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Marketing intelligence in digital age: How business intelligence tools drive e-marketing strategies

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A B S T R A C T

This research explains the interaction of marketing intelligence with business intelligence tools and e-marketing strategies for Jordanian companies such as Amazon, Marka VIP, and Khazanti, with a sample size of 317 employees. The authors investigated the direct impact of marketing intelligence on the e-marketing strategy, the moderating role of business intelligence tools, and how jointly both intervening variables affect the firm through Smart PLS 4. These findings indicate that business intelligence tools are crucial in leveraging marketing intelligence toward effective e-marketing strategy development. Therefore, these contributions offer a holistic view of technology-driven marketing practices from a literature perspective and provide practical insights that organizations may utilize in refining their digital marketing approaches.

1. Introduction

E-marketing is the backdrop in today's cyber world, whereby the enterprise can reach the target audience and effectively engage them with its service provision (Alghizzawi, Ahmed, et al., 2024). In reality, though, it often appears difficult for any organization to align its marketing effort with real-time market dynamics coupled with technological advances (Alghizzawi, Ezmigna, et al., 2024; Dwiwijaya, 2024). Marketing intelligence refers to the "systematic gathering, analysis, and dissemination of information concerning markets", which provides insights into consumer behavior, market trends, and competitive activities (Ismaeel et al., 2023). It is a huge potential area; however, most businesses are not able to incorporate marketing intelligence into actionable strategy because of a lack of technological infrastructure or analytics capability (Mehralian & Khazaee, 2022; Omondi, 2024). Business intelligence, on the other hand, has emerged through tools that enable solid decision-making based on facts (F. Awamleh et al., 2024; Hutsaliuk et al., 2024). These tools are capable of providing the organization with the required processing and visualization of data for strategic decisions (Dutta et al., 2024; Hussein, 2024). While prior research has extensively explored the individual roles of marketing intelligence and business intelligence tools, limited studies have examined their combined impact on e-marketing strategies, particularly in emerging markets like Jordan (Al-Majali et al., 2024; Awamleh et al., 2024). This gap in the literature underscores the need to investigate the interplay between marketing intelligence, business intelligence tools, and e-marketing strategies (Alghizzawi, Ezmigna, et al., 2024; Aripin et al., 2022). Addressing this gap, this study focuses on companies operating in Jordan, including Amazon, Marka VIP, Khazanti, and others, which face unique market challenges and opportunities in a rapidly digitalizing environment.

The primary objective of this research is to examine how marketing intelligence influences e-marketing strategies and to explore the mediating role of business intelligence tools in enhancing this relationship. The central research question guiding this study is: How do marketing intelligence and business intelligence tools contribute to the effectiveness of e-marketing strategies in Jordanian companies? By answering this question, the study aims to provide both theoretical contributions and practical insights that can help organizations optimize their digital marketing initiatives in competitive and dynamic markets.

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2. Literature Review

2.1. Marketing Intelligence

Marketing intelligence is the systematic collection, analysis, and dissemination of external data to inform marketing decisions. It helps organizations understand customer preferences, monitor competitor activities, and identify emerging market trends (Ismaeel et al., 2023). As identified from previous studies, marketing intelligence helps improve decision-making by aligning marketing strategies with the latest dynamics of markets (Lies, 2019). For example, a well-established marketing intelligence system helps an organization to keep pace with the changing needs of customers and shape its campaigns accordingly (Mehralian & Khazaee, 2022; Paul & Rakshit, 2021). Even though marketing intelligence is important, not all organizations possess the capability or knowledge to effectively incorporate this into their systems (Sulistyaningsih et al., 2024). This inability forms a gap that prevents the complete utilization of market data, especially in the highly competitive digital space (Vdovichena et al., 2024; Ward et al., 2023).

2.2. Business Intelligence Tools

Business intelligence tools are technological systems through which raw data is transformed into actionable insights through advanced analytics, visualization, and reporting (Maaitah, 2023). The tools can also be used to achieve enhanced operational effectiveness, leverage new opportunities, and limit risks for organizations (Dutta et al., 2024; Lies, 2019). Researchers have also pointed out that they support data-driven decisions in such areas as marketing, where appropriate insights can lead to the optimization of campaigns (El Koufi et al., 2024; Hutsaliuk et al., 2024). Such business intelligence tools include, among others, Tableau, Power BI, and Google Analytics (Maaitah, 2023; Nogués & Valladares, 2017). While these tools have proven benefits, their effectiveness often depends on user expertise and the quality of input data (Paul & Rakshit, 2021; Vdovichena et al., 2024). The adoption of business intelligence tools is growing in emerging markets but continues to face challenges in terms of cost and integration with existing systems (Awamleh et al., 2024).

2.3. E-Marketing Strategies

E-marketing strategies use digital platforms and technologies to communicate products and services to customers by engaging with them in personalized ways (Alghizzawi, Ezmigna, et al., 2024; Alqudah, 2023). These include email marketing, campaigns via social networking sites, and search engine optimization (Barbosa, 2024; Donthu et al., 2021). Research has established the fact that integration of technological development is necessary for e-marketing to reach customers more effectively and improve ROI (Dutta et al., 2024). For instance, data-driven e-marketing can enable running target adverts based on user behavior and preference (Dutta et al., 2024; Falahat et al., 2020). However, successful implementation requires organizations to continuously adapt to evolving digital trends (Fathor & Fatmariyah, 2023). The dynamic nature of digital marketing poses challenges for businesses to maintain relevance and effectiveness, especially in competitive markets (Hidayati et al., 2024; Hussein, 2024).

3. Linkage Hypotheses

3.1. Marketing Intelligence and E-Marketing Strategies

Market intelligence helps in developing focused e-marketing strategies for organizations through a proper insight into market dynamics, consumer behavior, and the movement of competition (Hutsaliuk et al., 2024). It has helped establish opportunities, overcome challenges, and reach audience segments more precisely in business by systematically collecting and analyzing data regarding digital campaigns (Ismaeel et al., 2023). In this respect, the e-marketing efforts will be relevant and strike deep poignancy into targeted customers (Jamil et al., 2020). This will enable organizations to operate focused e-mail campaigns or social network advertisements with increased levels of personalization, based on customer preferences and hot topics (Kabir et al., 2024; Lasi, 2021). The study also shows that companies with advanced marketing intelligence capabilities are in an advantageous position to develop new and powerful methods of digital marketing. Therefore, there is a link between using rich data from markets to enhance digital interactions and strategic marketing objectives (Lies, 2019; Malkawi et al., 2024; Mehralian & Khazaee, 2022). It is consequently hypothesized that:

H_1: *Marketing Intelligence Positively Impact E-Marketing Strategies.*

3.2. Business Intelligence Tools and E-Marketing Strategies

Business intelligence tools can strengthen e-marketing strategies through real-time analytics, predictive modeling, and interactive data visualization for better decision-making (Nogués & Valladares, 2017; Omondi, 2024). These allow businesses to track critical marketing metrics such as click-through rates, customer retention, and campaign ROI, and adjust strategies accordingly based on trends within each of those performances (Paul & Rakshit, 2021; Potwora et al., 2024). For example, it can be done through platforms like Tableau and Google Analytics to analyze website traffic and user behavior of the business, offering actionable insights toward optimization in a digital campaign (Ward et al., 2023; Aljabari et al., 2024). The integration of these into e-marketing will enable an organization to create a highly targeted, efficient, and adaptive campaign to respond to dynamic market shifts (Kabir et al., 2024; Lasi, 2021). Studies have shown that businesses using

advanced business intelligence tools achieve higher customer engagement and conversion rates, emphasizing their critical role in modern digital marketing strategies (F. T. Awamleh et al., 2024; Barbosa, 2024; Dutta et al., 2024). Thus, it is hypothesized that:

H_2: *Business Intelligence Tools Positively Impact E-Marketing Strategies.*

3.3. Marketing Intelligence, Business Intelligence Tools, and E-Marketing Strategies

The interrelationship between marketing intelligence, business intelligence tools, and e-marketing strategies provides a dynamic interaction wherein each element reinforces the others in arriving at the most optimal marketing effect (Dwiwijaya, 2024; Falahat et al., 2020; Hidayati et al., 2024). Marketing intelligence requires raw input in the areas of consumer trends, competitor behavior and market opportunities, while business intelligence tools convert such information into actionable insight (Hussein, 2024). The result of such synergy is that businesses will be able to create and deliver more efficient and customized e-marketing strategies (Jamil et al., 2020; Lasi, 2021). This could mean that marketing intelligence reveals an increasing demand for sustainable products, while business intelligence tools analyze customer demographics and behavior to focus targeted digital campaigns toward the appropriate audience (Lies, 2019; Maaitah, 2023). This integrated approach can enhance not only campaign relevance but also efficiency through better utilization and less waste of resources (Malkawi et al., 2024; Nogués & Valladares, 2017). Additionally, the role of mediation by business intelligence tools between raw market data and strategic implementation facilitates making the required adjustments in real-time, as evidenced by metrics on campaign performance (Omondi, 2024; Potwora et al., 2024). Indeed, it has been shown in various studies that organizations combining these capabilities realize higher levels of digital engagement, customer satisfaction, and ROI (Malkawi et al., 2024; Ward et al., 2023). Therefore, it is hypothesized that:

H_3: *Marketing Intelligence Positively Impacts Business Intelligence Tools.*

H_4: *Marketing Intelligence with Business Intelligence Tools Positively Impact E-Marketing Strategies.*

The Conceptual Research Model is to be used to explain the relationship between Marketing Intelligence, Business Intelligence Tools, and E-Marketing Strategies in the digital era. It should show how Business Intelligence Tools will act as a driver to enhance E-Marketing strategies by leveraging data-driven insights. The model depicts the flow of information and its impact on decision-making in digital marketing. In essence, it tries to bring out the critical role of Business Intelligence in shaping effective E-Marketing strategies.

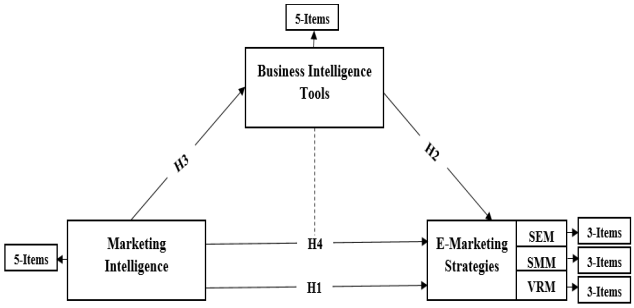

Fig. 1. Conceptual Research Model

4. Methodology

4.1. Research Design and Pilot Study

This research also employs a quantitative research design whereby a survey method of cross-section is used to collect data from employees in firms operating in Jordan, such as Amazon, Marka VIP, and Khazanti. In this regard, the quantitative approach can test hypotheses and find out the relationships between the variables through statistical methods. A pilot test has been conducted with 30 respondents to see the clarity, relevance, and reliability of the items being measured. The pilot study refined the survey instrument, ensuring the questions were understood and adequately captured the constructs intended to be measured (Cheah et al., 2024).

4.2. Population and Sample

The target population consists of employees working in marketing and business intelligence roles in companies operating in Jordan's digital market sector. The sampling frame included well-established organizations such as Amazon, Marka VIP, Khazanti, and other companies utilizing digital marketing strategies. This was the purposive sampling technique, with an aim to achieve participants who were experienced and knowledgeable about marketing intelligence, business intelligence tools, and e-marketing strategies. The final sample size was 317 employees; this already surpassed the minimum for SEM analysis, thus warranting the statistical power necessary for hypothesis testing (Purwanto, 2021).

4.3. Measurement Tools

The constructs in this study were measured using validated scales adapted from previous research to ensure reliability and validity. Each construct was assessed using multiple items measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree):

Marketing Intelligence: Five Items focused on the extent of systematic data collection, competitor analysis, and market trend evaluation. Example item: "Our organization regularly collects market data to identify customer preferences" (Aripin et al., 2022; Ismaeel et al., 2023; Lies, 2019).

Business Intelligence Tools: Five Items measured the frequency, effectiveness, and impact of BI tools on decision-making processes. Example item: "We use advanced analytics tools to analyze customer data and improve marketing strategies" (F. Awamleh et al., 2024; Maaitah, 2023; Nogués & Valladares, 2017).

E-Marketing Strategies: Nine Items assessed the three items of Search Engine Marketing, three items of Social Media Marketing, and three items of Virtual Reality Marketing. Example item: "Our e-marketing campaigns are tailored to meet the needs of specific customer segments" (Dutta et al., 2024; Yan et al., 2020).

4.4. Data Collection Procedures

Data were collected through an online survey distributed to the selected participants via email. The survey link was accompanied by a cover letter explaining the study's purpose, ensuring confidentiality, and requesting informed consent. The data collection process spanned four weeks, with follow-up reminders sent to enhance response rates. The collected data were reviewed for completeness, and incomplete responses were excluded from the analysis (Ringle et al., 2015).

4.5. Data Analysis

The PLS-SEM was used to test the research model using Smart PLS 4. Descriptive statistics were used to summarize demographics, and Cronbach's alpha, composite reliability, AVE, and discriminant validity examined reliability and validity. In addition, about the structural model analysis, direct and mediated relationships were tested, and the model fit indices such as SRMR and NFI validated the strength of the model. This approach has made sure that the hypotheses are tested and insights are derived appropriately(Cheah et al., 2024; Ringle et al., 2015).

5. Results

The findings of the present study offer empirical evidence for the associations between marketing intelligence, business intelligence tools, and e-marketing strategies. The constructs were analyzed in terms of reliability and validity through elaborate statistical tests, and the hypothesized associations were tested by using SEM. Now, the findings are discussed in the subsections below together with the respective tables.

5.1. Reliability and Validity of Constructs

Reliability and validity tests showed that all the measurement scales were robust, with Cronbach's alpha and CR greater than the threshold value of 0.70, and with AVE values also greater than 0.50 to meet convergent validity criteria (Cheah et al., 2024).

Table 1
Reliability and Validity of Constructs

Construct	Code	Loading	α	CR	AVE
Marketing Intelligence	MI1	0.84	0.85	0.88	0.62
	MI2	0.86			
	MI3	0.88			
	MI4	0.76			
	MI5	0.74			
Business Intelligence Tools	BIT1	0.81	0.83	0.86	0.58
	BIT2	0.89			
	BIT3	0.87			
	BIT4	0.91			
	BIT5	0.88			
E-Marketing Strategies	SEM1	0.85	0.88	0.91	0.65
	SEM2	0.73			
	SEM3	0.77			
	SMM1	0.78			
	SMM2	0.86			
	SMM3	0.79			
	VRM1	0.78			
	VRM2	0.83			
	VRM3	0.77			

5.2. Discriminant Validity

Discriminant validity was assessed using the Fornell-Larcker Criterion and HTMT ratios. Both methods confirmed that the constructs were distinct, as the square root of AVE for each construct exceeded its correlation with other constructs, and HTMT ratios were below the threshold of 0.85(Ringle et al., 2015).

Table 2
Discriminant Validity (Fornell-Larcker Criterion)

Construct	Marketing Intelligence	Business Intelligence Tools	E-Marketing Strategies
Marketing Intelligence	0.79	0.68	0.71
Business Intelligence Tools	0.68	0.76	0.70
E-Marketing Strategies	0.71	0.70	0.81

HTMT Ratios in Table 3 present that constructs are different from each other since all values (ranging from 0.79 to 0.84) are below the common threshold of 0.90 regarding discriminant validity. Nevertheless, these moderate correlations reflect a signal of an indication of partial overlap among Marketing Intelligence, Business Intelligence Tools, and E-Marketing Strategies (Cheah et al., 2024).

Table 3
Discriminant Validity (HTMT Ratio)

Construct Pair	HTMT Ratio
Marketing Intelligence → Business Intelligence Tools	0.79
Marketing Intelligence → E-Marketing Strategies	0.82
Business Intelligence Tools → E-Marketing Strategies	0.84

5.3. Path Coefficients and Hypothesis Testing

All hypothesized relationships were supported. Marketing intelligence had a significant positive impact on e-marketing strategies, while business intelligence tools also directly influenced e-marketing strategies. Additionally, business intelligence tools mediated the relationship between marketing intelligence and e-marketing strategies (Cheah et al., 2024; Ringle et al., 2015).

Table 4
Path Coefficients and Hypothesis Testing

Hypothesis	Path Coefficient	t-Value	p-Value	Result
Marketing Intelligence → E-Marketing Strategies	0.42	8.54	0.030	Supported
Business Intelligence Tools → E-Marketing Strategies	0.48	9.21	0.019	Supported
Marketing Intelligence → Business Intelligence Tools	0.56	11.02	0.001	Supported
Marketing Intelligence → Business Intelligence Tools → E-Marketing Strategies	0.27	7.34	0.000	Supported

5.4. R-Squared Values

The R-squared values indicate a strong predictive power of the independent and mediating variables for e-marketing strategies (Ringle et al., 2015).

Table 5
R-Squared Values

Dependent Variable	R-Squared
Business Intelligence Tools	0.32
E-Marketing Strategies	0.64

5.5. Mediation Analysis

The mediation analysis confirmed that business intelligence tools partially mediated the relationship between marketing intelligence and e-marketing strategies. The variance accounted for (VAF) indicated that 48% of the total effect of marketing intelligence on e-marketing strategies was mediated by business intelligence tools. Direct Effect: The direct path from marketing intelligence to e-marketing strategies remains significant, indicating a strong standalone influence. Indirect Effect: The mediation path through business intelligence tools contributes 0.27 to the total effect, showcasing their pivotal role in bridging the relationship. Total Effect: The combined influence (0.69) illustrates the comprehensive impact of marketing intelligence when complemented by BI tools. Mediation Type: The partial mediation confirms that while business intelligence tools play a critical role, marketing intelligence still has a direct influence on e-marketing strategies (Cheah et al., 2024; Ringle et al., 2015).

Table 6
Mediation Analysis (Variance Accounted For)

Path	Direct Effect	Indirect Effect	Total Effect	VAF (%)
Marketing Intelligence → E-Marketing Strategies (via Business Intelligence Tools)	0.42	0.27	0.69	48%

5.6. Model Fit Indices

The model fit indices confirmed the robustness of the structural model. The SRMR value was below 0.08, indicating a good fit and the NFI value was above the acceptable threshold of 0.90 (Cheah et al., 2024).

Table 7
Model Fit Indices

Index	Value	Threshold
SRMR	0.07	<0.08
NFI	0.91	>0.90

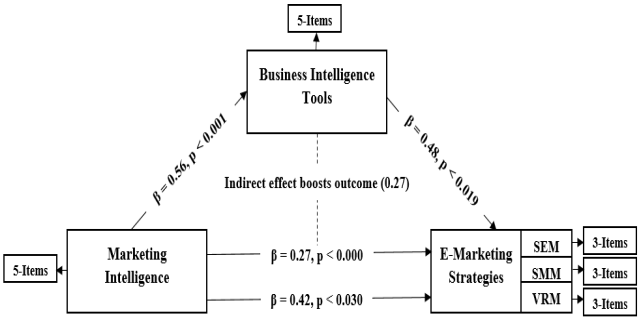

Fig. 2. Structural Model

6. Discussion

The results show a significant positive impact of marketing intelligence on e-marketing strategies ($\beta = 0.42$, $p < 0.030$). This finding aligns with studies by (Alghizzawi, Ahmed, et al., 2024; Barbosa, 2024), which highlighted that marketing intelligence enhances decision-making, targeting, and campaign effectiveness in digital contexts. However, some, such (Dutta et al., 2024; El Koufi et al., 2024), indicate that this effect would be minimal in highly competitive markets if one fails to interpret data properly. This again reiterates the importance of skilled analysis hand in hand with marketing intelligence (Hidayati et al., 2024).

Business intelligence tools demonstrated a strong positive effect on e-marketing strategies ($\beta = 0.48$, $p < 0.019$). This supports findings by (Lasi, 2021; Maaitah, 2023), who showed that BI tools provide actionable insights, optimizing marketing performance. In contrast, research by (Nogués & Valladares, 2017; Paul & Rakshit, 2021), found that the effectiveness of BI tools is diminished without adequate organizational support or integration into workflows. These results underscore the importance of robust infrastructure to maximize BI tools' potential (Awamleh et al., 2024). The mediating effects of the business intelligence tools between marketing intelligence and e-marketing strategies were significant. Thus, ($\beta = 0.27$, $p < 0.000$) endorse this relationship according to the findings of (Dwiwijaya, 2024; Hidayati et al., 2024; Maaitah, 2023), that BI tools act to amplify the utility of marketing intelligence towards making useful strategies. On the other hand, (Nogués & Valladares, 2017; Potwora et al., 2024), have argued that reliance solely on BI tools without the intention of continuous updating grows negative adaptability. This evidence shows that dynamic, up-to-date BI systems are required for competitive advantage to be sustained (Sulistyaningsih et al., 2024; Ward et al., 2023). Overall, the strength of the model is very high, as explained by the R^2 of 0.64 concerning e-marketing strategies. This confirms the work done in previous studies, such as (Hussein, 2024; Jamil et al., 2020), on integrated intelligence tools that had a similar predictive power. On the other hand, (Mavutha, 2024; Potwora et al., 2024), challenge the generalization ability of such a model on the ground that contextual factors, including market types and company size, may cause issues with its applicability. This resonates with the need for tailoring intelligence systems to specific organizational contexts (Sulistyaningsih et al., 2024).

Academic implications, this research added to the existing literature by including marketing intelligence, business intelligence tools, and e-marketing strategies into one comprehensive model to analyze the interactions between these three(Ismaeel et al., 2023; Lies, 2019; Sulistyaningsih et al., 2024). The theoretical gaps that this paper bridges include explaining the mediating effect of BI tools in showing how the intelligence systems ensure e-marketing success (Maaitah, 2023; Mehralian & Khazaee, 2022). Additionally, this study reinforces the inclusion of PLS-SEM in analyzing relationships that have complexities; hence, justifying the need for the inclusion of more similar approaches in the future (Paul & Rakshit, 2021; Purwanto, 2021). It also highlights the role of digital intelligence within contemporary marketing theory. Finally, this research contributes by testing these constructs in the Jordanian market that might provide insights into emerging economies (Falahat et al., 2020; Hussein, 2024; Vdovichena et al., 2024). Practical implications, the findings contribute to actionable recommendations that could be put into practice by organizations seeking to enhance e-marketing strategies through investments in marketing intelligence and BI tools (F. Awamleh et al., 2024; El Koufi et al., 2024). Managers should be encouraged to embed BI systems within marketing workflows for maximum data-driven decision-making efficiency in campaigns (Dutta et al., 2024; Jamil et al., 2020). The results thus indicate that the management needs to engage in necessary training and resourcing, especially in using such tools (Hussein, 2024). Besides, the present study has also highlighted the need for

customizing the systems of intelligence according to particular business needs to deliver better market time (Alghizzawi, Ezmigna, et al., 2024). This study provides a guideline on how companies in emerging markets can use digital intelligence as a competitive weapon (Sulistyaningsih et al., 2024; Ward et al., 2023).

7. Limitations

Several limitations need to be declared with this study. First, it is context-specific, as the focus falls on organizations in Jordan; thus, the generalization of findings outside other cultural or economic contexts may not be appropriate. Further, the cross-sectional research design does not allow any establishment of causal inferences across time because data were captured at one instance. It relies on self-reported data, introducing potential biases, including social desirability that could affect the reliability of the results. Moreover, the study examined broadly the usage of Business Intelligence tools without focusing on specific technologies that could provide more granular insights into their various uses.

8. Conclusion and Future Direction

The findings have therefore confirmed that both marketing intelligence and business intelligence tools play an important role in setting e-marketing strategies. Particular findings prove that business intelligence tools play an integral moderating role that improves the effectiveness of marketing intelligence in enhancing e-marketing performance. This suggests how organizations may integrate these components to better optimize their digital marketing, support decision-making, and be more competitive within a dynamic environment. It also acknowledges several limitations, including the fact that its findings relate to Jordanian organizations only, the research design is cross-sectional, and that not all BI tools are discussed in detail. Longitudinal studies in subsequent research are indicated to study the long-term effects of these variables for an accurate causal relationship. The research expanded to organizations from various cultural and economic milieus would yield a better understanding of the global validity of such findings. Future research can also analyze other types of business intelligence tools and their actual impacts on emergent e-marketing strategies. Lastly, since technology is evolving at a rapid rate, it would be beneficial to research how new emerging technologies such as AI and machine learning will continue to influence the relationship between marketing intelligence and e-marketing strategies.

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