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Impact of Social Networks Safety on Marketing Information Quality in the COVID-19 Pandemic in Saudi Arabia*

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Abstract

The study aimed to investigate the impact of social networks safety (SNS) on the marketing information quality (MIQ) during the COVID-19 pandemic in Saudi Arabia. The study examines the statistical differences in social networks safety SNS and marketing information quality MIQ according to the demographics such as age, sex, income, and education. For this study purpose, information security and privacy are two components of social networks safety. The research materials are website resources, regular books, journals, and articles. The population includes all Saudi users of social networks. The figures show that active users of the social network reached 25 Million in 2020. The snowball method was used and sample size is 500 respondents and the questionnaire is the tool for the data collection. The Structural Equation Modelling SEM technique is used. Convergent Validity, Discriminate Validity, and Multicollinearity are the main assumptions of structural equation modeling SEM. The findings show the high positive impact of SNS networks safety on MIQ and the statistical differences in such variables refer to education. Finally, the study presents a set of future suggestions to enhance the safety of social networks in Saudi Arabia.

1. Introduction

With technological advancements and the revolution of information and communication, security and privacy are becoming increasingly important concepts. These concepts date back to 1997 when social networks became a legal construct

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(Boyd & Jenkins, 2006). Social networks have become one of the vital tools for sending long-distance visual and audio data in a short time. Social media platforms have made it possible to exchange interactive information in a virtual community quickly and easily (Liang & Mackey, 2011).

Social networks include a number of useful features that have made them one of the most talked-about topics of the twenty-first century (Wibowo et al., 2021; Jadoon, 2014). Many research concluded that privacy and security are among the challenges that social networks will face in the future (Chang et al., 2017). These challenges will remain, despite the policies and procedures of protection. Social media sites include a large amount of sensitive information that is difficult to manage (Jadoon, 2014). This has become subject to abuse, hacking, exploitation, and illegal practices Through social networks, unethical privacy practices have harmed credibility, trust, and security (Chang et al., 2017).

Because of this, many schools of thought and consumer protection movements have looked at the ability of social networks to keep stored information and user details accurately and correctly (Wibowo et al., 2021). In this discussion, the literature distinguishes between ordinary personal information posted on the electronic wall and

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sensitive personal information (Liang & Mackey, 2011). The first type is controllable and easy to access, but the second type is unpublished and difficult to control (Trepte et al., 2017). The literature suggests some practices associated with privacy violations like personal identity theft, physical stalking, online embarrassment, bullying, extortion, sex discrimination, threats, and distortion of user behavior (Park & Kim, 2020), as well as information confidentiality disclosure (Min & Kim, 2015), and content distortion (Lee & Choi, 2019).

From a marketing perspective, businesses have used social networks for communication with customers, sharing ideas, discussions, and evaluations, etc. It also creates the brand reputation, customer experience, and brand preferences (Yang et al., 2016). Other studies add that networks increase the positive e-WOM (Kim et al., 2016), consumer awareness as well as buying intents (Moran & Muzellec, 2014).

Many consumers perceive social media to be a source of complication, difficulty, and concern in their life (Wibowo et al., 2021). This perception alludes to the period of social media, when data loss, hacking, and cyberbullying were commonplace. The use of social media to threaten the privacy of others has increased (Mutuku, 2017). Unsatisfied consumers use social media to spread negative comments about the brand. Extortion of personal information such as phone numbers, addresses, workplaces, passwords, credit card numbers, and purchasing histories is becoming more common. Nowadays, social media become a powerful tool in human life and it has a great power to destroy the business reputation (Mutuku, 2017).

Because of the low level of safety on social media, online content such as recordings, images, videos, and advertising is on the rise. Experiences show that easy access to videos and ads of tobacco companies was vital in encouraging smoking among adolescents. Poor information was responsible for drug marketing (Kim et al., 2016) and access to harmful pharmaceutical descriptions, herbs, and drugs (Liang & Mackey, 2011). So, Consumption habits, purchasing beliefs and consumption patterns are affected by social media.

Controlling and regulating marketing information via social media is impossible due to a lack of authority (Rivadeneyra & Lebo, 2008). Anyway, marketing information via social networks should be safe. Sharing inaccurate information and unreliable sources must be stopped (Lee & Choi, 2019). The successful decision process depends on the safety, privacy and protection of information via the Internet (Zlatolas et al., 2015).

This research discusses social networks safety during the COVID-19 pandemic. All studies confirm that pandemic negatively affects the world economy with losses reaching $9 trillion. Saudi Arabia is one of these countries affected by such conditions. The local authorities reacted effectively to the WHO circumstances and have executed a precautionary procedure and complete lockdown for several months. The paper aims to resolve the impact of social network safety on the marketing information quality during the COVID-19 in KSA.

2. Literature Review

2.1. Social Networks Safety

Social networks play a vital role in shaping human interaction and communication and allow rapid and easy access anywhere worldwide. Meanwhile, it becomes an essential part of a user's life, creates two-way communication, and provides interactive changeable content of the virtual community (Zeng & Gerritsen, 2014), so social relations become overlapping and tangled (Baruah, 2012). Social networks offer an opportunity to formulate knowledge, reach others, and influence the host societies (Hallam & Zanella, 2017).

Interactive communication is positively affected by Massive technical and technological advancements in social network applications (Boyd & Jenkins, 2006). Personal data as images, videos, demographics, and contact information are a result of such communication. Interactive communication is a rich source of information, idea generation, and creating virtual community interactions (Wang et al., 2015). Through this type of communication, individuals can share their perspectives and life experiences and foster social dialogue (Maurer & Wiegmann, 2011).

Despite all of the benefits of social networks listed above, multiple studies have confirmed the lack of security and privacy when using them. The lower security and privacy via networks refer to variations in virtual human behavior, increasing trust towards other users, accepting friendships, and extreme trust in a friend (Min & Kim, 2015; Pasternak et al., 2017).

According to research, many teens report that social media and social networking services are important to building relationships and friendships. With this fact comes privacy concerns such as identity theft, stealing of personal information, and data usage by advertising companies. Among all other age groups, in general, the most vulnerable victims of private-information-sharing behavior are preteens and early teenagers (Lee & Choi, 2019). According to research results, many adolescents say that social media and its services are vitally important to building relationships and friendships. They decide that privacy threats come with identity and personal information violation and data use through advertising companies (Liang & Mackey, 2011). Besides using social media to connect, teenagers use social networking services for political purposes and obtaining information. However, sometimes social media can become the place for harassment and disrespectful political debates

that fuels resentment and raises privacy concerns (Boyd & Jenkins, 2006).

The concept of social network safety is a relatively new one, and it is the outcome of constant technological and communication advancements. Information security and information privacy have been distinguished in studies. While one school of thought considers privacy to be a component of information security, another school of thought viewed information security to be a part of user privacy, and the best school combines the two principles. Some evidence believes that confidentiality is an alternative for privacy.

2.2. Research Hypothesis

Businesses used social media to engage with customers, share ideas, discuss and review products, and shape brand perceptions (Kim et al., 2016). So, they allowed consumers to create fancy pages, disseminate information, and share feedback, experience, and brand preferences (Yang et al., 2016). Over time, social networks enhanced the positive e-WOM (Kim et al., 2016), building consumer awareness, attracting new customers (Moran & Muzellec, 2014), and formulating buying intents and purchasing decisions (Park & Oh, 2012). Over time, social networks enhanced the positive e-WOM (Kim et al., 2016), building consumer awareness, attracting new customers (Moran & Muzellec, 2014), and buying intents and purchasing decisions (Park & Oh, 2012). Reaching high levels of marketing efficiency relies on security via social networks. Results say that security is a function of reliable and accurate sources of information (Lee & Choi, 2019).

Privacy violation has many forms as phone numbers, addresses, workplaces, and passwords (Öztürk, 2018). The outflow of sensitive information, piracy, and cyberbullying are remarkable (Boyd & Jenkins, 2006). Finally, social networks have become a source of inaccurate, malice, and false information, and many times have been destroying the business reputation, the family, and the user itself (Tufekci, 2008; Zlatolas et al., 2015). Easy access to sensitive marketing information reduces safety. In conclusion, the marketing information quality determines the efficiency of a decision (Jadoon, 2014). For example, studies indicate that 40% of marketing decisions failed in achieving the market goals because of the poor quality of information (Smith et al., 2007). Other studies believe that 54% of marketing managers have inaccurate, incomplete, and poor information (Kessler, 2007).

Reliable marketing information is an input for the rational buying behavior of consumers. Reliable information is used to manufacture products, make purchasing decisions, improve the consumer experience (Bicen & Cavus, 2012), improve social awareness and brand image (Hassanein & Head, 2007). Customer preferences are precisely determined by reliable marketing information (Wang et al., 2015).

This kind of information facilitates product dissemination, best price, impulsive buying and enhances the purchasing decision (Park & Oh, 2012).

Finally, unreliable marketing information via social networks has increased in the COVID- 19 pandemic. Many users exploit social networks for comments, sharing videos, press news, television meetings, and show off purposes. These behaviors have a negative impact on local procedures adopted by health authorities. Other uses distorted health messages and disseminating a pessimistic climate in the virtual space. The chaos of information and random behavior, as well as uncertainty, have negatively affected the consumer. He became a vulnerable to abuse and privacy threats. The cost of transactions and buying decisions increased as well (Kim et al., 2016).

H1: There is a statistical impact of social networks safety on the marketing information quality during the COVID-19 pandemic in Saudi Arabia.

3. Research Method and Materials

3.1. The Population and Sampling

The population consists of all active users of social networks in Saudi Arabia. The figures indicate that users reached 25 Million in 2020 (www.reportal.com). The sampling technique is non-probability type. The snowball method is used. The unit of analysis is the Saudi adult who has an active account on social networks in Saudi Arabia. The total required sample size is 500. The collected responses reach 388 and account for 77.6% of the total sample size. The quantitative method was used as well.

3.2. Research Instrument and Measurement

The questionnaire is the tool of data collection and it has closed-ended questions. The materials used are specialized books, online journals and articles, website resources, and theses. The measurement consists of 13 items for independent and dependent variables. Likert Five Scale is used, it ranked from 1 and 5. The two extreme points are very high with the value 5 and very low with value 1. For accuracy purposes, the relative scale was developed. (1) 5–4.2 is very high, (2) less than 4.2–3.6 is high, (3) less than 3.6–2.4 is average, (4) less than 2.4–1.6 is low, and (5) less than 1.6 is very low. The data analysis technique is Structural Equation Modelling SEM. The assumptions of this technique including convergent validity, discriminate validity, and multicollinearity (Tebeh, 2008).

The independent variable is social networks safety. It consists of 8 items (Table 1). The responses are high according to the mean value of (3.7) with an S.D of (1.109).

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62% of respondents believe that safety is high. Social network safety contains couple of independent variables**.** Security has 4 items. The responses are high according to the mean value of (3.7) with an S.D of (1.119) and 59% of respondents believe that. Privacy has 4 items. The response level is high based on the mean value of (3.69) with an S.D of (1.12) and 65% of respondents believe privacy exists. The dependent variable is marketing information quality. This variable has 5 items and responses varied between high and very high (Table 2). The mean is (4.153) with an S.D of (0.855). Marketing information quality was high according to 78% of respondents.

3.2.1. Construct Validity and Reliability

It consists of three construct tests: Individual Item Validity measures the level of consistency between a set of items that measure the same construct. The acceptable value is above 0.7. Table 3 indicates that all items are statistically reliable.

Composite Reliability (CR) says that the values are above 0.7 for the latent variables. Table 3 shows that all latent variables are accepted (Hair et al., 2010). Average Variance Extracted (AVC) says that the minimum acceptable value is 0.5, and T able 3 indicates that test values are statistically accepted (Henseler & Sarstedt, 2013).

3.2.2. Discriminant Validity

It indicates that the power of explanation for each item in the current latent variable is better than other variables (Fornell & Lacker, 1981). Table 3 shows that the discriminant validity for each item in the latent variable is distinctive and unique.

3.2.3. Fornell-Larcker Criterion and VIF

Fornell-Larcker Criterion indicates that the correlation of the independent variable in the current place is above

Table 1: Descriptive Statistics of Independent Variables

Item	Responses%					S.D	Mean	Decision
	VL	L	M	H	VH			
Social networks offer the possibility of restricting consumer-generated content (integrity).	4.4	9.1	26.4	30.3	29.3	1.11929	3.7047	High
Social networks protect the brands' reputation from abuses (integrity).	3.9	11.4	31.1	27.7	25.9	1.10531	3.6036	High
Social networks offer the advantage of protecting consumer personal details from fraudsters.	3.1	10.9	26.2	31.6	28.2	1.08532	3.7098	High
Social networks provide easy reach to information at any time (availability).	3.4	7.5	25.9	30.6	32.6	1.07624	3.8161	High
1. Security:	3.7	9.725	27.4	29.967	29	1.09654	3.7086	High
Social networks offer the confidentiality of the information and not allowing anyone to disclose sensitive personal and behavioral information.	0	1	13.4	24.9	35	1.15943	3.7642	High
Social networks provide a technical design capable of avoiding espionage and cyber hacking.	0	3.1	29.8	52.5	14.5	1.21298	3.4896	High
Consumer social networks provide rules and policies for consumers to control information from theft and loss.	1.6	3.9	13	31.1	21.6	1.07409	3.6788	High
Social networks provide a control on the quality of sending marketing information.	1.3	4.4	14	29.8	50.5	1.04661	3.8627	High
2. Privacy:	0.725	3.1	17.55	34.575	30.4	1.123278	3.699	High
Social Networks Safety.	2.2125	6.4125	22.475	32.271	29.7	1.109909	3.7037	High

Table 2: Descriptive Statistics of Dependent Variable

Item	Responses%					S.D	Mean	Availability
	VL	L	M	H	VH			
Social networks provide sufficient information on products that satisfy my needs.	0	2.3	16.8	34.7	46.1	0.8148	4.2461	Very High
Social networks provide adequate information on the quality of products presented to me.	1.3	4.4	20.7	37	36.5	0.9309	4.0311	High
Social networks provide sufficient information on the advantages of products presented to me.	0	2.1	22.8	37.6	37.6	0.8228	4.1062	High
Social networks provide sufficient information on how to obtain the products in front of me.	0	3.6	16.6	37.8	42	0.8364	4.1813	High
Social networks are an easy tool to reach information quickly.	1	2.8	15.3	36.3	44.6	0.8751	4.2047	Very High
Marketing Information Quality.	0.46	3.04	18.44	36.68	41.36	0.856	4.1539	High

Table 3: Summary of Results of Measurement Model

Construct	Items	Factor Loading - Discriminate Validity			AVE	CR
		SNS	SNP	MIQ		
Social Networks Security (SNS)	SNS1	0.841	0.629	0.487	0.722	0.912
	SNS2	0.843	0.631	0.576		
	SNS3	0.912	0.724	0.536		
	SNS4	0.780	0.612	0.458		
Social Networks Privacy (SNP)	SNP1	0.595	0.858	0.569	0.704	0.905
	SNP2	0.681	0.861	0.500		
	SNP3	0.676	0.832	0.522		
	SNP4	0.729	0.875	0.622		
Marketing Information Quality (MIQ)	MIQ1	0552	0.514	0.815	0.674	0.911
	MIQ2	0.476	0.517	0.822		
	MIQ3	0.579	0.606	0.889		
	MIQ4	0.580	0.592	0.840		
	MIQ5	0.510	0.395	0.769		

the other coefficients in the matrix (Esposito et al., 2010). Table 4 indicates that the correlations for latent variables are more than other values. So, there is no latent relationship between one variable and the other variable in the matrix.

VIF is a test of multicollinearity. It is the level of correlation between two or more independent variables in the regression model (Montgomery et al., 2012). The statistical rule decides that multicollinearity between independent variables is weak.

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Table 4: Fornell-Larcker Criterion and VIF

Criterion	Construct	SNS	SNP	MIQ
Fornell Larcker	Social Networks Security SNS	0.850		
	Social Networks Privacy SNP	0.760	**0.839**	
	Marketing Information Quality MIQ	0.655	0.646	**0.821**
VIF	**Social Networks Security**		**Social Networks Privacy**	
	2.372		2.372	

Table 5: Path Coefficients of First Hypothesis

Relationship	Std. Beta	Std. Error	*t*-value	*P*-value	Decision	f^2	R^2	Q^2	GoF
SNS → MIQ	0.376	0.110	4.133	0.00	Moderate Positive Relationship	0.111	0.512	0.340	0.824
SNP → MIQ	0.381	0.103	3.872	0.001	Moderate Positive Relationship	0.113			
Safety → MIQ	0.716	0.046	15.415	0.00	High Positive Relationship	1.050	0.507	0.344	0.835

Significant at P_0* < 0.01; Significant at P_0** < 0.05.

4. Results and Discussion

4.1. Empirical Results

The independent variable is marketing information quality. It contains a couple of independent variables: security and privacy. Table 5 shows that the *p*-value measures the directional relationship between independent and dependent variables in the structural model. Statistics say that a *p*-value low of 5% means the directional relationship between variables. So, there is a positive relationship between MIQ, security, and privacy of social networks. Information security has a higher correlation with MIQ. The final result confirms the positive relationship between safety and MIQ via social networks (0.716). The f^2 explains the effect size of the SNS on the MIQ (Cohen, 1988). The statistical rule says that f^2 above 0.35 means a large effect while less than 0.15 means a small effect of SNS (Cohen, 1988). Table 5 explains that security affects MIQ. Each sub-variable (Security and Privacy) has a small size effect on MIQ.

The coefficient of determination (R^2) reveals the explanatory power of the independent variable for the dependent variable variations (Elliot & Woodward, 2007). Table 5 indicates the small difference between sub-independent variables in R^2 values. Safety explains 50.7% of variations in the MIQ. Q^2 is the predictive power of the regressed model. The statistical rule decides that the value above 0.00 means a predictive power for the model (Wold, 1982). Thus, findings show the high predictive power for the model. Finally, the Goodness of Fit test (GoF) measures the performance of the regression model (Henseler &

Sarstedt, 2013). The statistical results of table 5 indicate that the regression model is highly appropriate (Wetzels & Odekerken, 2009).

To test the 2nd and 3rd hypotheses path analysis technique and the demographics as moderators. The statistical method uses a *p*-value to decide the level of differences. The statistical differences can prove when the *p*-value is less than 5%. Table 6 indicates no significant differences in the perceived social networks safety according to age, sex, and income. The differences are according to education level only.

4.2. Discussion and Recommendations

The results found that 62% of users have agreed that social networks were save in COVID-19 since March 2020. For research purposes, safety includes security and privacy. Information security relies on confidentiality, integrity, and availability. 59% of users believe that information security is high, and 55.3% believe the integrity via social networks. Social networks can protect online content created by 59.6% of users. 53.6% of users see that integrity via social networks is high and can protect brand reputation from abuse. The high integrity and availability improved confidentiality for 59.8% and 63.2% of social networks' users, respectively.

Saudi Arabia has advanced technical, legal, and administrative systems to fight cybercrime, informatics, and fake transactions. It has established the Protection Electronic Information Center for security purposes and meets the e-government requirements. Saudi Arabia has attained a high degree of national security and a secure environment

Table 6: Path Coefficients of Second and Third Hypotheses

A. Second Hypothesis					
Relationship	Std. Beta	Std. Error	*T*-value	*P*-value	Decision
AGE → Safety	−0.001	0.001	0.598	0.55	No Significant Differences
SIX → Safety	0.00	0.002	0.152	0.879	No Significant Differences
INCOME → Safety	0.00	0.002	0.274	0.784	No Significant Differences
Education → Safety	0.013	0.083	2.128	0.020	There is a Significant Differences
B. Third Hypothesis					
Relationship	Std. Beta	Std. Error	*T*-value	*P*-value	Decision
AGE → MIQ	0.096	0.08	1.198	0.232	No Significant Differences
SIX → MIQ	0.096	0.08	1.204	0.229	No Significant Differences
INCOME → MIQ	0.151	0.096	1.564	0.118	No Significant Differences
EDUCATION → MIQ	0.262	0.108	2.520	0.029	There is a Significant Differences

Significant at P_0* < 0.01; Significant at P_0** < 0.05.

for intellectual property rights, data protection, and population safety through legal, technical, and administrative information security. From an economic and security standpoint, the government can maintain tight control over information security practices that could lead to cyber-terrorism, financial fraud, theft, and piracy. Information security is dependent on MIQ systems and up-to-date data. Information is one of a company's marketing assets that must be protected against competitors and customers distorting or exploiting it. Information security is a tool of the strategic marketing mix that affects the overall marketing success and business competencies. These elements confirm the efficiency of the procedures, the legislation, and the technical measures of information security in Saudi Arabia.

Information privacy is the 2nd pillar of safety. 59.5% of users consider the marketing, personal, and behavioral data are own issues. 67% of users believe that relationships between privacy and technical matter can reduce espionage and cyber hacking. 52.7% of users say that social networks in Saudi Arabia provide clear rules and policies to protect information from being stolen and lost. So 80.3% of such users approved marketing information from others. Accordingly, 65% of users say that the privacy of marketing information during the pandemic was high. These findings are consistent with previous literature that supported privacy via social networks. So, there is an urgent need for information technology modernization and advancement (Bouguettaya & Eltoweissy, 2003). Ethical considerations play a vital role in promoting privacy via social networks. Therefore, the protection of human rights from exploitation via social networks is urgent. Low marketing information security is an obstacle for e-commerce and the e-marketing environment

(Taddei & Contena, 2013). Consumers have increased priorities to shop from stores that strictly adopted privacy policies (Tsai et al., 2013). Kusumawati et al. (2021) found that the e-services quality increased stickiness intent by 81.1% in COVID-19 time, compared to 61.2% before the pandemic.

As a result, the SNS has a high positive impact on the MIQ, and half a variation in the MIQ refers to safety. The future forecasting of consumer behavior heavily depends on the confidence and trust of social networks. This finding is consistent with studies that confirmed the strong positive relationship between the SNS and the MIQ. Another contribution resolved the differences in the SNS and the MIQ. The result concludes that differences in the SNS and MIQ refer to the educational level of the users. In contrast, other studies have found that such differences refer to gender and for women (Park et al., 2020).

According to previous findings, the study presents a set of recommendations and suggestions to strengthen SNS and improve the MIQ, which are as follows:

1. Social Network Verification. A sent text message to the email or mobile of the user. Approval means that images, videos, messages, and information are available for others.
2. Safety Updating. The user may be allowed to hide private contact data or any information at a given time. This information includes email, date of birth, mobile number. Updating safety may reduce hacking and avoid exploitation and illegal practices.
3. Creating Legislation: Laws and regulations via social networks determine the size and type of shared information by a third party. It is a solution

to protect information from malicious uses by marketers and salesmen. In addition, there is a need for control departments to monitor bias in the application of laws and regulations.

4. Special Conditions for Certain Users:
   - Heavy users of social networks.
   - Young people, the elderly, children, and women.
   - The place of residence, the social environment, and the degree of urbanization.
   - Personal qualities of the user such as educational level, type of job, etc.

5. Conclusion

This research paper discusses the impact of the SNS on the MIQ during the Covid-19 pandemic. Many economic, educational, commercial, and sports institutions were locked down. Social networks have become the way of entertainment and the source of information. Saudi cyberspace is crowding with millions of users. Now, 75% of the population has accounts and applications on social networks. The need for health and marketing information in this period doubled. Local governments used social media to improve communication and announce updated information. All health circumstances require using social networks for collecting, distributing, and sharing information with other users. There was a digital biased toward the educated, high-income, and heavy users of technology. But the government developed other options for less educated and less perceived people. Using social media and verifying reliable information has become a challenge. The ethical considerations in using social networks decreased. Verification is a challenge due to the low data mining, the intangibility of information, and the large size of data.

This study emphasized and confirmed the importance of initiatives and policies adopted by the Saudi government in the pandemic. The perceived awareness of Saudi people reduces the associated risks of security and privacy in such a pandemic. There were collaborative efforts to protect users from illegal practices such as extortion and hacking. As a result, there are no threats on the SNS in the COVID-19 pandemic. This level of safety is associated with a set of creative applications such as Tawakkalna and Sehhaty. These innovative applications improved information security and user privacy. The study concludes that the Saudi government was smarter at ensuring SNS, and users were more conscious of MIQ.

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