

The Role of Digital Management in Improving Organizational Innovation in Syrian Companies (Field study- Syriatel Co. for Private Telecommunication)

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Abstract— Digital management is a modern idiom that is considered a result of the advanced digital revolution. It tends to use computation and digitalization to achieve several goals. Furthermore, digital management is critical since it helps organizations to keep up with the latest technologies, improving their activities and performances. However, this study aims to illustrate the impact of digital management on enhancing organizational innovation in Syriatel Co. in Syria, depending on four components of digital management, which are administrative and legislative, technological, human, and security. The descriptive analytical approach was used and a questionnaire was distributed on the study sample, which is 184. The most important findings of the study are that there is a positive impact of the digital management application on improving organizational innovation in Syriatel. Finally, the study recommends modifying the company's laws and improving employees' skills and abilities.

Keywords— Digital management, organizational innovation, administrative, legislative, security, human.

I. INTRODUCTION

Technological changes and transformations and the accelerated development of telecommunication and information technologies stimulate most public and private institutions to keep up with the latest technologies and advancements. Therefore, the main objective is to transform from traditional management to digitalization [1]. However, e-management or digital management is an effective choice for institutions to reach their goals efficiently, since it is a stimulant to economic and social transformation, as well as helps enhance activities and provide information and data for individuals [2]. The development of research in the field of digital management and organizational innovation was based on the idea that digital management is an efficient procedure for organizations' welfare, so this should be valued. In this essence, digitalization is very important for administration because it helps organizations to innovate operational performance [3].

For [4], digital technology contributes highly to improving organizations' operational performance and efficiency. In addition, to reach goals, these establishments require skilled and experienced human resources with innovative talents and abilities. Therefore, applying digitalization is considered not only a technical issue in organizations but also a strategic management matter [5]. On the other hand, the concept of "digital management" was used to refer to input and data transformation from a transformation form into an electronic form. In other words, it is modern technology used to process inputs by transforming data into digital signs using a binary system [6]. It can be said that the so-called term "digital management" was first explained by [7], who predicted that technology would be the basis of top management activities. They added that those managers should be skillful enough in using and managing its impact in organizations.

Moreover, the current study contributes to the current body of knowledge by clarifying the role of digital management in improving organizational innovation. Past studies have discussed limited analysis in the field of digital management, concentrating on its role in organizations without including many fundamental dimensions. However, [8] focused on the impact of digital transformation on innovation management, whereas the current study focused on digital management. Hence, the present study depends on several studies related to digital management and organizational innovations that can be covered by prior research to explain the history and trends of digital management by addressing the following questions:

1. What is the role of digital management in improving organizational innovation?
2. What is the role of legislative and administrative requirements in improving organizational innovation?
3. What is the role of technical requirements in improving organizational innovation?
4. What is the role of human requirements in improving organizational innovation?
5. What is the role of security requirements in improving organizational innovation?

Hence, the study has many objectives that endeavours to achieve, including:

1. Studying the concepts of digital management and the main requirements of its application.
2. Illustrating the state of digital management in Syriatel Co. in Syria using the distributed questionnaire.
3. Studying the impact of the digital management application requirements on organizational innovation in Syriatel Co.

II. LITERATURE REVIEW

The concept of digital management was introduced by many researchers and scholars in the literature [2, 3, 8], wherein the

impact of this management on organizations' performance was discussed. Since then, some studies have been conducted related to digital management. These studies have primarily concentrated on the impact of digital management on enhancing organizational innovation addressing different dimensions of this management. However, the authors in [9] defined digital management as when managers can develop an apparent vision for the digitalization process and their abilities to develop strategies and execute them to make this vision actual.

Likewise, it implies actions that concentrate on executing and planning digital strategies to reach goals inside the company [10]. Conversely, the digital management system is a kind of system used for digital documents' organization and processing; these documents include videos, images, and presentations [11]. [12] defined it as the process of changing paper transactions and documents with electronic ones by following certain steps including organized work, then applying the one-window technique that saves time and effort and provides new opportunities.

Digital management depends on technological advancement, including science, technology, and creative approaches to economic process organization. So, the application of these technologies helps the appearance of the innovative development of science, research, and education [13]. Moreover, digital management helps highly improve organizations' abilities since it affects positively work motivation and stimulates workers' innovative behavior and performance, wherein this effect can be direct and indirect. So, digital management has a multifaceted and context-dependent effect on organizational innovation and performance [14]. According to [15], this management contributes to achieving strategic digital success inside organizations. Otherwise, digital management helps enhance organizations' digital assets to reach objectives and improve digital transformation. It has many forms including digital transformation, technological strategy, soft and hard skills, decision-making...etc. [16].

Digital Knowledge Management implies protecting organizations' culture and supporting the use of technology for innovation and collaboration inside companies to help make appropriate decisions and reach goals [17]. Additionally, it has three elements, namely information management, leadership, and organizational management [18]. However, modern and advanced management needs more active managers who can motivate employees engage them in the decision-making process, and encourage them to do their best [19]. On the other hand, digital transformation contributes to improving the application of sustainable development [20]. Furthermore, it means the use of digital intelligence to improve management, production, sales ...etc. It also enables the innovation and supply chains [21]. For [22] digital transformation is an academic term that means the changes that organizations encounter because of digital technology. It usually happens due to the organization's development. In the same context, digital transformation means the application of technology to enhance organizations' performance [23].

Many past studies referred to the relationship between digital management and organizational innovation [3] & [16]. "Innovation" implies many elements including technical

design, manufacturing, and organizations' activities and research. It is the modification and restructuring of the organization's internal processes. According to [24], organizational culture affects positively organizational performance, while organizational innovation has an indirect impact on it. Management makes use of innovation to influence organizational performance.

On the contrary, innovation improves organizations' and employees' performance [25]. [26] stated that digital innovation contributes greatly to enhancing organizations' success through digital transformation. In essence, digital transformation helps organizations create new skills and do activities through digital technology [27]. For [28], it affects innovation's various complex stages. Digitalization means applying digital information and technology to look for new methods of creating value. It is to utilize digital knowledge to make changes inside organizations [29].

Organizational innovation implies adopting or creating a new idea in organizations [30]. Concisely, there is a complicated and dynamic relationship between organization and innovation. Additionally, it encompasses changes that face organizations' practices, workplaces, and relations [31]. So, organizational innovation is used to enhance and promote operation efficiency, market development, and quality control [32]. Consequently, organizational innovation encourages using new technologies through organizational structures and processes. Moreover, it plays a vital role in creating a suitable environment as well as making product advancement easier [33]. Likewise, [34] also confirms that organizational innovation helps organizations to be more efficient, productive, and flexible, wherein they become more susceptible to changes that lead to better performance.

Under this rationale, telecom companies' management needs to acquire and adopt the latest advanced technologies to precede other competitors. In addition, it should encourage employees to learn and acquire knowledge, as well as allow employee participation [35]. Meanwhile, one of the most important innovation components is the human factor. Unless there is energy and will of human resources, innovation will not occur [36]. However, the application of modern technology in the telecom sector is happening rapidly and permanently. More precisely, because of the spread of 5G networks, there is an increasing need for mobiles and other telecom technologies, leading to a rising will to implement organizational innovations in these companies [37]. [38] proved that the use of technologies in the telecommunication sector has a positive impact on companies' efficiency.

III. DIGITAL MANAGEMENT REQUIREMENTS

1) *Administrative and legislative requirements:*

It can be achieved by issuing legal legislation related to implementing digital management, before it is applied, by defining the legal framework of electronic transformation, the punitive procedure, and the legal rules that guarantee the security of electronic transactions. Moreover, the state must issue laws that guarantee data privacy and confidentiality [39].

2) *Technological requirements:*

The application of digitization requires several substantial components, such as computers, networks, systems, programs, human cadres, experts, and specialists. Plenty of organizations have started to computerize their activities and transactions for dozens of years, where digital technology has been used in performing transactions and paperwork. Moreover, digital technologies are frequently incorporated into production processes. Furthermore, managers should recognize how these technologies change their businesses. Most organizations are aware of the importance of digital transformation in developing strategies and improving performance [40].

3) *Human requirements:*

For digital management to implement its activities, employees should have certain elements when dealing with advanced technologies. Because of the widespread of these methods and means, employees must understand *how to use them* in administrative bodies. Moreover, the management should be able to program training sessions for workers, so those workers must have a technological culture. This in turn raises the levels of cooperation and culture among old and new employees. In brief, without human resources, the management will not be able to achieve its goals ,even if it has enough electronic devices [41].

4) *Security requirements:*

Globalization is the result of new crime emergence, such as identity theft, fraud, and virus attacks. Techno-criminals intend to break into the database of computers’ systems for theft. This robbed information is threatening people’s and organizations’ security. However, plenty of users and beneficiaries consider the internet as an unsecured tool, imposing obstacles on the management’s activities and personal data transfer. Therefore, the application of digital management is a very significant means to safely save information in secure places to be used by digital management. Digital management is directly connected with traditional management since it is a source that is full of data and services. Information security can be achieved by three elements, namely human, technical, and physical elements [42].

IV. RESEARCH HYPOTHESIS AND METHODOLOGY

1- *Study hypothesis*

Hypothesis H01: There is no impact of the application of digital management on improving organizational innovation in Syriatel Co.

Hypothesis H02: There is no impact of applying digital management dimensions (administrative and legislative, technological, human, and security) on improving organizational innovation in Syriatel Co.

2- *Research Form:*

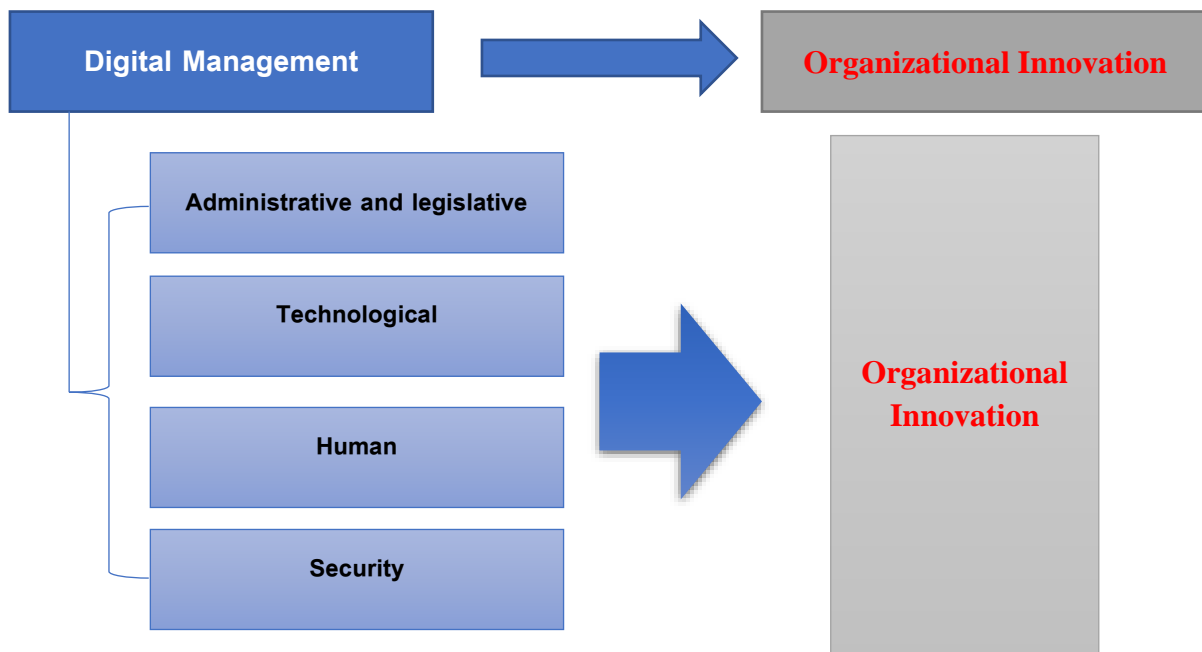


Figure (1) Research Form

3- *Research Methodology:*

The descriptive analytical approach was adopted, wherein a questionnaire was designed for data collection and analysis and hypotheses test since it is the most popular and appropriate approach to study the phenomenon, provide an accurate description, and express it quantitatively and qualitatively. In addition, the Likert scale was used.

Syriatel is considered one of the most important mobile companies in Syria, which provides various services to more than 2 million citizens. The company employs 589 administrators, distributed in various branches, which are the study community. However, the sample will be determined according to the following law: [43]

$$n1 = z^2 \cdot p \cdot q / d^2$$

$$n1 = (1.96)^2 \cdot (50\%) \cdot (50\%) / (0.05)^2 = 184$$

4- Questionnaire Validity:

The tool was judged by a group of specialists at Tishreen University and the questionnaire was modified based on their observations, including 28 questions. At the same time, there was a correlation between the tool phrases and axes. Meanwhile, the structure of the questionnaire is strong, and its stability degree is high as shown in Table (1), because the alpha-Cronbach coefficient is 0.910, which indicates the possibility of getting the same answers in case of redistribution to the study population in the same conditions. [44]

TABLE 1: Alpha Cronbach

Reliability Statistics	
Cronbach's Alpha	N of Items
.910	28

V. FINDINGS AND INTERPRETATIONS

1. Data Distribution

In Table 2, the Kolmogorov-Smirnov test shows that data can be represented linearly according to the appropriate models.

TABLE 2 Normal Distribution Test

One-Sample Kolmogorov-Smirnov Test			
		Digital Management	Organizational Innovation
N		183	183
Normal Parameters ^a	Mean	3.8203	3.8367
	Std. Deviation	.58502	.58647
Test Statistic		.145	.156
Asymp. Sig. (2-tailed)		.000	.000

a. Test distribution is Normal.

2. Demographic characterization of respondents

TABLE 3 Demographic Distribution

Gender	Male	Female	-	-	-
%	63.9	36.1	-	-	-
Age	>25	25-35	35-45	45-55	55 <
%	5.5	16.4	21.9	43.2	13.1
Qualification	Preparatory	Bachelor	Diploma	Postgraduate	-
%	5.5	32.8	48.6	13.1	-
Job	Manager	Chief	department	Employee	-
%	4.4	8.7	18	68.9	-
Period	>1	1-5	5-10	10<	-
%	5.5	32.8	44.3	17.5	-

The distribution of the questionnaire has encompassed the various groups divided in the demographic aspect. Consequently, males' percentage is higher than that of females. Therefore, it is noted that Arab society is still masculine at work. On the other hand, the distribution included different age groups, where more-than-45-year groups were the most representative. Moreover, university and diploma students were the most representative, as well as those with more than 5 years of experience at work. Therefore, the representation is good as practical and scientifically experienced individuals have the greatest percentages.

3. Characterization of variables and components:

TABLE 4: Characterization of variables and axes

Variables	Mean	STD
Administrative and Legislative	3.84	0.589
Technological	3.83	0.588
Human Resources	3.81	0.593
Security	3.83	0.586
Digital Management	3.82	0.585
Organizational Innovation	3.84	0.586

Table 4 indicates the following:

- **Administrative and legislative requirements:** the company's management is fully convinced that digital management is important. Consequently, necessary plans are developed to adopt its vision for applying its principles. On the other hand, the average of 3.84 indicates a high degree of approval by respondents on the importance of administrative and legal amendments necessary to implement digital management.
 - **Technological requirements:** The company focuses on the use of technology in various fields. Therefore, the digital management application requires updating many available technologies and ensuring other necessary technologies. So, this is what the management focuses on, according to the respondents' opinion, where the average intensity of 3.83 was high.
 - **Human requirements:** It is clear that the available capabilities and skills are insufficient for the application of digital management in the company. Therefore, the management focused on the training process on the one hand, and attracting external experts on the other hand. Hence, the transformation process requires qualified and trained human cadres. At the same time, the answers' intensity was high 3.81.
 - **Security requirements:** There is a high emphasis of 3.83 by respondents on the need for cybersecurity in the application of digital management which the company's management seeks by providing the necessary software.
 - **Digital management:** The sample responses' intensity was high, 3.82, referring to the need for (human, security, technological, administrative, and legislative) factors to apply digital management in the company, as the management is interested in achieving all transformation conditions.
 - **Organizational innovation:** It is clear that there is a high interest and focus by the management on benefitting from the transformation process to improving the organizational innovation through several aspects, including meeting customers' desires by introducing new and unique products that increase the company's competitive advantage. In this context, the management focuses on innovators granting them necessary powers and supporting them because of their important role in organizational innovation.
- In the end, the respondents' answers were high and within the range [3.41-4.20] according to the five-point Likert scale. (Asaad & Jonbolat, 2022) However, this indicates the sample individuals are convinced of the important role of digital management and its axes in enhancing the reality of organizational innovation in the company [45].

4. Hypothesis testing:

➤ *Hypothesis H01: There is no impact of the application of digital management on improving organizational innovation in Syriatel.*

For testing the hypothesis, a simple linear regression model was applied to study the impact of digital management on organizational innovation:

TABLE 5: Simple Regression Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.963 a.	.928	.927	.15794

a. Predictors: (Constant), Digital Management

TABLE 6: The Impact of Digital Management on Organizational Innovation Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	.148	.077			1.908	.058
	Digital Management	.966	.020	.963		48.254	.000

a. Dependent Variable: Organizational Innovation

According to the previous data, it is clear that the value of the correlation coefficient $R = 0.963$ indicates there is a strong and direct correlation at the same time, whereas the value of the coefficient of determination $R^2 = 0.928$ shows that 92% of the changes in organizational innovation are due to digital management, and 8% is due to other outside reasons according to the sample's point of view.

On the other hand, it was found that $Sig=0.000$, which is less than $\alpha=0.05$. Therefore, hypothesis H01 is rejected and replaced by the alternative one H01-1, which states that there is a positive and high impact of the application of digital management on improving organizational innovation in Syriatel, according to the sample's point of view.

➤ *Hypothesis H02: There is no impact of the application of digital management dimensions (administrative and legislative, technological, human, security) on improving organizational innovation in Syriatel.*

TABLE 7: Digital Management Components and Organizational Innovation Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.980a	.960	.959	.11823
2	.981b	.962	.961	.11530
3	.981c	.963	.963	.11337
4	.982d	.965	.964	.11160

For testing the hypothesis, a multiple linear regression model was applied to study the impact of the four axes of digital management on organizational innovation.

It is clear that the values of the correlation coefficient of the four axes are high and refer to a very high and direct correlation between these components and organizational innovation according to the sample's point of view. Furthermore, the values of R^2 are 96% for the four axes and refer to the organizational innovation changes, which are due to the four axes in the same proportion.

TABLE 8: ANOVA Test

Model		Sum of Squares	Push	Mean Square	F	Sig.
1	Regression	59.703	1	59.703	4271.047	.000b
	Residual	2.516	180	.014		
	Total	62.220	181			
2	Regression	59.840	2	29.920	2250.680	.000c
	Residual	2.380	179	.013		
	Total	62.220	181			
3	Regression	59.932	3	19.977	1554.349	.000d
	Residual	2.288	178	.013		
	Total	62.220	181			
4	Regression	60.015	4	15.004	1204.687	.000e
	Residual	2.204	177	.012		
	Total	62.220	181			

- *First model:* The value of $F = 4271.047$ is statistically good, which corresponds to the value of $Sig=0.000$ that decreases from the approved significance level of 0.05. Hence, the necessary conditions for adopting the model are fulfilled.
- *Second model:* $F=2250.680$ implies that it has an appropriate compatibility and significance. On the other hand, $Sig=0.000$ which is less than α . Therefore, the model is also accepted and approved as it meets the necessary conditions.
- *Third model:* According to the previous table, the value of $F = 1554.349$ indicates that it is statistically significant, while the value of $Sig=0.000$ is below α , and therefore the model is suitable and adopted in its current form.
- *Fourth model:* The value of F for the data test is equal to 1204.687 and implies it is statistically significant, while $Sig=0.000$ is lower than α . Hence, the model is highly representative and meets conditions, and therefore it is accepted in its current form.

To show the representation gradient to reach the final equation, the following table shows the following.

To get the final representative equation that shows each dimension's impact, the analysis method depends on the gradient for calculating the effect as shown:

▪ *First model:*

Based on the above, the first equivalent, which shows the impact of administrative and legislative requirements on organizational innovation, can be determined as follows:

(administrative and legislative $\times 0.980$) = 0.957. Thus, it is clear that administrative and legislative requirements have a

good impact on organizational innovation if measured alone, excluding the impact of other dimensions.

TABLE 9: Impact of Digital Management Components on Organizational Innovation

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.095	.058		1.643	.102
	Administrative and Legislative Requirements	.974	.015	.980	65.353	.000
2	(Constant)	.078	.057		1.368	.173
	Administrative and Legislative Requirements	.769	.066	.773	11.675	.000
	Technological Requirements	.211	.066	.212	3.205	.002
3	(Constant)	.065	.056		1.162	.247
	Administrative and Legislative Requirements	.741	.066	.744	11.290	.000
	Technological Requirements	.109	.075	.110	1.456	.147
4	(Constant)	.058	.055		1.057	.292
	Administrative and Legislative Requirements	.412	.143	.414	2.886	.004
	Technological Requirements	.065	.076	.065	.855	.394
	Human Requirements	.133	.049	.135	2.703	.008
	Security Requirements	.376	.146	.377	2.586	.011

a. Dependent Variable: Organizational Innovation

▪ **Second model:**

This model shows the gradation of adding the impact, which includes only two dimensions (administrative and legislative, technological) as shown above. It is represented by the following equation:

$$(\text{administrative and legislative} \times 0.980) + 0.211(\text{technological} \times 0.981) = 0.769$$

It is noted that the impact of administrative requirements has decreased with the impact of technological requirements, although the impact of the first axis is higher than the second.

▪ **Third model:**

In this model, the impact of three dimensions (administrative, technological, and human) is studied, and the changes in the first and second dimensions are illustrated, as a result of the impact of a third dimension, as in the following equation:

$$(\text{administrative and legislative} \times 0.980) + 0.109 (\text{Technological} \times 0.981) + 0.134 (\text{Human} \times 0.981) = 0.741$$

The presence of the third component impact, the impact of both the first and the second dimensions decreased simultaneously.

▪ **Fourth model:**

It is the last stage that interprets the impact of the dependent variable's components, as shown in the following equation:

$$(\text{administrative and legislative} \times 0.980) + 0.065 (\text{Technological} \times 0.981) + 0.133 (\text{Human} \times 0.981) + 0.376 (\text{Security} \times 0.982) = 0.412$$

Obviously, the four components of the independent variable have a variant-level impact on the dependent variable, distributed as follows:

- First impact: related to administrative and legislative requirements.
- Second impact: related to security requirements.
- Third impact: related to human requirements.
- Fourth impact: related to technological requirements.

Finally, there are strong, significant, and highly influential correlations for the independent variable, including its four dimensions, on the dependent variable.

VI. CONCLUSION AND RECOMMENDATIONS

▪ **Findings**

1. The high intensity of respondents' responses refers to the important role of applying digital management and its four components in improving the organizational innovation in Syriatel Co. for Mobile Phone in Syria.
2. There is a positive and high impact of the application of digital management on improving organizational innovation in Syriatel, according to the sample's views.
3. There is a different impact of the digital management components. Consequently, administrative and legislative requirements come first, then security requirements. After that, human requirements come, and finally technological requirements.

▪ **Recommendations**

Based on the results above, there are many recommendations:

- 1- The internal laws of Syriatel should be amended in line with the management will and desire for digital transformation and digital management application in various fields. However, in this field, it is possible to benefit from the experiences of many international companies that make modifications to their organizational structure and workstyle in adopting digital management concepts.
- 2- Improving employees' capabilities and skills at various administrative levels, through the continuous training and improvement process regarding the possibility of optimally applying digital management. Additionally, it is possible to benefit from external experts' views.
- 3- Paying more attention to innovators and talents available in the company, giving them greater powers and focusing on applying work teams' experiences, to improve the level of organizational innovation.
- 4- Contracting and cooperating with external companies is essential to enhance the company's cybersecurity and protect customers' data

Conclusion

Rapid technological development stimulates many companies worldwide to apply digital management principles, since digital management has various advantages and effects on

companies' different activities, especially on organizational innovation. Moreover, many studies have highlighted the clear impact of digital management on improving organizational innovation, and the current study confirmed the existence of this impact, wherein its results correspond to those of the previous studies.

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