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Assessing the Digital Skills of Travel Agency Employees in Adrar : A Study of the Requirements for Digital Transformation

تقييم المهارات الرقمية لموظفي وكالات السفر بولاية أدرار :دراسة لمتطلبات التحول الرقمي

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Abstract: This study assesses the digital competencies of travel agency employees in Adrar Province (Algeria) amid the accelerating digital transformation of tourism. A mixed-method approach combined semi-structured interviews with 18 employees (10 men, 8 women) from six active travel agencies, covering basic digital skills, frequency of tool use, and perceived barriers. Results reveal a clear gap between basic skills (email, social media) and specialized skills (Global Distribution Systems and digital security): 44.4% of employees remain beginners in GDS use, and 50% lack basic digital security knowledge. Poor internet connectivity (83.3%), weak local infrastructure (72.2%), and limited specialized training (77.8%) emerged as the main barriers.

The study recommends continuous training, improved telecommunications infrastructure, and structured change management to support digital transformation in Adrar's travel agencies.

Keywords: Digital competencies; travel agencies; digital transformation; desert tourism; Adrar; Global Distribution Systems (GDS).

الملخص: تهدف هذه الدراسة إلى تقييم واقع الكفاءات الرقمية لموظفي وكالات السفر بولاية أدرار في ظل التحول الرقمي المتسارع لقطاع السياحة .اعتمدت الدراسة منهجاً مختلطاً، وطبقت أداة المقابلة على عينة من 18 موظفاً 10) رجال، 8 نساء (من ست وكالات سفر ناشطة، وركزت على المهارات الرقمية الأساسية وتكرار استخدام الأدوات الرقمية والعوائق المتصورة .أظهرت النتائج فجوة واضحة بين المهارات الأساسية) كالبريد الإلكتروني ووسائل التواصل (والمهارات المتخصصة)كأنظمة الحجز العالمية والأمن الرقمي(، إذ بلغت نسبة المبتدئين في استخدام هذه الأنظمة44.4% ، ويفتقر 50% من الموظفين إلى الحد الأدنى من الأمن الرقمي.

كما مثّلت ضعف شبكة الإنترنت (83.3%) وضعف البنية التحتية (72.2%) ونقص التكوين المتخصص (77.8%)أبرز العوائق .وتوصي الدراسة باعتماد برامج تكوينية مستمرة وتحسين البنية التحتية وإدارة مقاومة التغيير لدى الموظفين.

الكلمات المفتاحية :الكفاءات الرقمية؛ وكالات السفر ؛ التحول الرقمي؛ السياحة الصحراوية؛ أدرار ؛ أنظمة الحجز العالمية.

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1. INTRODUCTION

Travel agencies in Adrar play a crucial role in promoting Saharan tourism, managing bookings, and guiding visitors to cultural and natural heritage sites. However, the rapid digitalisation of the tourism sector — through online reservation platforms, digital marketing, e-payment systems, and customer relationship management (CRM) tools — has created a skills gap among local agency employees. Many staff members lack the necessary digital competencies to effectively use these tools, limiting their competitiveness and their ability to meet the expectations of modern travellers. This situation is compounded by the region's geographical isolation, limited access to specialised training, and the predominance of traditional operating methods.

This study was guided by the following research questions:

• What is the current level of digital skills among travel agency employees in Adrar?

• What are the specific training needs related to digital reservation systems, social media marketing, e-payment, and online reputation management?

• What barriers (infrastructure, training availability, organisational culture) hinder the digital upskilling of these employees?

• What empowerment mechanisms can be implemented effectively in the local context?

Accordingly, the study pursued the following objectives:

• Assess the existing digital competencies of travel agency personnel in Adrar and identify skill gaps.

• Identify the digital tools and platforms most relevant to the tourism value chain (e.g., global distribution systems, OTAs, social media, e-administration) that require proficiency.

• Propose a tailored empowerment framework, including adapted training modules, partnerships with regional training centres and tourism authorities, and incentive measures to encourage certification and continuous learning.

2. THEORETICAL FRAMEWORK

The digital transformation of the tourism sector presents profound challenges for travel agencies in peripheral and geographically isolated regions such as Adrar, Algeria. To understand the nature of these challenges, this study draws primarily upon two interconnected communication theories: Media

Dependency Theory Ball-Rokeach & DeFleur, and the Digital Divide framework (Norris, Van Dijk. These two theoretical lenses collectively offer a comprehensive explanation of why travel agency employees in Adrar struggle to adopt and effectively utilise digital tools, despite the growing imperative for digitalisation in the global tourism industry.

2.1 Media Dependency Theory

Media Dependency Theory posits that individuals and organisations become increasingly dependent on media systems as their environment becomes more complex, uncertain, and rapidly changing (Ball-Rokeach, 1976, p. 113). The theory identifies three primary needs that drive media dependency: understanding (comprehending social and professional realities), orientation (guiding behaviour and decision-making), and play (entertainment and emotional release). Of these three, understanding and orientation are the most directly relevant to a professional, skills-based context such as this study; the play dimension is not intrinsic to workplace media dependency, although the incidental personal use of social media documented among employees in this sample may partly reflect it. In the context of Adrar's travel agencies, this dependency is particularly acute.

Due to the region's geographical isolation, limited access to formal training institutions, and scarcity of professional development opportunities, local employees have few alternative sources of knowledge about emerging tourism technologies, market trends, and customer expectations. Consequently, they rely heavily on digital media platforms — including online travel agencies (OTAs) such as Booking.com and Expedia, social media networks like Facebook and Instagram, and review platforms such as TripAdvisor — as their primary channels for understanding the rapidly evolving tourism landscape (UNWTO., 2020, p. 17).

However, this dependency becomes problematic when employees lack the necessary digital competencies to critically evaluate, interpret, and effectively utilise the information these media provide.

In other words, they are highly dependent on media for knowledge acquisition, yet they possess limited capacity to transform that knowledge into professional practice — a condition that Ball-Rokeach and DeFleur (1976) would describe as an imbalanced and potentially dysfunctional dependency relationship.

2.2 The Digital Divide Framework

This predicament is further elucidated by the Digital Divide framework, which moves beyond the simplistic binary of "having" versus "not having" access to technology. Norris distinguishes between the global digital divide (disparities between countries), the social digital divide (disparities within societies), and the democratic digital divide (disparities in political participation). More recently, Van Dijk has proposed a more nuanced, multi-layered model that identifies four successive types of barriers to digital inclusion: motivational access (lack of interest or perceived relevance), physical access (lack of devices or internet connectivity), skills access (lack of operational, informational, and strategic digital skills), and usage access (lack of meaningful, productive applications of technology). (Norris, 2001, p. 78).

Applying this model to Adrar's travel agencies reveals that employees face cumulative barriers across all four levels. Physically, the region suffers from unstable internet connectivity and inadequate technological infrastructure.

In terms of skills, employees exhibit significant gaps in operational competencies (e.g., using booking systems, managing e-payments) as well as informational and strategic competencies (e.g., analysing market data, managing online reputation). Regarding usage, even when employees do engage with digital platforms, their usage tends to be superficial — limited to basic browsing or passive consumption rather than active, strategic deployment for competitive advantage.

Furthermore, motivational barriers persist because many employees perceive digital tools as irrelevant to their traditional, face-to-face service model, a perception reinforced by the absence of organisational incentives and institutional support.

2.3 An Integrated Framework: Asymmetric Dependency and Cumulative Disadvantage

Crucially, Media Dependency Theory and the Digital Divide framework are not separate but mutually reinforcing. Ball-Rokeach and DeFleur (1976) argued that media dependency intensifies in conditions of social change and instability. For Adrar's travel agencies, the accelerating digitalisation of the global tourism sector creates precisely such an unstable environment.

As international travellers increasingly expect seamless online booking, instant communication, and digital payment options, local agencies experience heightened pressure to conform. This pressure intensifies their dependency on

digital media as a source of information about how to compete and survive. However, because they operate from a position of structural disadvantage — characterised by infrastructural deficits, skill shortages, and institutional neglect — they are unable to translate this dependency into effective digital agency. In other words, their dependency is asymmetric: they depend on media to understand and navigate digital transformation, but they lack the resources and capabilities to control, influence, or benefit equally from that media environment (Didawi, 2021, p. 54).

This asymmetry perpetuates a cycle of marginalisation, where increased dependency without corresponding capacity leads to frustration, disengagement, and a further widening of the digital gap.

Moreover, the digital divide in Adrar is not merely technical but deeply communicative and socio-cultural. That digital exclusion is often intertwined with broader patterns of social inequality, including geographic marginality, economic deprivation, and limited educational attainment.

In the Saharan context, these factors converge to produce a "cumulative disadvantage," where pre-existing socio-economic vulnerabilities are amplified by digital exclusion. (Tran, 2025, p. 39).

Employees in Adrar's travel agencies are not simply "late adopters" of technology; they are situated within a structural environment that systematically limits their opportunities for digital skill acquisition, professional networking, and institutional support.

This structural dimension is critical because it reframes the problem not as an individual failure of employees to "keep up," but as a systemic failure of policy, infrastructure, and institutional capacity to provide equitable access to digital resources and training.

In light of these theoretical insights, this study argues that developing digital competencies among travel agency employees in Adrar requires more than isolated training interventions. It demands a two-pronged communicative strategy: first, reducing the asymmetric dependency by building employees' critical media literacy and strategic digital skills, enabling them to move from passive media consumers to active, empowered media producers.

Second, bridging the multi-level digital divide by addressing motivational, physical, skills-based, and usage barriers through contextually tailored, blended

learning programmes that are accessible, culturally sensitive, and directly relevant to employees' professional realities. (Boukhalfa, 2024, p. 11)

Only by simultaneously addressing both the dependency relationship and the structural inequalities that sustain the digital divide can sustainable digital empowerment be achieved in Adrar's tourism sector.

3. METHODOLOGY

3.1 Research Design and Sample

A mixed-methods approach suited to the local context was adopted. The field study covered a sample of six (06) active travel agencies in Adrar province, involving 18 employees (10 men and 8 women).

Data were collected using a semi-structured interview tool addressing three main axes: digital skills, frequency of digital tool use, and perceived barriers to digital transformation.

3.2 Data Collection

The quantitative component used structured questions distributed to employees across all travel agencies operating in Adrar wilaya, targeting front-office staff, reservation agents, and managers; these covered self-assessment of digital skills, frequency of tool usage, and perceived barriers.

The qualitative component consisted of semi-structured interviews with agency owners/managers, the local tourism directorate (DTP), and representatives from training institutions, to understand institutional support, infrastructure challenges, and strategic priorities.

This was complemented by an observation and infrastructure audit assessing internet connectivity, hardware availability, and access to digital platforms within the agencies. (Boudjemaa, 2023, p. 91).

4. RESULTS AND DISCUSSION

4.1 Digital Skills Profile

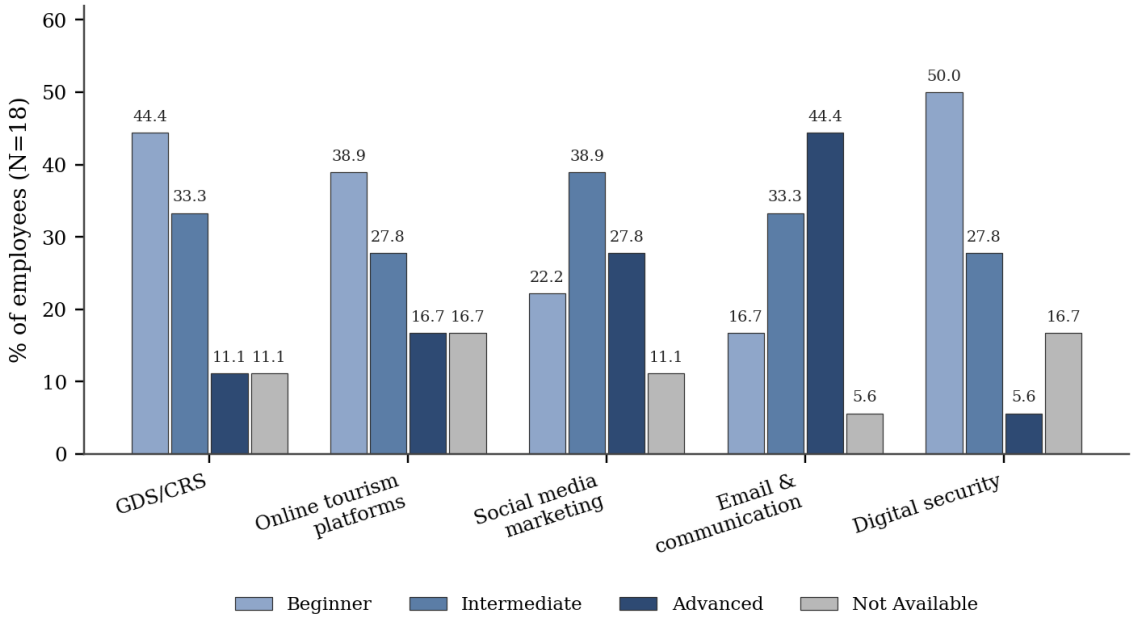
Table N° 1: Distribution of Basic Digital Skills among Employees (N=18)

Digital Skill	Beginner Level	Intermediate Level	Advanced Level	Not Available
Use of electronic booking systems	8 (44.4%)	6 (33.3%)	2 (11.1%)	2 (11.1%)

(GDS/CRS)				
Use of online tourism platforms	7 (38.9%)	5 (27.8%)	3 (16.7%)	3 (16.7%)
Use of social media for marketing	4 (22.2%)	7 (38.9%)	5 (27.8%)	2 (11.1%)
Email management and professional communication	3 (16.7%)	6 (33.3%)	8 (44.4%)	1 (5.6%)
Digital security and data protection	9 (50.0%)	5 (27.8%)	1 (5.6%)	3 (16.7%)

Source: Prepared by the author based on field survey data (2026).

Figure N° 1: Distribution of Basic Digital Skills among Employees (N=18)



Source: Prepared by the author based on field survey data (2026).

The table shows a clear disparity in digital skill levels. While acceptable competencies exist in email and professional communication (44.4% at advanced level), there is a notable weakness in specialised skills such as the use of Global Distribution Systems (GDS/CRS) — 44.4% of employees remain at beginner level — and half of the sample (50%) lack even basic digital security knowledge. Moreover, 16.7% possess no skill in using online tourism platforms.

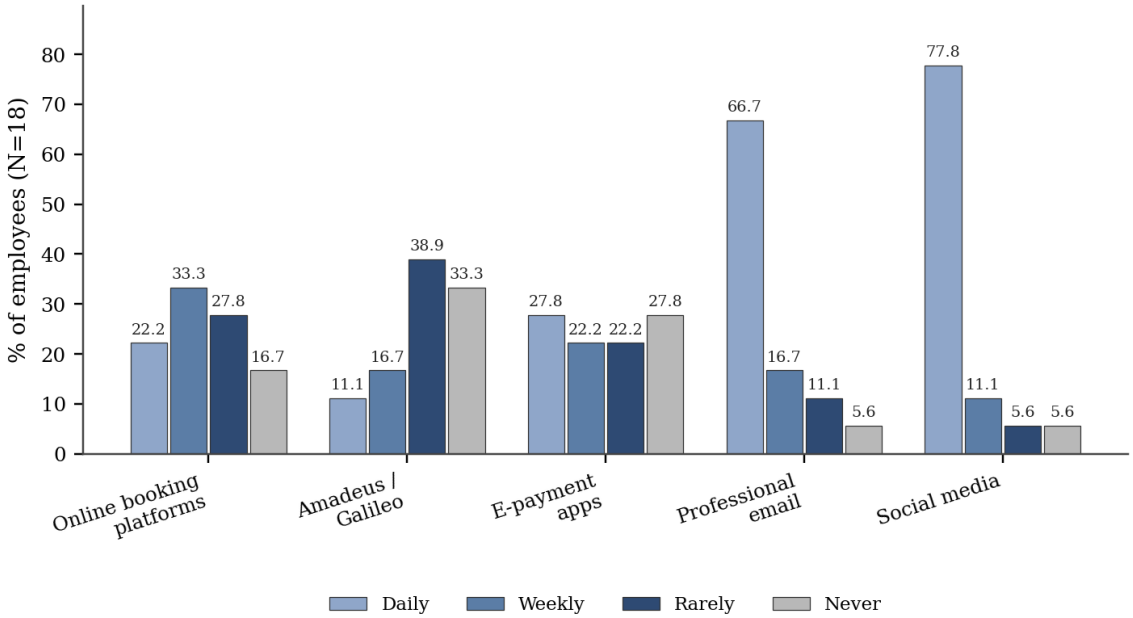
4.2 Frequency of Digital Tool Use

Table N° 2: Frequency of Digital Tool Use in Daily Work (N=18)

Digital Tool / Technology	Daily	Weekly	Rarely	Never
Online booking platforms (Booking, Expedia)	4 (22.2%)	6 (33.3%)	5 (27.8%)	3 (16.7%)
Travel distribution systems (Amadeus, Galileo)	2 (11.1%)	3 (16.7%)	7 (38.9%)	6 (33.3%)
Electronic payment apps and transfers	5 (27.8%)	4 (22.2%)	4 (22.2%)	5 (27.8%)
Professional email	12 (66.7%)	3 (16.7%)	2 (11.1%)	1 (5.6%)
Social media (Facebook, WhatsApp)	14 (77.8%)	2 (11.1%)	1 (5.6%)	1 (5.6%)

Source: Prepared by the author based on field survey data (2026).

Figure N° 2: Frequency of Digital Tool Use in Daily Work (N=18)



Source: Prepared by the author based on field survey data (2026).

The table reflects a heavy reliance on simple digital tools such as email and social media (77.8% daily use of social media), while the use of specialised systems such as Amadeus/Galileo declines — two-thirds of employees (33.3% never, 38.9% rarely) do not use them regularly. Additionally, 27.8% of employees never use electronic payment applications, indicating continued reliance on cash or traditional transfers.

4.3 Perceived Barriers to Digital Transformation

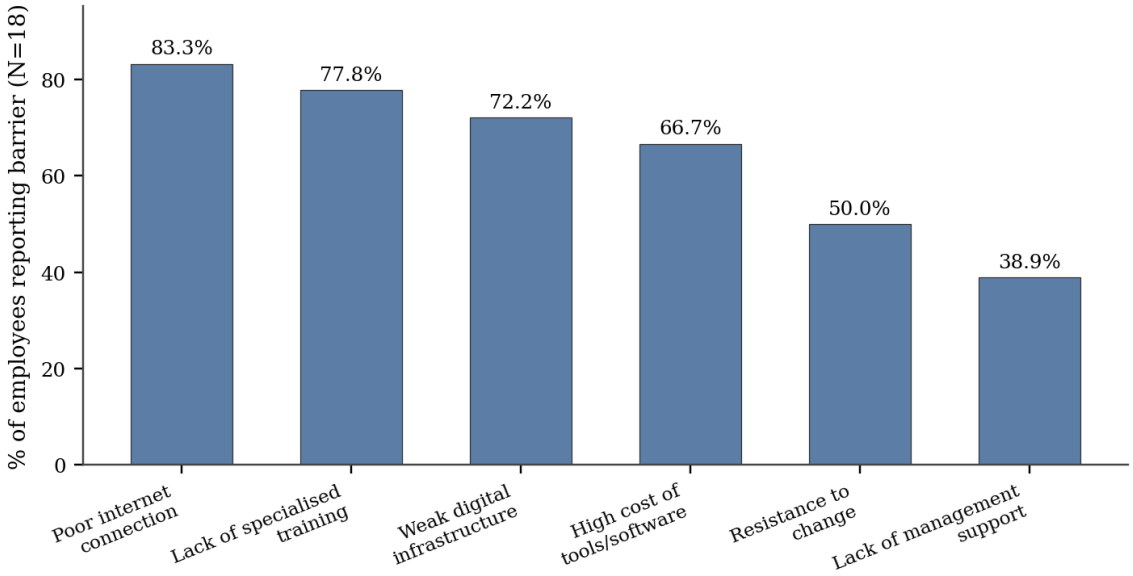
Table N° 3: Perceived Barriers to Digital Transformation (Multiple Responses, N=18)

Barrier	Number of Employees	Percentage
Poor and unstable internet connection	15	83.3%
Lack of specialised digital training	14	77.8%
High cost of professional tools and	12	66.7%

software		
Employee resistance to change and fear of new technologies	9	50.0%
Lack of top management support for digital transformation	7	38.9%
Weak digital infrastructure in Adrar province	13	72.2%

Source: Prepared by the author based on field survey data (2026).

Figure N° 3: Perceived Barriers to Digital Transformation (Multiple Responses, N=18)



Source: Prepared by the author based on field survey data (2026).

Technical environment barriers top the list: poor internet (83.3%) and weak digital infrastructure in Adrar (72.2%), reflecting the reality of remote desert areas. Moreover, 77.8% of employees report a lack of specialised training, and 66.7% consider tool costs a barrier. Resistance to change (50%) and limited management support (38.9%) are comparatively less severe human barriers, though they remain influential.

4.4 Discussion

The results indicate a qualitative digital gap within travel agencies in Adrar. While employees master simple daily tools (email, WhatsApp, Facebook) used primarily for communication, they are unable to operate global distribution systems (GDS) and advanced online tourism platforms.

This disparity leaves agencies unable to compete in the digital tourism environment, where instant bookings and connections with global providers have become essential, and may be explained by the absence of targeted digital training programmes for the tourism sector in the region and a reliance on limited self-learning. (Stambouli, 2024, p. 77)

Intensive use of social media (77.8% daily) may reflect an attempt to compensate for the lack of professional tools, but it carries risks, including the mixing of personal and professional communication and poor archiving and tracking.

The rare use of booking and electronic payment systems leads to slower transaction processing, more frequent manual errors, and lost digital marketing opportunities; the absence of electronic payment (27.8% never use it) also hinders attracting digital tourists who prefer contactless transactions.

The technical environment emerges as the greatest barrier: poor internet (83.3%) and weak infrastructure (72.2%) are not merely local problems but reflect the isolation of Adrar as a desert province and limited investment in fibre-optic or 4G/5G networks.

However, without continuous training (77.8%), performance would likely remain limited even if infrastructure improved. The resistance-to-change rate (50%) suggests that senior employees in particular may prefer traditional methods (paper directories, manual bookings) out of fear of complexity or job loss.

4.5 Recommendations

• Specialised and continuous training: in-house training programmes on GDS, digital security, and electronic payments.

• Infrastructure improvement: coordination with telecommunications authorities to enhance the internet network in Adrar.

• Incentivising digital transformation: financial support for agencies to acquire professional software licences, and provision of low-cost local platforms.

• Change management: awareness workshops to reduce employee resistance, involving staff in the selection of digital tools.

5. CONCLUSION

Travel agencies in Adrar are essential intermediaries for the development of sustainable Saharan tourism, yet this study has shown that their capacity to fulfil this role is increasingly constrained by a pronounced digital skills gap. Among the 18 employees surveyed across six agencies, basic communication tools were well mastered — 77.8% used social media daily and 66.7% used professional email daily — but specialised systems remained largely inaccessible: 44.4% of employees were still at beginner level in Global Distribution Systems use, and 50% lacked even basic digital security knowledge. This disparity was compounded by structural barriers specific to the region: 83.3% of employees cited poor internet connectivity and 72.2% cited weak digital infrastructure as major obstacles, while 77.8% reported a lack of specialised training — all of which are intensified by Adrar's geographical isolation.

Read through the theoretical lens adopted in this study, these findings illustrate a condition of asymmetric media dependency: employees rely heavily on digital media to understand and navigate an increasingly digitalised sector, yet lack the operational and strategic capacity to convert that dependency into professional advantage. This asymmetry is best understood not as an individual failing but as a manifestation of cumulative disadvantage the compounding of motivational, physical, skills-based, and usage barriers that characterises digital exclusion in structurally marginalised regions. The comparatively lower rates for resistance to change (50%) and lack of management support (38.9%) suggest that, in Adrar's case, this disadvantage is driven primarily by structural and infrastructural conditions rather than human or organisational resistance — a distinction with direct implications for where intervention should be targeted.

These findings carry direct implications for policy and practice. Enhancing the digital capabilities of travel agency employees would be expected to improve service quality, increase online visibility, and enable better integration with national and international booking platforms, thereby contributing to the broader economic diversification of the region. Realising these gains, however, requires more than isolated training sessions: it calls for the coordinated, sustained interventions outlined in Section 4.5 — continuous and specialised training, improved telecommunications infrastructure, incentives for digital adoption, and structured change management to address employee resistance.

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