CYBERSECURITY RISK MANAGEMENT SKILLS NEED OF POSTGRADUATE BUSINESS EDUCATION STUDENTS FOR EFFECTIVE FRAUD DETECTION IN SOUTH-SOUTH PUBLIC UNIVERSITIES.

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Abstract

The study investigated cybersecurity risk management skills need of postgraduate Business Education students for effective fraud detection in South-South Public Universities. The study adopted descriptive research design. Two research questions were posed and two corresponding null hypotheses were formulated to guide the conduct of the study. The population of the study comprised of 386 postgraduate Business Education students in 11 public Universities in South-South Nigeria which also formed the sample. The instrument for data collection was a self-constructed questionnaire titled Cybersecurity Risk Management Skills and Effective Fraud Detection" (CYRIMASEFD) was used in eliciting responses from respondents for this study. The research instrument was validated by two Business Educators and one Measurement and Evaluation expert. Reliability level for the instruments was established using a test-re-test method. Pearson's Product Moment Correlation Coefficient was used to analyze the set of data and the reliability levels were established at a coefficient (r) of 0.84. Mean and standard deviation was used in answering the research questions while ANOVA was used in testing the hypotheses at 0.05% level of significance. The findings of the study revealed that to a high extent postgraduate Business Education students need cloud implementation management skill and risk identification management skill for effective fraud detection. Also, the results in hypotheses 1 and 2 shows that there is a significance difference among postgraduate students Reponses on cybersecurity risk management skills need for effective

fraud detection. It was recommended among others that; Universities should integrate practical cloud security courses into the curriculum to enhance Business Education students' ability, Institutions should collaborate with cybersecurity experts to provide workshops and seminars on emerging threats, Universities should establish cybersecurity labs where students can gain hands-on experience with fraud detection software, Universities should encourage students to participate in industry-led cybersecurity certification programs to strengthen their security awareness.

Keywords: Cybersecurity, cloud management skill, risk identification skill, fraud detection

Introduction

The increasing reliance on digital technologies in education, business and financial sector underscores the necessity for strong cybersecurity risk management skills among postgraduate Business Education students. To detect and prevent fraud effectively, students need to develop cybersecurity skills to protect financial data and ensure integrity in business operations, thereby maintaining relevance in today's competitive business landscape. According to Mizrak (2023) cybersecurity skills represent the essential qualifications and abilities required to pursue a career in fraud detection, as specialists collaborate within an organization's Information Technology (IT) department to safeguard data, networks, and systems from security breaches. Cybersecurity refers to the practice of protecting computer systems, networks, devices, and data from malicious attacks, unauthorized access, or damage. It encompasses technologies, processes, and practices designed to safeguard information and ensure the confidentiality, integrity, and availability of digital resources. The entire world particularly the banking industry has benefited from the dynamic pace and result oriented character of information technology, as well as its exponential multi-dimensional relevance, which continues to flex human activities in many fields and ages (Okiridu & Godpower, 2020). Cybersecurity risk management focuses on protecting computer systems, networks, and data from unauthorized access, theft, and tampering, a critical component of fraud detection. This field includes the implementation of practices, tools, and strategic measures to secure digital information and assets, which are vital for tackling fraud risks in a digital-first environment. Educational institutions particularly benefit from enhancing students' cybersecurity skills, as they address the unique challenges of managing sensitive data, protecting research information, and securing digital assets. Cybersecurity helps to build skills, knowledge, ethics, values and attitude that will help an individual to be able to face life challenges around them and function especially in fraud detection (Okiridu, Godpower & Kire, 2023).

Importance of Cybersecurity Risk Management Skills to Business Education Students

Cybersecurity risk management is very important for today's Business Education students, especially in a world driven by rapidly changing technology. Students preparing for careers in business must understand that cyber-related risks can affect both individuals and organizations, making them potential targets for cyber attackers. Even well-established businesses with a large customer base may fall victim to cyber-attacks if proper precautions are not taken (Sayyed, 2020). For Business Education students, lacking cybersecurity risk management skills could result in serious consequences when they join the workforce, such as data breaches, financial losses, reputational damage, and reduced organizational trust. Moreover, overreliance on basic security measures like antivirus software is no longer sufficient. Antivirus programs are only one aspect of risk management, and Business Education students must acquire broader cybersecurity competencies to safeguard digital resources, promote resilience, and remain relevant in modern business environments (Okiridu & Ogbosei, 2024).

Challenges of Acquiring Cybersecurity Risk Management Skills by Business Education Students:

1. Limited Exposure to Technology: Many Business Education curricula focus more on management and accounting courses, giving students less exposure to practical cybersecurity tools and applications.
2. Inadequate Infrastructure: Lack of access to modern computer laboratories, updated software, and secure internet facilities makes it difficult for students to practice cybersecurity skills.
3. Low Awareness and Interest: Some students may not see cybersecurity as directly related to their field, leading to a lack of motivation to develop such skills.
4. Shortage of Qualified Instructors: Few lecturers specialize in cybersecurity risk management within Business Education, which reduces the quality of teaching and learning.
5. Financial Constraints: Students may not be able to afford personal access to advanced learning platforms, certifications, or security tools needed to build practical skills.
6. Rapid Technological Changes: Cyber threats and security tools evolve quickly, making it challenging for students to keep their knowledge up-to-date.
7. Complexity of Cybersecurity Concepts: Cyber risk management involves technical knowledge (encryption, firewalls, penetration testing) that may be difficult for students with limited IT backgrounds.
8. Poor Integration into Curriculum: Cybersecurity is often treated as an optional or peripheral area rather than being fully integrated into Business Education programs.

9. Limited Industry Partnerships: Few opportunities for internships, workshops, or collaborations with IT security firms reduce students' chances of gaining real-world experience.
10. Attitudinal Barriers: Some students believe that cybersecurity is only the responsibility of IT specialists, making them neglect the importance of acquiring these skills (Godpower, Egbunefu & Onyeso, 2025).

Cloud Implementation Management Skill for Effective Fraud Detection

Cloud security safeguards customer orders, blueprints, and financial information. Breach of data and theft must be avoided at all costs to preserve customer trust and secure the assets that allow you to gain a competitive advantage. Cloud Implementation Management refers to the process of planning, deploying, and overseeing the integration of cloud computing services and infrastructure into an organization's existing IT environment. It involves ensuring that cloud solutions align with the organization's strategic goals, technical requirements, and operational needs (Okiridu, Godpower & Kire, 2023). Cloud Implementation Management Skills for Fraud Detection refers to the expertise required to effectively deploy, integrate, and manage cloud-based systems and technologies specifically designed to detect, prevent, and respond to fraudulent activities. These skills combine technical know-how, strategic planning, and domain knowledge in fraud detection to ensure seamless operation and effectiveness of cloud-enabled anti-fraud systems (Abdulrahman, 2019). The main advantage of cloud computing is its ability to address the various challenges and needs of the digital society. It allows businesses to focus on their core business while reducing their expenses and improving their operations. The advantages of cloud computing are numerous, such as its ability to reduce an organization's capital expenditures and improve its operational efficiency. It also enables them to respond quickly to changes in the market (Jakkani, Premkumar & Jayesh, 2023).

Risk Identification Management Skill for Effective Fraud Detection

Risk Identification Management refers to the systematic process of identifying potential risks that could negatively impact an organization's objectives, operations, or assets. It is a foundational element of risk management, enabling organizations to anticipate, analyze, and prepare for challenges before they occur. Risk Identification Management Skills refer to the abilities and expertise required to effectively identify, analyze, and document potential risks that could impact an organization's objectives or operations. These skills are critical for proactively addressing challenges and ensuring effective risk management strategies. Nguyen, Ngo and Le (2020) have found that the risk assessment process can reduce the risk of material misstatement in the stage of audit planning. The identification phase is usually performed using a number of tools such as internal organization

records, insurance policy checklists, risk analysis questions, flow process charts, financial statements analysis, firm performance reviews and interviews among others. However, Trotman and Wright in Apreku-Djan, Ameyaw, Kuma, Ahiale and Owusu (2022) argued that internal evidence is presented as fraudulent as it is under the control of management. Trotman and Wright in Apreku-Djan, Ameyaw, Kuma, Ahiale and Owusu (2022) therefore suggested that fraud risk assessments should also be based on external evidence related to business objectives. They argue that external evidence is very useful in detecting fraud and should therefore be included in the fraud risk assessment section. The identification phase is usually performed using a number of tools such as internal organization records, insurance policy checklists, risk analysis questions, flow process charts, financial statements analysis, firm performance reviews and interviews among others.

Fraud is a scourge that has severely affected Nigeria's banking industry and the economy as a whole. Its severe effects may be seen in the declining bank income statement and the nation's economic downturn. Badejo, Okuneye, and Taiwo (2018), opined that, since deceptive activities have been increasing recently, it appears that efforts to identify and eliminate fraud in the financial sector have been largely ineffectual. Nugraha and Bayunitri (2020), describes fraud as "intentional activity by one or more individuals among management, staff, or third parties that might result in a financial statement deceit." Manipulation, fabrication, or alteration of supporting documentation; asset misappropriation; fraudulent practices including the concealment or the absence of transaction consequences from records or documents; transaction documentation that is devoid of substance; and accounting standards that are distorted (Badejo et al., 2018). Fraud prevention is the process of identifying suspicious transactions in the banking industry and preventing them from inflicting financial or reputational harm to the clients or other financial institutions (FI). As online and mobile banking grows, more prevalent and financial institutions continue to digitize, it will become even more critical to have a solid fraud protection plan.

Fraud Detection is the process of identifying and preventing fraudulent activities in various contexts, such as financial transactions, identity theft, insurance claims, credit card fraud, or internal company misconduct. Fraud detection involves using a combination of technology, data analysis, employee awareness, and investigative techniques to identify suspicious activities, minimize financial losses, and protect an organization's reputation. Fraud detection involves the identification of a very fast fraud. Fraud detection is also a process of recognizing and evaluating anomalous patterns, activities, or behaviors in financial transactions, systems, or processes to detect possible cases of fraud or unauthorized activity (Godpower & Egbunefu, 2024).

The purpose of this study was to examined cybersecurity risk management skills needs of postgraduate Business Education students for effective fraud detection in South-South Public Universities. Specifically, the study sought to

1. Determine the extent to which postgraduate Business Education students in South-south public universities need cloud implementation management skill for effective fraud detection.

2. Determine the extent to which postgraduate Business Education students in South-south public universities need risk identification management skill for effective fraud detection.

The following research questions were raised to guide the study:

1. To what extent do postgraduate Business Education students in South-South public universities need cloud implementation management skill for effective fraud detection?

2. To what extent do postgraduate Business Education students in South-South public universities need risk identification management skills for effective fraud detection?

The following null hypotheses are formulated and was tested at 0.05 level of significance to guide the study:

1. There is no significant difference between federal and state universities postgraduate Business Education students in South-South universities on the extent to which students need cloud implementation management skill for effective fraud detection.

2. There is no significant difference between federal and state universities postgraduate Business Education students in South-South universities on the extent to which students need risk identification management skills for effective fraud detection.

Cybersecurity risk management is vital for mitigating threats across sectors, ensuring financial stability, safeguarding reputation, and maintaining competitive advantage. It offers scalable solutions, advanced security features, and compliance benefits to protect against cyber threats and fraudulent activities. Institutions, organizations, and businesses face increasing cyber threats, including phishing, data breaches, and identity theft. Key challenges include inadequate risk identification, limited knowledge of critical assets, weak investment in cybersecurity, and fragmented regulations. Complexities in cloud implementation, emerging technology threats, insufficient fraud detection knowledge, and the growing prevalence of remote work further

exacerbate these issues. The lack of expertise in cloud implementation, risk identification, on the part of universities postgraduate Business Education students create vulnerabilities and inefficiencies in addressing complex cybersecurity challenges, leaving organizations exposed to potential threats and crises. Every 39 Cyber-attack take place, business lose million and important documents are stollen and the world is desperately looking for protectors. Also, currently the world is in shortage of over 4million cyber security Experts (Skillsboost limited, 2025) and the global average annual cost of cybercrime is expected to increase from 8.4 trillion dollars in 2022 to more than 23 trillion dollars in 2027 (Governance Institute of Australia, 2024). To address these challenges, the study focuses on assessing cybersecurity risk management skills needs of postgraduate Business Education students for effective fraud detection

Methodology

The researchers adopted a descriptive survey research design for the study. The area of the study is delimited to federal and state universities in South-South Nigeria. The population for this study consist of three hundred and eighty-six (386) Business Education Postgraduate Students of 2025/2025 academic session from eleven (11) public Universities in South-South region of Nigeria which includes, University of Calabar (UNICAL), Cross River State University (CRUTH), University of Uyo (UNIUYO), Rivers State University (RSU), Ignatius Ajuru University of Education (IAUE), University of Port Harcourt (UNIPORT), Niger Delta University(NDU), Federal University, Otuoke (FUOTUOKE), Delta State University (DELSU), University of Benin (UNIBEN), and Ambrose Ali University, (AAU). The researchers adopted census method by using the entire population for the study. The justification for the adoption of the entire population for the study is that the researchers considered the population comfortable for the study The instrument for data collection was a self-structured questionnaire, titled “Cybersecurity Risk Management Skills and Effective Fraud Detection” (CYRIMASEFD). The questionnaire items were organized in a 5-point rating scale with a response option of Very High Extent (VHE-5points), High Extent (HE-4points), Moderate Extent (ME-3points), Low Extent (LE-2points) and Very Low Extent (VLE-1points). The instrument was validated by three experts; two lecturers from the Department of Business Education and one in Measurement and Evaluation all in Rivers State University, Port Harcourt. The researcher used test-retest method via Pearson Product Moment Correlation Coefficient (PPMCC) to determine the reliability of the instrument. The instrument was administered to thirty (30) postgraduate students in Michael Okpara University of Agriculture, Umudike which is not part of study.The reliability coefficient index of 0.84 was obtained, which indicates that the instrument was reliable and suitable for the study. Due to proximity the researcher engaged the services of five (5) assistants who helped to administer the instrument to the respondents. Out of three hundred and eighty-six (386) copies of the instrument distributed, 321

were completely filled and returned which accounts for 83% returned rate and used for data analysis. Data collected were analyzed using mean and standard deviation to answer the research questions, while the hypotheses was analyzed using one way Analysis of Variance (ANOVA) statistical tool with the aid of Statistical Package for the Social Sciences (SPSS) version 2023 at 0.05 level of significance. The decision rule was based on the mean score of 3.00 benchmark and above was the benchmark was considered High Extent (HE), while any item with a mean score below 3.00 was considered low extent. The Decision rule for hypotheses is to retain the null hypotheses if F-calculated value is less than F-critical value and to reject the null hypotheses if F-calculated is greater than or equal to F-table value.

Results

The data are presented in the following table below:

Research Question 1: To what extent does postgraduate Business Education students need cloud implementation management skill for effective fraud detection in South-South public universities?

Table 1: Computed means and standard deviations scores of respondents on the extent postgraduate Business Education students need cloud implementation management skill for effective fraud detection in South-South public universities.

(n=321)

S/N	Items	$\bar{x}$	S.D	Remark
1.	Knowledge of encryption helps prevent sensitive data exposure, a common route for fraudsters to exploit vulnerabilities	3.17	.742	HE
2.	Understanding of cloud security models helps to secure sensitive information, which is critical in preventing unauthorized access that can lead to fraud	3.60	.599	HE
3.	Understanding of machine learning models helps in identifying anomalies in transaction data that could signal fraudulent activity	3.77	.658	HE

4. Setting up automated alerts, helps for quickly respond to potential fraud as it happens, minimizing financial losses	3.74	.568	HE
5. AWS fraud detector tool, Microsoft Azure's fraud protection detection strategies help to spot fraudulent transactions or suspicious user behavior.	3.36	.636	HE
6. Compliance to cloud skill ensures that data handling practices are in line with regulatory standards, reducing vulnerabilities that could be exploited	3.76	.572	HE
Grand Mean/SD	**3.67**	**0.61**	HE

Source: **Researchers' Field Survey (2025)**

Table 1 had a grand mean of 3.67 and standard deviation of 0.61, this result shows that postgraduate Business Education students need cloud implementation management skill for effective fraud detection. The six items indicate high extent that postgraduate Business Education students work in Compliance with cloud, integrate fraud detection, understand cloud security models and have knowledge of encryption which helps to prevent sensitive data exposure accordingly.

Research Question 2:

To what extent does postgraduate Business Education students need risk identification management skills for effective fraud detection in South-South public universities?

Table 2: Computed Means and Standard Deviations Scores of Respondents on the extent postgraduate Business Education students need risk identification management skills for effective fraud detection in South-South Public Universities.

(n=321)

S/N	Items	$\bar{x}$	S.D	Remark
•	Regular fraud risk assessments help to pinpoint areas most susceptible to fraud, such as procurement or financial transactions.	3.49	.685	HE
•	Recognizing the indicators enable to early detect fraudulent activities and helps prevent financial and reputational damage	3.53	.912	HE
•	Proficiency in data analysis and pattern recognition helps to detect anomalies, such as duplicate payments or falsified invoices	3.64	.541	HE
•	Knowledge of focusing on high-risk areas allows for targeted fraud prevention, making monitoring and mitigation more efficient.	3.53	.787	HE
•	Identifying the risk factors helps detect potential fraud from employees who might exploit their positions due to personal or financial pressures	3.61	.520	HE
Grand Mean/SD		**3.56**	**0.69**	**HE**

Researcher's Field Survey (2025).

Table 2 had a grand mean of 3.56 and a standard deviation of 0.69. this result shows to a high extent that risk identification management skills play a key role in effective fraud detection. The result in items 1 to 5 showed that risk identification management skills indicators enable students to detect fraudulent activities early and helps to prevent financial and reputational damage.

Testing of Hypotheses

Hypothesis 1: There is no significant difference in the mean response of Postgraduate Business Education students of federal and state universities in South-South on the extent to which cloud implementation management skill need enhances effective fraud detection.

Table 3: ANOVA on the Mean Response of postgraduate Business Education students of federal and state universities in South-South on the extent cloud implementation management skill enhances effective fraud detection.

Sources of Variance	Sum of Squares	Df	Mean Square	∝	F-cal	F-crit	Remarks
Between Groups	7.501	10	.938	0.05	11.491	4.15	
Within Groups	25.457	310	.082				
Total	32.958	320					

Source: Researcher's Field Survey (2025)

Result in table 3, showed that the F-calculated value of 11.49 is greater than the F-critical table value of 4.15 at 0.05% level of significance. While the sum of squares (SS) for between groups was 7.50 and the (mean sum of squares (MS) 0.938, for within groups (Error Variance), it was 25.46 and 0.82. Thus, the null hypothesis of no significant difference in the mean ratings of postgraduate Business Education students in federal and state universities in South-South on the extent to which cloud implementation management skill need enhances effective fraud detection was rejected meaning there is significant difference in the mean ratings of postgraduate Business Education students in South-South public universities on the extent to which cloud implementation management skill need enhances effective fraud detection.

Hypothesis 2: There is no significant difference in the mean ratings of state and federal universities postgraduate Business Education students in South-South public universities on the extent to which risk identification management skill need enhances effective fraud detection.

Table 4: ANOVA on the Mean Ratings of state and federal universities postgraduate Business Education students in South-South public universities on the extent to which risk identification management skill enhances effective fraud detection.

Sources of Variance	Sum of Squares	Df	Mean Square	∝	F	F-crit	Remark
Between Groups	16.668	10	2.083	0.05	14.037	4.15	Rejected
Within Groups	46.310	310	.148				
Total	62.977	320					

Source: Researcher's Field Survey (2025)

From table 4, the F-calculated value of 14.04 is greater than the F-critical table value of 4.15 at 0.05% level of significance. While the sum of squares (SS) for between groups was 16.67 and the (mean sum of squares (MS) 2.08, for within groups (Error Variance), it was 46.31 and 0.148. Thus, the null hypothesis of no significant difference in the mean ratings of postgraduate Business Education students in South-South public universities on the extent to which risk identification management skill need enhances effective fraud detection was rejected meaning there is significant difference in the mean ratings of postgraduate Business Education students in South-South public universities on the extent to risk identification management skill need enhances effective fraud detection.

Summary of Major Findings

Major findings from the research work are as follows:

1. Research question 1 had a grand mean score of 3.67, this result reveled that postgraduate Business Education students need cloud implementation management skill for effective fraud detection in South-South public universities to a high extent. Hypothesis 1 also show that there is significant difference in the mean response of universities postgraduate Business Education students on the extent they need cloud implementation management skill for effective fraud detection.
2. The finding of the study in research question 2 revealed that universities postgraduate Business Education students need risk identification management skills for effective fraud detection to a high extent. The result of the study in hypothesis 2 indicated significant difference in the opinion of federal and state universities postgraduate Business Education students need for risk identification management skills for effective fraud detection.

Discussion of Findings

The findings of the study in research question 1 revealed that postgraduate Business Education students in South-South public universities agreed that knowledge of encryption helps to prevent sensitive data exposure, understanding of cloud security models help to secure sensitive information, setting up automated alerts, helps for quickly respond to potential fraud, minimizing financial losses, ability to integrate fraud detection tools like AWS fraud detector. Microsoft Azure's fraud protection detection strategies help to spot fraudulent transactions and compliance to cloud skill ensures that

data handling practices are in line with regulatory standards, reducing vulnerabilities that could be exploited. The findings are in line with Ripal, Amit, Hirenkumar and Chirag (2024) The rise of the cloud has revolutionized the way people think about and act on information. Its ability to provide cost-effective and scalable solutions for fraud detection and identity management has revolutionized the way organizations and individuals think about and act on these issues. Arogundade and palla, (2023) assert that the rise of cloud computing has transformed the way people and organizations think about the digital world. It has opened new opportunities for collaboration and innovation, and it has disrupted the traditional ways of doing business. The test of hypothesis one indicates that South-South public universities students differ significantly in their mean response regarding postgraduate Business Education students' possession of cloud implementation management skill for effective fraud detection.

The findings of the study in research question 2 showed that postgraduate Business Education students have the ability in conducting regular fraud risk assessments and it help to pinpoint areas most susceptible to fraud, such as procurement or financial transactions, recognizing the indicators enhances early detection of fraudulent activities and helps prevent financial and reputational damage, Knowledge of focusing on high-risk areas allows for targeted fraud prevention efforts, making monitoring and mitigation more efficient, identifying the risk factors helps to detect potential fraud from employees who might exploit their positions due to personal or financial pressures. This result is in line with the views of Nguyen, Ngo and Le (2020) which revealed that the risk assessment process can reduce the risk of material misstatement in the stage of audit planning. The authors argue that the risk assessment of fraud is an important part of the anti-fraud strategy as it allows key stakeholders such as internal auditors, law enforcement officials and management to raise awareness of the risks of fraud and thus mitigation measures can be taken. Fraud risk assessment is part of an anti-fraud program that can ultimately improve the confidence of stakeholders in the organization which may also attract investors, keep customers and lower financial costs. Fraud risk assessment deals with the risk of fraudulent financial reporting, fraudulent non-financial reporting, asset misappropriation, and illegal activities (including corruption). Organizations can adopt this approach to meet their individual needs, difficulties, and goals. The organization conducts comprehensive fraud risk assessments to identify fraud and risk schemes, assess their feasibility and value, evaluate existing fraud control activities, and implement measures to reduce the remaining fraud risk. The identification phase is usually performed using a number of tools such as internal organization records, insurance policy checklists, risk analysis questions, flow process charts, financial statements analysis, firm performance reviews and interviews among others. However, Trotman and Wright in Apreku-Djan, Ameyaw, Kuma, Ahiale and Owusu (2022) argued that internal evidence is presented as fraudulent as it is under the control of management. Also, the analysis of hypothesis 2 indicates that South-South public universities students differ significantly in their mean response regarding

postgraduate Business Education students' possession of risk management skill for effective fraud detection.

Conclusion

In an era where digital transactions dominate business operations, cybersecurity risk management skills are crucial for postgraduate Business Education students to effectively detect and mitigate fraud in modern business environments. This study has highlighted the importance of key competencies such as threat identification, risk assessment, data protection, and incident response in combating fraudulent activities. This study highlights that while these students possess foundational knowledge of cybersecurity principles, gaps remain in their ability to apply advance fraud detection techniques. Strengthening their competencies in areas such as threat analysis, data encryption, and real-time fraud monitoring will enhance their readiness for the evolving cyber threat landscape.

Recommendations

Based on the findings of the study the following recommendations were made:

1. Universities should integrate practical cloud security courses into the curriculum to enhance Business Education students' ability to implement and manage cloud-based fraud detection solutions effectively.

2. Business Education programme should emphasize case studies and real-world scenarios in risk identification to strengthen students' ability to recognize and mitigate fraud risks in business environments.

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