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M. Alawamreh

Department of Accounting, Putra Business School, University Putra, Selangor, Malaysia,
sebastare2014@gmail.com

T. Abutaber

Department of Accounting, Faculty of Economics, Jadara University, Irbid, Jordan,
sebastare2014@gmail.com

V. Vin?alek

Department of Business, University of Applied Sciences Nikola Tesla, Gospic, Croatia,
sebastare2014@gmail.com

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COVID-19 and Cost Reduction in Jordanian Civil Defense: Ajloun Case Study on Strategic Decisions

M. Alawamreh^{1,*}, T. Abutaber², and V. Vinšalek³

¹Department of Accounting, Putra Business School, University Putra, Selangor, Malaysia

²Department of Accounting, Faculty of Economics, Jadara University, Irbid, Jordan

³Department of Business, University of Applied Sciences Nikola Tesla, Gospic, Croatia

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Abstract: This study aims to identify the effect of strategic decisions on reducing the Jordanian civil defense infrastructure's costs considering the Corona pandemic. To achieve the goals of the study, a 38-item questionnaire on the infrastructure of the civil defense distributed 50 questionnaires were distributed on a random sample of the population of the study represented all workers at Ajloun civil directorates only 40 questionnaires were returned valid for analysis. regression analysis was used to test the hypotheses of the study. The results showed an effect for strategic decisions in reducing the Jordanian civil defense infrastructure's costs in light of the Corona pandemic in terms of (equipment and vehicles' costs) in the civil defense in Jordan It was also revealed that strategic decisions have a vital role in reducing human resources costs. The study highlighted the necessity of implementing strategic decisions because of their significant role in reducing the costs of civil defense infrastructure and finding solutions through variables of reducing costs, mechanisms and reducing equipment costs respectively.

Keywords: Strategic Decisions, Civil Defense Infrastructure, Corona Pandemic, Reduce costs.

1 Introduction

Strategic decisions in light of crises have always been the cornerstone of leaders and decision makers in governments, as they are considered the main driver of crisis management, and the secret of success depends largely on decision makers and the amount of expertise and experience [1] as governments seek to provide the necessary infrastructure through a stimulating environment as a factor to attract Investing and raising the level of community security and sustainable development, [2] Therefore, the role of civil defense emerged in the Corona pandemic, which is an essential pillar in protecting the state's infrastructure, which resulted in an increase in the costs of civil defense infrastructure, which consists of human resources, machinery and equipment [3, 4, 5] Which prompted the adoption of strategic decisions to solve the high costs of civil defense infrastructure, which are based on scientific foundations based on creativity in decision-making [6, 7, 8].

Strategic decisions can be defined as a comprehensive plan based on defining the organization's operations and allocating capabilities to achieve long-term goals and clarifying the mission that the organization seeks to achieve through a long-term plan to achieve those goals [3]. Its importance lies in the fact that it decides the future of the organization and has a significant impact. It is taken by the top management with a deep vision to avoid risks and achieve goals [9, 10].

The important role that played by the civil defense in Corona epidemic era, and the readiness of the civil defense through the provision of equipment and tools [2,11]. The need to activate the partnership between the government and the private sector in the field of infrastructure to reduce costs in the general budget and work to attract investment and revive the economy [12,13]. Some studies have addressed the importance of decision support in managing the ecosystem to support firefighting and clarify the role of strategic decisions in participatory planning in firefighting [14, 15]. The importance of the historical role of strategic decisions in supporting the service and economic sectors can reduce the spread of the virus [16]. While other studies referred to the roles and responsibilities of strategic decision-makers in light of the Corona pandemic, as the study found the ability of the health sector to combat the epidemic through human and material resources and the continuous flow of information [1].

Some studies also added the importance of innovative solutions for early detection of fires and natural disasters [17, 18]. One of the most innovative solutions was the use of drones and thermal sensors to detect fires.

*Corresponding author e-mail: sebastare2014@gmail.com

2 Methodologies

The current research adopted the descriptive analytical approach due to its relevance to the research and its objectives, as it studies the phenomenon as it is in reality and describes it accurately and determines the reasons for the high costs of the civil defense infrastructure in Ajloun Governorate (analytical sample) and the response of the civil defense cadres in receiving communications and the challenges they face during the Corona pandemic (the field of the sample)

2.1. Sample Analytical Study

Before choosing (Ajloun Civil Defense Directorate and its affiliated centers) as a sample for the analytical study, a survey was prepared.

As for the civil defense directorates throughout the Kingdom, it was found that some directorates are in remote desert areas or in the Jordan Valley that lack population, which were excluded from the study because they are only concerned with specific services.

Rescue the mountain, Rescue water.

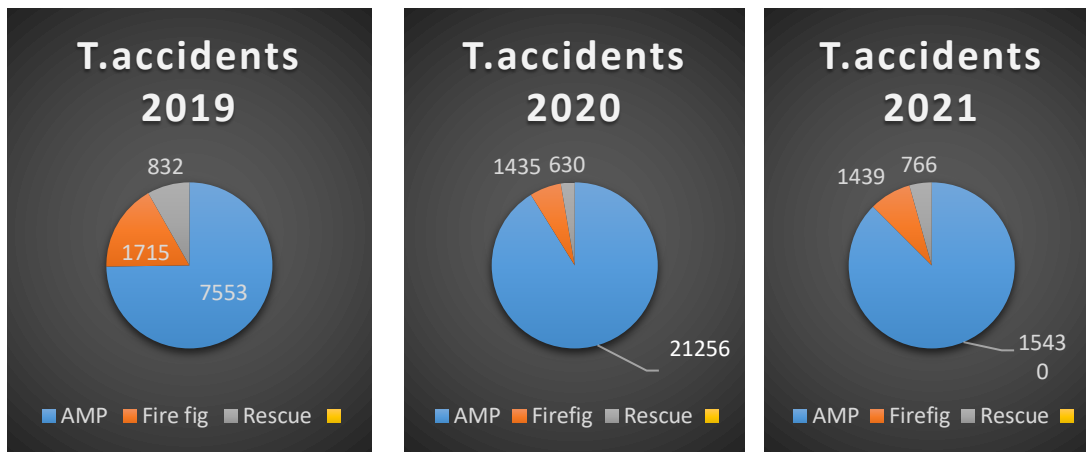


Fig. 1: Statistics of the accidents of the Ajloun Civil Defense Directorate during the Corona pandemic.

The statistics show the gradual increase in the number of cases that were responded to during the Corona pandemic, as we note the significant increase in the response to ambulances with double the firefighting, in contrast to road accidents, which decreased due to the quarantine imposed by Jordan to prevent movement.

2.2. Sample of the study

The sample of the study consisted of (50) civil defense employees in Ajloun governorate distributed among the director, head of the center, and other employees. The fields of specialization varied between firefighting, ambulance, rescue and engineering. The sample was interviewed, and a direct questionnaire was distributed to collect data.

3 Results

The purpose of the study is to measure the impact of strategic decisions in reducing the costs of the Jordanian civil defense infrastructure in light of the Corona pandemic.

Explain the impact of strategic decisions on crisis management by reducing the costs of the Jordanian civil defense infrastructure, which consists of (vehicles costs, equipment costs, human resource costs).

Reliability Test

To check for the tool's validity and reliability, some tests such as reliability were run, to check the reliability of the tool, the Cronbach's alpha was used for the dimensions' items and the tool as whole as indicated in table (1) below.

Table 1: Cronbach Alpha for the study dimensions and domains

Domain	Dimension	Consistency Cronbach's Alpha
Strategic Decisions		
Reducing infrastructure's costs	Reducing vehicles' costs	0.834
	Reducing equipment' costs	0.943
	Reducing human resources' costs	0.720

Reducing infrastructure costs' domain	0.949
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Table (1) indicates that all reliability values (Cronbach Alpha) were acceptable for the purposes of applying this study as they ranged between 0.720 and 0.966, and previous studies have indicated that these values are accepted for the application as many studies indicated the value (0.60) as acceptable value [18].

4 Discussion and Results

Means and standard deviations of the extent to which the respondents agree on the items that reflect the independent variable, which are included in the second part of the study questionnaire, were extracted. The results are presented in tables (2-4) below.

Table 2: Means and SDs for the strategic decisions items and the items as whole in descending order according to the mean.

Rank	No	Item	Mean	SD	Level
1	5	The importance of strategic decisions lies in their reliance on innovation, development, speed of implementation, and implementation of the decision	3.96	1.15	High
2	12	Strategic decisions enter action in the external environment through competitive advantage and adaptation to new requirements	3.95	1.11	High
3	11	The strategic decision is implemented efficiently and effectively under the supervision of senior management to reach the desired goal	3.90	1.22	High
4	2	The resources and capabilities available to the organization are taken into consideration when making strategic decisions	3.83	1.26	High
5	4	Strategic decisions have a high impact if they are taken in a situation of uncertainty and high risk	3.73	1.26	High
6	6	The media helps spread strategic decisions and their implementation by the citizen in light of the Corona pandemic	3.65	1.37	Medium
7	10	Strategic decisions seek to achieve long-term goals with high quality and lowest costs	3.64	1.23	Medium
8	9	Strategic decisions positively affect the increase in the organization's financial revenues and economic capacity and reduce costs	3.50	1.34	Medium
9	3	The decision-making process in the organization is carried out through its three stages, strategic, tactical, and operational decisions.	3.45	1.38	Medium
10	7	One of the most important components of strategic decisions is integration so that it allows the organization to carry out its work jointly with other organizations and reduce costs	3.18	1.26	Medium
11	1	Strategic decisions are made by consulting experienced and advisors.	3.13	1.32	Medium
12	8	One of the pillars of strategic decisions is the ability to make detailed decisions in the event of unexpected risks	3.00	1.41	Medium
Strategic decisions' dimension as whole				3.58	Medium

It is clear from Table No. (2) that the mean for the items of the dimension (strategic decisions) ranged between (3.00-3.96). Paragraph No. (5) ranked first with a mean (3.96) and a high evaluation score, while Paragraph No. (8) ranked last with a mean of (3.00), and the mean for the field was (3.58), with an average evaluation score.

Means of participants' agreement on the items reflecting the level of reduction in infrastructure costs for the Jordanian Civil Defense in light of the Corona pandemic,

Table 3: means of the respondents' perception.

Rank	No	Dimension	Mean	SD	Level
1	2	Reducing equipment's' costs	3.96	0.53	High
2	1	Reducing vehicles' costs	3.76	1.00	High

3	3	Reducing human resources' costs	2.60	1.21	Medium
Reducing infrastructure costs' domain as whole in light of the Corona epidemic			3.44	0.97	Medium

Table (3) indicates an increase in the average of each of the costs of vehicles and equipment, while the costs of human resources came on average from the point of view of the participants.

1st dimension: Reducing Vehicles' costs.

Table 4: Means of participants' perception on Reducing Vehicles' costs

Rank	No	Item	Mean	SD	Level
1	6	The lack of previous experience on the part of the citizen in dealing with epidemics has led to a significant increase in ambulance cases	4.00	1.09	High
2	5	The lack of awareness and indifference on the part of the citizen contributed to the increase in cases, which led to an increase in the demand for ambulances	3.95	1.30	High
3	10	The vehicles of government departments in the operations of transporting casualties help reduce pressure on civil defense vehicles	3.83	1.34	High
4	2	Thermal sensors help identify fires and send early notice to civil defense units	3.78	1.19	High
5	4	The expected risks and obstacles are identified during the handling of accidents and proactive plans are developed to combat or reduce them.	3.78	1.21	High
6	1	The use of drones helps in the process of early identification of fires and the ability to control them	3.71	1.18	High
7	8	Establishing health centers during quarantine helps treat accidental cases and reduces the use of ambulances	3.70	1.24	High
8	7	The impact of the comprehensive quarantine on increasing the demand for civil defense ambulances has tremendously reduced the lifespan of the vehicles and increased costs	3.68	1.25	High
9	3	Mobile technical workshops help reduce the costs of moving machinery over long distances for repair	3.65	1.27	Medium
10	9	The process of immediate treatment through the home service of a specialist doctor in the ambulance helps reduce the cost of distance traveled	3.55	1.26	Medium
Dimension of vehicles costs' reduction as whole			3.76	1.00	High

It can be seen from Table No. (4) that the mean for the items of the dimension (reducing vehicle costs) ranged between (3.55-4.00). Paragraph No. (6) ranked first with a mean (4.00) and a high evaluation score, while Paragraph No. (9) ranked last, with a mean (3.55) and an average evaluation score. The mean for the dimension as a whole was (3.76), with a high evaluation score.

2nd Dimension: reducing equipment' costs.

Table 5: Means of participants' Perception on reducing equipment' costs.

Rank	No	Item	Mean	SD	Level
1	5	Increasing the penalties by judiciary the decrease in the proportion of arson attacks	4.95	0.53	High
2	4	Strict patrols by the competent authorities help reduce the rate of arson attacks	4.90	1.38	High
3	10	Ambulances in the Ministry of Health that are out of service during urban times help in transporting injuries by reducing the burden on civil defense vehicles	4.20	1.42	High
4	6	Tougher penalties for fake reports help reduce costs	4.05	1.32	High
5	7	The presence of surveillance cameras in areas most prone to fires helps reduce the rate of arson attacks	4.04	1.33	High

6	8	The presence of towers to discharge electrical charges in high areas helps reduce fires generated by thunder	3.73	1.18	High
7	9	The process of reorganization and road construction will help speed up access and reduce casualties, machinery, and equipment	3.68	1.13	High
8	3	Clearing weed lands by their owners helps reduce fires and lower equipment costs	3.53	1.04	Medium
9	1	Providing water tanks in forested areas helps reduce water transportation costs and speed response	3.30	0.22	Medium
10	2	The presence of rock barriers between the owned lands helps prevent fires and limit their spread	3.18	0.30	Medium
Dimension of reducing equipment' cost as whole			3.96	0.97	High

It can be seen from Table No. (5) that the mean for the items of the dimension (reducing equipment costs) ranged between (3.18-4.95). Paragraph No. (5) ranked first with a mean of (4.95) and a high evaluation score, while it ranked last. Paragraph No. (2) with a mean (3.18) and an average evaluation score, and the mean for the dimension as a whole was (3.96), with a high evaluation score.

3rd dimension: reducing human resources costs.

Table 6: Means of participants' perception on reducing human resources costs.

Rank	No	Item	Mean	SD	Level
1	5	The process of closing some programs that require a large number of human resources helps reduce costs	3.68	1.32	High
2	4	Job description distribution helps reduce human resource costs	2.43	1.33	Medium
3	3	HR restructuring helps reduce costs in the organization	2.32	1.30	Low
4	1	Continuous HR training helps reduce costs	2.28	1.19	Low
5	2	The process of assigning specialized people to work helps reduce costs	2.26	1.30	Low
Dimension of reducing human resources' costs			2.60	1.21	Medium

It can be seen from Table No. (6) that mean for the items of the dimension (reducing human resource costs) ranged between (2.26-3.68). Paragraph No. (5) ranked first with a mean (2.68) and a high evaluation score, while it ranked first. The last paragraph No. (2) has a mean (2.26) and a low evaluation score. The mean for the dimension was (2.60), with a medium evaluation score.

Hypotheses Test Results

Results related to the 1st main hypothesis: There is no significant statistical effect at $\alpha \leq 0.05$ for strategic decisions in reducing Jordanian civil defense infrastructure's costs.

To check the validity of this hypothesis, the Simple Regression equation was applied to study the impact of strategic decisions in reducing the costs of the Jordanian civil defense infrastructure , Table (7) illustrates This.

Table 7: Results of the Simple Regression equation

Dimension	Non-standard coefficients		Unified coefficient			R	R ²	Adjusted R Square	F	Sig
	B	Std. Error	Beta	T	Sig					
Constant	0.622	0.313		1.989	0.054	0.865	0.748	0.741	112.533	0.000
Strategic Decisions	0.909	0.086	0.865	10.608	0.000					

Table (7) indicates a statistically significant effect at the level $\alpha \leq 0.05$ for strategic decisions on reducing the costs of civil defense infrastructure in Jordan, so the first hypothesis is accepted with its alternative formula stating that " There is a significant statistical effect at $\alpha \leq 0.05$ for strategic decisions on reducing the costs of civil defense infrastructure in Jordan".

Results related to the 1st sub-hypothesis stating that: There is no significant statistical effect at $\alpha \leq 0.05$ for strategic decisions in reducing Jordanian civil defense human resources' costs.

To check the validity of this sub-hypothesis, the Simple Regression equation was applied to study the impact of strategic

decisions in reducing the costs of human resources in the Jordanian civil defense, Table (8) illustrates this.

Table 8: Results of the Simple Regression

Dimension	Non-standard coefficients		Unified coefficient			R	R ²	Adjusted R Square	F	Sig
	B	Std. Error	Beta	T	Sig					
Constant	-0.528	0.582		-0.907	0.370	0.785	0.617	0.607	61.177	0.000
Strategic Decisions	1.245	0.159	0.785	7.822	0.000					

Table (8) indicates that there is a statistically significant effect at the significance level ($\alpha \leq 0.05$) for strategic decisions in reducing the costs of human resources for the Jordanian Civil Defense. Therefore, the first sub-hypothesis is accepted in the alternative formula, which states “there is a statistically significant role at the level of ($\alpha \leq 0.05$) for strategic decisions in reducing the costs of human resources for the Jordanian Civil Defense.

Results related to the 2nd sub-hypothesis test: There is no statistically significant effect at the level ($\alpha \leq 0.05$) for strategic decisions in reducing the costs of Jordanian civil defense vehicles.

To check the validity of this sub-hypothesis, the Simple Regression equation was applied to study the impact of strategic decisions in reducing the cost of vehicles of the Jordanian civil defense, Table (9) illustrates this.

Table 9: Results of the Simple Regression

Dimension	Non-standard coefficients		Unified coefficient			R	R ²	Adjusted R Square	F	Sig
	B	Std. Error	Beta	T	Sig					
Constant	-0.169	0.431		-0.391	0.698	0.834	0.695	0.687	86.654	0.000
Strategic Decisions	1.099	0.118	0.834	9.309	0.000					

Table (9) indicates that there is a statistically significant effect at the level ($\alpha \leq 0.05$) for the strategic decisions in reducing the costs of vehicles of the Jordanian Civil Defense, thus accepting the second sub-hypothesis in the alternative formula, which states that “there is a statistically significant effect at the significance level ($\alpha \leq 0.05$) for strategic decisions in reducing the costs of the Jordanian civil defense vehicles.

Results related to the 3rd sub-hypothesis test: There is no statistically significant effect at the level ($\alpha \leq 0.05$) for strategic decisions in reducing the costs of Jordanian civil defense equipment.

To check the validity of this sub-hypothesis, the Simple Regression equation was applied to study the impact of strategic decisions in reducing the cost of the Jordanian civil defense equipment, Table (10) illustrates this.

Table 10: Results of the Simple Regression

Dimension	Non-standard coefficients		Unified coefficient			R	R ²	Adjusted R Square	F	Sig
	B	Std. Error	Beta	T	Sig					
Constant	1.989	0.247		8.039	0.000	0.797	0.635	0.625	65.973	0.000
Strategic Decisions	0.550	0.068	0.797	8.122	0.000					

Table (10) indicates that there is a statistically significant effect at the level ($\alpha \leq 0.05$) for the strategic decisions in reducing the costs of the requirements of the Jordanian Civil Defense, thus accepting the second sub-hypothesis in the alternative formula, which states that “there is a statistically significant effect at the significance level ($\alpha \leq 0.05$) for strategic decisions in reducing the costs of the Jordanian civil defense equipment.

5 Discussions

The results of the questions of the first paragraph (strategic decisions) indicated that the strategic decisions are based on innovation, development, speed in implementation, and application of the decision, which helps to find solutions in and adapt to new requirements in the event of uncertainty and high risks. The results of the second paragraph questions (vehicle costs) indicated that the absence of prior experiences such as the Corona epidemic led to an increase in the demand for ambulances without an urgent need, and the lack of use of modern technologies in detecting fires helped in

increasing the costs of vehicles.

The results of the third paragraph questions (equipment costs) indicated that the paving of roads in forested areas and the existence of severe penalties for arson has a significant impact on reducing equipment costs. While the results of the fourth paragraph questions (human resource costs) indicate that there is no actual impact of strategic decisions in reducing human resource costs.

6 conclusions

Strategic decisions in this study play an important and influential role in reducing the costs of the Jordanian civil defense infrastructure in light of the Corona epidemic, which consists of (vehicle costs, equipment costs, human resource costs), as civil defense is an essential element. One of the building blocks of the state and the protection of citizens and property.

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Conflicts of Interest Statement

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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