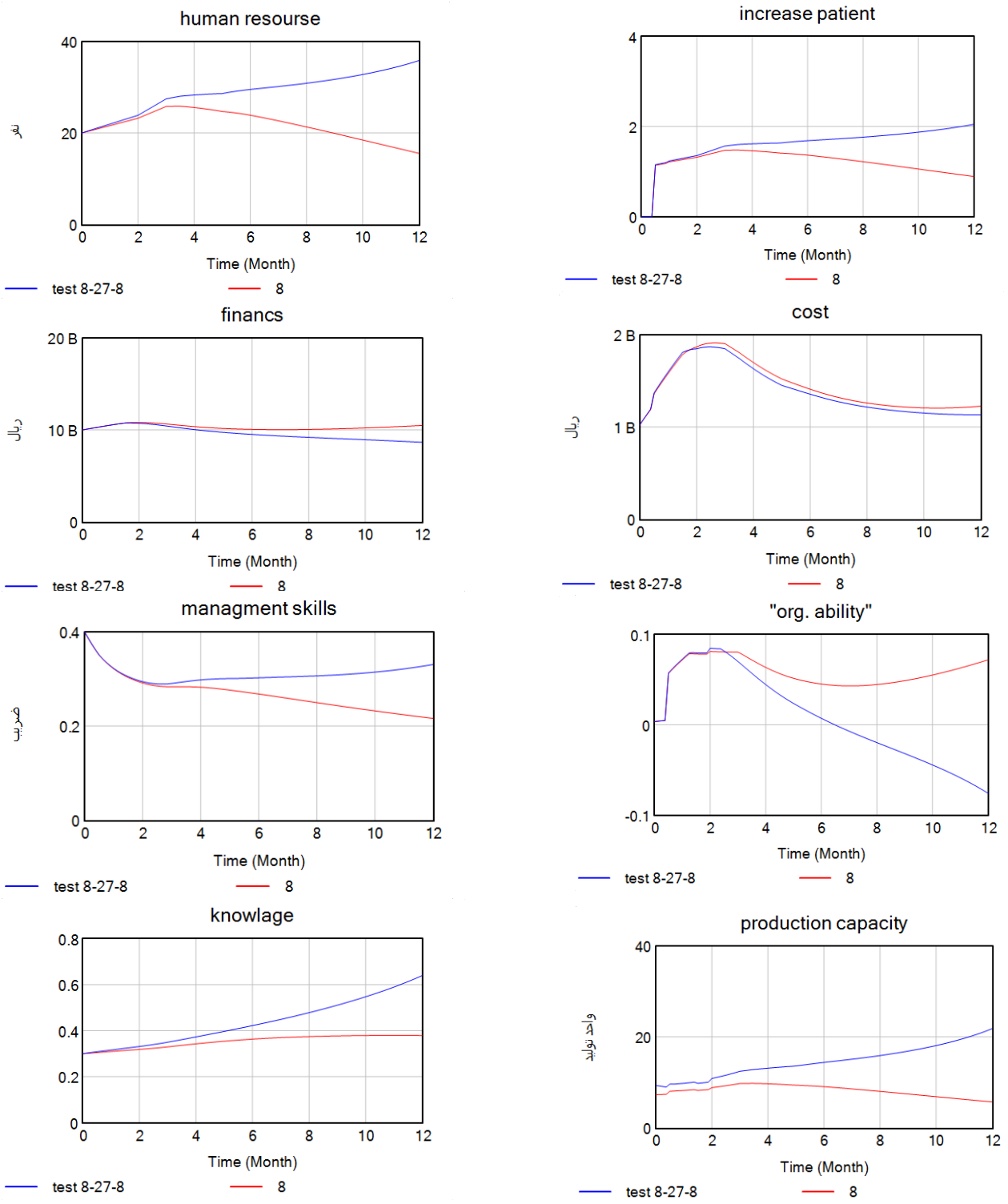




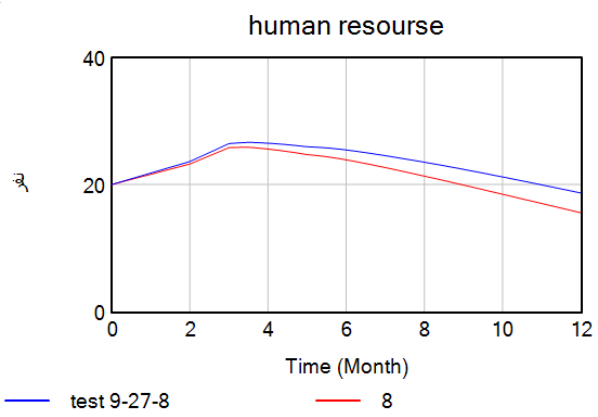


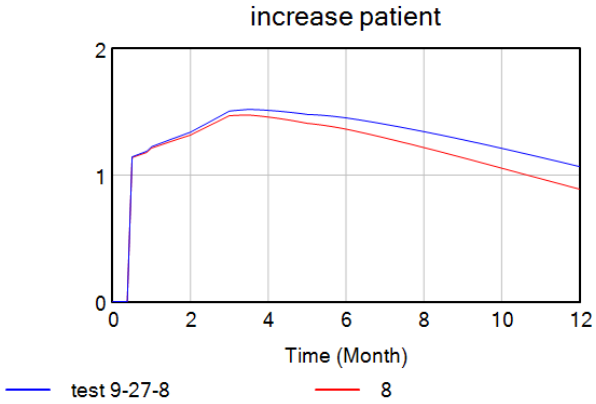


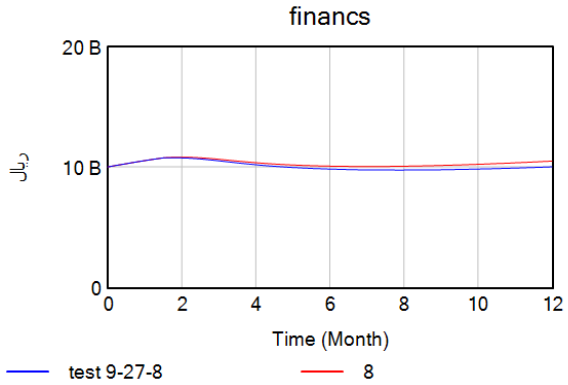
6- Diagrams of the main indicators of system dynamics of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis by increasing the motivation in the organization

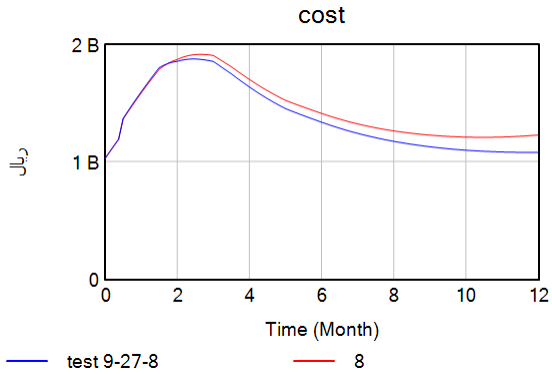


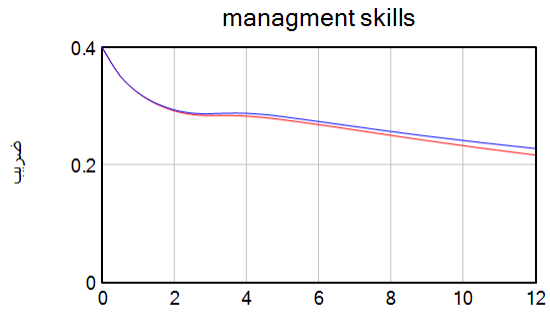
7- Diagrams of the main indicators of the system dynamics of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis by increasing the amount of organizational learning.

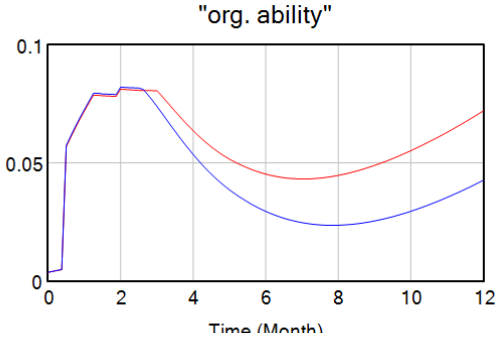


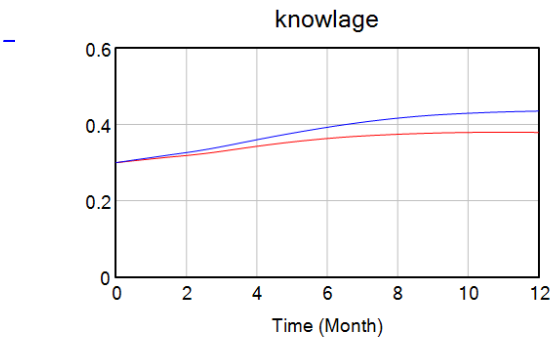


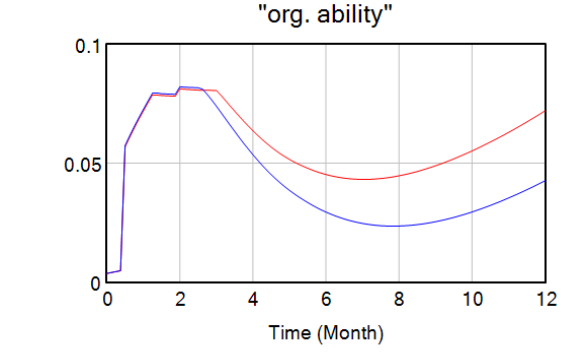




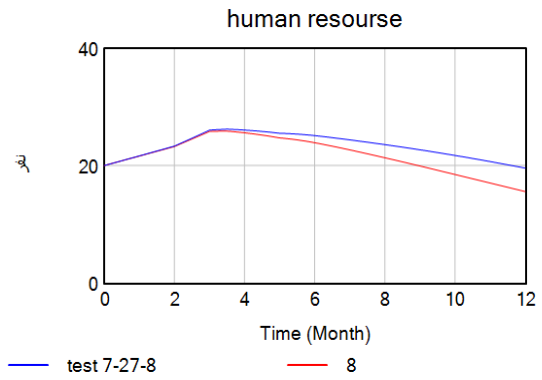


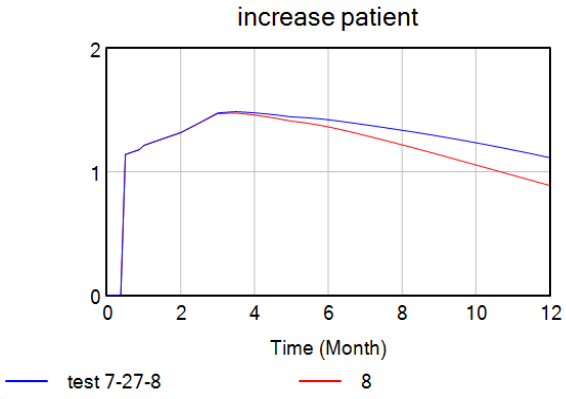


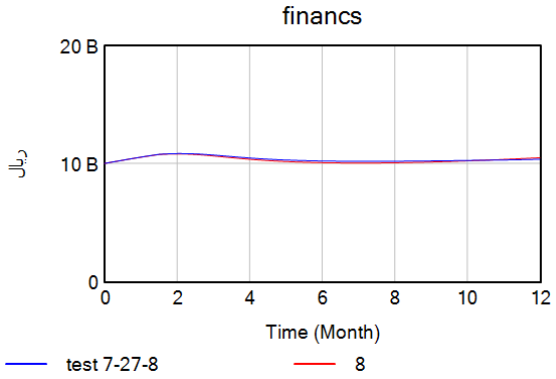


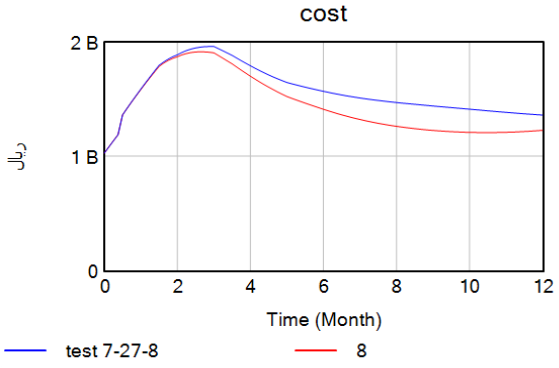


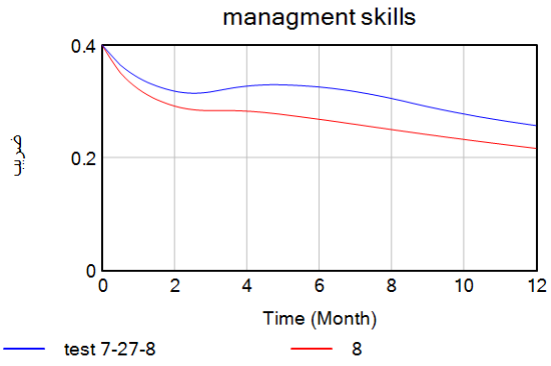
8- Diagrams of the main indicators of the system dynamics of the decision-making system in a small and medium-sized business in the conditions of the Corona crisis by applying changes in the amount of opportunism of the organization

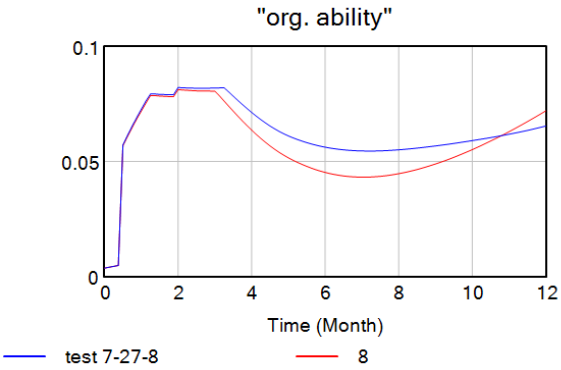


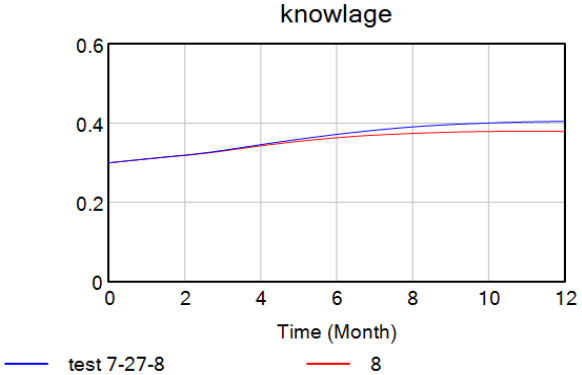


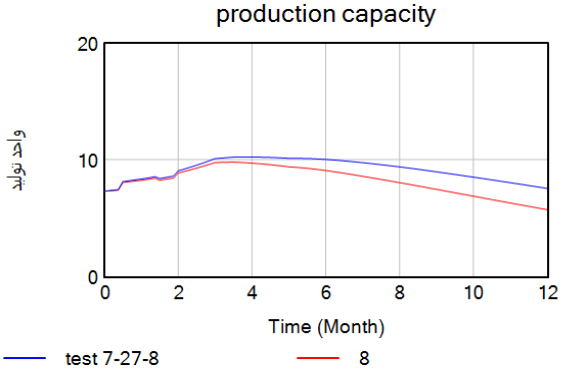












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