

A REVIEW OF ANTIFRAUD SOFTWARE MARKET

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Abstract. Since fraud can be a catastrophic risk for all companies worldwide, there have been recorded numerous attempts to reduce this negative phenomenon. Some of them focused on detecting fraud cases, while others tried to prevent them at an early stage. The purpose of this article is to analyse fraud prevention programs developed by specialised organisation, implemented in companies all over the world that contributed with success in reducing corporate fraud. We reviewed the major reports on antifraud software developed over the years, their degree of implementation within organisation and in what extent they fulfilled their purpose. Also, we point it out where Romania stands in the antifraud software market and the key points that should be taken into consideration by local companies when implementing these specific programs.

Keywords: fraud detection, fraud prevention, antifraud software, international antifraud software market, Romanian antifraud software market

Introduction

Since the release of Sarbanes-Oxley (SOX) Act in 2002 there have been developed several anti fraud programs. Usually the software has been focused on a specific type of fraud, the possibility of covering all fields sensitive to fraud not being accomplished yet. As a result, several anti fraud solutions have focused on e-commerce or electronic payments, which can be attacked from outside by hackers or malicious viruses, while others were developed in order to prevent fraud within organisations.

Despite their heterogeneity, commonly fraud detection programs include a system monitoring and scanning to find conflicts between an employee or an authorised person and his access rights. With the development of IT, fraud prevention programs started to use more sophisticated techniques, behavioural data etc. in order to detect and prevent fraud as it is happening.

Being a recent field of research, the existing studies from the literature have focused especially on the detecting software, neglecting the prevention part. It is the case of Ngai et. al. (2010) who reviewed and classified the financial fraud detection programs, proposing a classification framework for all the data mining techniques used.

The researchers presented a comprehensive review of the literature on the application of data mining techniques for the detection of financial accounting fraud, considering that a systematic and comprehensive literature review of the data mining techniques applicable to financial accounting fraud detection may provide a foundation to future research in this field. The findings of their study show that data mining techniques like logistic models, neural networks, Bayesian belief network, and decision trees have been applied most extensively to provide primary solutions to the problems inherent in the detection and classification of fraudulent data¹.

¹ Ngai, E.W.T., Hu, Y., Wong, Y. H., Chen, Y., Sun, X., (2010), The application of data mining techniques in financial fraud detection: A classification framework and an academic review of literature, *Decision Support System*, pp. 559-569, doi:10.1016/j.dss.2010.08.006

Similar to Ngai et. al., Aite Group (2014) have analysed and classified anti fraud software for enterprises, finding some key points for the enterprise fraud management. Aite Group's methodology consisted in interviews and demos with enterprise fraud management (EFM) providers, financial institution executives, and Aite Group's in-house knowledge. Further, having as base the findings of their study, we take into consideration other solutions proposed by developers in order to fight fraud.

Fraud prevention solutions framework according to Aite Group

Many fraud-prevention providers offer point solutions to mitigate one or several types of fraud. A few of these companies even offer their own simple methods of working the alerts generated by their prevention solution, but they do not offer the robust case management product that enables effective fraud management. There is no silver bullet to fighting fraud, but many of these point solutions are very effective². Some highlights regarding solution providers for some types of fraud are presented in Table 1 (a) and (b).

Table 1 (a) - Fraud prevention solutions providers by problem

Fraud-prevention problem	Fraud solution providers		
Check fraud—on-us checks	BAE Systems Fiserv Intellinx Orbograph	FICO NICE Softpro	FIS Actimize SQN
Check fraud—deposits	BAE Systems FIS	Early Warning Services Fiserv	FICO Intellinx

Source: Aite Group's Report (2014), *Enterprise Fraud Management: Still Evolving After All These Years*, may 2014, retrieved from http://www.sas.com/content/dam/SAS/en_us/doc/analystreport/aite-enterprise-fraud-management-107178.pdf.

Table 1 (b) - Fraud prevention solutions providers by problem

Check fraud—kiting	Banker's Toolbox FIS Verafin	BAE Systems Fiserv	Computrol Intellinx
Debit card fraud	ACI Worldwide FICO NICE Actimize Verafin	BAE Systems FIS SAS	First Data Fiserv Vantiv
Credit card fraud	Accertify BAE Systems FICO Fiserv Vantiv	ACI Worldwide CyberSource First Data NICE Actimize	Alaric Experian FIS SAS
Online fraud	41st Parameter FICO NICE Actimize ThreatMetrix	ACI Worldwide Fiserv RSA	BAE Systems ID Analytics SAS
Contact center fraud	Auraya Systems FICO Natural Security	Authenticate Fiserv NICE Actimize	Convergys Mattersight Nuance

² Aite Group's Report (2014), *Enterprise Fraud Management: Still Evolving After All These Years*, may 2014, retrieved from http://www.sas.com/content/dam/SAS/en_us/doc/analystreport/aite-enterprise-fraud-management-107178.pdf.

	Phone Factor TradeHarbor VoiceTrust	Pindrop Security TrustID VoiceVault	SpeechPro Verint Voxeo
Wire fraud	ACH Alert FICO Guardian Analytics SAS	ACI Worldwide FIS Larue Technologies Verafin	BAE Systems Fiserv NICE Actimize
ATM fraud	BAE Systems Fiserv Parascript	Diebold NICE Actimize SAS	FICO Paragon
Employee fraud	BAE Systems Intellinx	FIS NICE Actimize	Fiserv
New account fraud	BAE Systems Experian ID Analytics Verafin	Early Warning Services FICO Lexis Nexis	Equifax Fiserv TransUnion

Source: Aite Group's Report (2014), *Enterprise Fraud Management: Still Evolving After All These Years*, may 2014, retrieved in November 2014 from http://www.sas.com/content/dam/SAS/en_us/doc/analystreport/aite-enterprise-fraud-management-107178.pdf.

Fraud Detection Software enables an organization to protect itself from fraud by verifying information on applications and identifying suspicious transactions. Basically, the antifraud software have specific characteristic. Some of the key products mentioned in the solution above are the following:³

First Data software works to help merchants and financial institutions process customer transactions safely. Its Fraud Detection product helps identify fraudulent debit and credit card transactions in real-time. They also use Neural Network Technology integrated with transaction data as part of their detection strategy. First Data also includes tools to monitor internal transactions for fraud. The company also provides financial institutions with ATM management and implementation of technologies like chip cards.

ArcSight is a global provider of compliance and security management solutions that protect enterprises and government agencies. They collect and correlate user activity and event data across the enterprise to identify, prioritize, and respond to compliance violations, policy breaches, cybersecurity attacks and insider threats. ArcSight's FraudView solution evaluates and scores financial transactions in real time, and correlates activities across multiple banking channels. It creates a risk score for each transaction as it occurs.

Arbutus Software offers both its Arbutus Query and Arbutus Connect products for fraud detection purposes. Arbutus Query is a tool kit that helps test and compare all types of organizational data. The interface is designed to develop and execute a set of fraud tests, and then deploy those tests either ongoing or as needed. The fraud tests can be applied in a legacy environment or against any type of data files. Arbutus Connect is made to work with Microsoft Excel for organizations using Excel for fraud detection. It fills in the functionality gaps of Excel by allowing analysis of unlimited data volume, makes it easier to access new data sources and supports legacy system analysis and reporting.

³<http://www.jazdtech.com/techdirect/leaf/Security-and-Privacy/Security-Software/Fraud-Detection-Software.htm>, retrieved in November 2014.

Fiserv, Inc. provides information management and electronic commerce systems for the financial services industry. Their Fraud Risk Solutions portfolio includes internal fraud prevention, check imaging interrogation, check fraud and deposit fraud detection, payment authorization fraud detection and multi-channel fraud prevention. They deliver fraud detection tools in one risk management system with an easy interface. Fiserv, in business more than 25 years, ranked No. 1 on the FinTech 100 survey of top technology partners to the financial services industry.

EastNets provides global compliance and payment solutions, including anti-money laundering (AML), anti-fraud, payment and transaction management solutions. Their en.SafeWatch Anti-Fraud product is part of the EastNets enterprise compliance management framework. It provides real-time fraud detection, using fraud scenarios and profiling and a risk-based approach and assessments, and performs automatic and semi-automatic decision assistance. EastNets touts its products as ready to work with SWIFT, the financial industry messaging system.

Other anti fraud solution identified

An online research for anti fraud software solutions has returned a Top 40 of this kind of programs. Among these we selected the most representative as it follows:⁴

Actimize delivers real-time, customer-centric fraud prevention that supports a holistic, enterprise-wide fraud management program.

ActiveData for Excel delivers powerful data analytics to the familiar Microsoft Excel environment.

AgenaRisk it is a powerful but intuitive tool for modelling, analysing and predicting risk.

AssetArchive by FinSoft is a software destined to examine loan trends, detect possible fraud attempts, and consistently audit borrower and lender data.

BankWare.NET by International Financial Systems is a "customer centric" core banking software solution that runs the front, middle and back office of the bank.

Clari5 EFM by CustomerXPs Software is a real-time, intelligent product empowering banks with instant insights enabling influenced outcomes of fraud free transactions.

Compliancy+ Corporate by MyFinancialAlerts automates the monitoring of card transactions with the ability to report potential fraud/misuse as it occurs, reducing detection time.

Dataview360 by GDS Link is an advanced Risk Management software for the financial services, telecommunications, retail, manufacturing and transportation industries.

ESurksha by Bennett Technologies is an anti Fraud Solution for Ecommerce, Banking, financial & CRM applications.

Fair Issac Falcon Fraud Manager by ISGN is detecting and stopping fraud for 20 of the world's top 25 financial institutions

Falcon Fraud Manager by FICO is an enterprise-class decisioning platform to provide end-to-end fraud, security and compliance management.

⁴ We typed in google.com the expression "anti fraud software" and we selected among 440.000 results the first 40 software shown as result after the search.

FirstStrike Fraud Detection by APEX Analytix is an automated analytics that provide prioritized risk scores on all of your vendors.

Fractals by Alaric is a class-leading integrated, intelligent fraud detection and prevention framework for payment card issuers and acquirers.

Fraud Analyst by Digital Envoy a proven platform for risk-based authentication, fraud detection, and real-time identity verification.

Fraud Barrier by Scorto is a fraud detection software that implements fraud scoring models based on advanced data mining techniques to calculate proximity. V

Fraud Risk Manager by Fiserv simplifies fraud prevention with this intelligent and easy-to-use financial crime management and compliance solution.

FraudGUARD by Interthinx is an electronic loan-level fraud detection solution for lenders and investors.

FraudNet by 41st Parameter is a fraud detection software that identifies fraudulent accounts, searches for customer information & provides warning of account takeover.

Insights On Demand by Oversight Systems links disparate financial systems, inspects every transaction in real time, and presents results with quantified risks.

Interceptas by Accertify is a financial fraud detection software that can detect online scams, online credit card fraud, and fraud related to returned merchandise.

iPrevent by Brighterion is a cross-channel fraud detection and prevention solution with strong behavioral analytics and automatic model creation.

Kount Complete by Kount is a SaaS solution for fraud management that reduces the number of fraudulent transactions, eliminates chargebacks, and offers geolocation.

LogRhythm Log Management by LogRhythm is a log management solution for collecting data across the enterprise and for identifying and preventing insider trading.

MATLAB by The MathWorks is a programming environment for algorithm development, data analysis, visualization, and numerical computation.

MinFraud by MaxMind identifies fraudulent credit card purchases and purchasers, IP tracing, BIN number matching.

NetReveal by BAE Systems is a risk, fraud and compliance solution suite for financial services and government clients across the globe.

On-Demand VerificationSM by TARGUSinfo is a web based tool that helps automatically verify good transactions and identify those that are high risk.

Oracle Bharosa by Oracle is a leading provider of fraud prevention and strong authentication solutions - i.d. management, risk-analysis, and fraud prevention.

PATRIOT OFFICER by GlobalVision Systems is a solution for financial institutions, integrating Anti-Money Laundering, Anti-Terrorist Financing, and Anti-Fraud capabilities.

Pointer by Potentia is a fraud detection software using advanced mathematics.

preCharge Fraud Screening by preCharge Risk Management makes an in-depth fraud scoring and customer verification in seconds. The software is proven to increase approved orders.

ReadiONE by ReadiMinds Systems & Services integrated Identity Theft & Online Financial Fraud Prevention and Business Activity Monitoring, for Banking & Securities Industry.

Reputation Manager 360 by Iovation is a software destined to reduce cyber fraud through strict device identification measures and risk report generation.

RiskTracker by BANKDetect is an account activity analysis system that analyzes daily banking transactions to detect a wide variety of fraud and abuse threats.

SAS Financial Management by SAS Institute helps companies to report, manage and improve the financial performance of your entire organization.

Signifyd by Signifyd is a fraud detection solution for eCommerce businesses. The technology aggregates customer data from multiple sources to identify fraud.

SVAT by Profinit is a visual information analytics product that helps discover links and money flow between subjects of financial or criminal investigation.

ThreatMetrix by ThreatMetrix is a global online fraud prevention solution that stops internal fraud and enables web businesses most at risk.

TransactionGuard by Entrust provides real-time monitoring of transactions, automatic detection of fraudulent activities and comprehensive case management tools.

ZoiD by ZoID stops credit / debit card fraud, check fraud, secures online bank accounts making them 100% secure, stops all online transaction fraud

As we can notice all software presented have different functions depending on which fraud they are destined to.

A review on anti fraud software implementation within organisations

The risk of fraud, bribery and corruption is greater in rapid growth markets. This may be due to a weak control environment that results in policies and procedures being implemented differently from global compliance frameworks. Tough times lead to shortcuts, companies being often under pressure to show positive results to stakeholders regardless of market conditions. This can create a higher fraud risk in volatile markets.

In order to have a global view among anti fraud software implemented within organisations worldwide we reviewed the major reports regarding this issue published by ACFE (2010), Ernst & Young (2013), KPMG (2013) and PricewaterhouseCoopers (2014).

When economic conditions are tough, there is pressure on management to meet sales targets, which can increase the risk of creative accounting practices and fraud. Organizations lose an estimated 5% of annual revenues to fraud⁵ (ACFE, 2010). Despite fraud prevention efforts such as increased legislation and enforcement or increased emphasis on “tone at the top,” fraud remains relatively entrenched within organizations.

As we can see from the results of studies analysed⁶ which were conducted in the last years, the software fighting creative accounting and fraud are continuously evolving. The estimation for the following years considers the possibility of developing ERP programs that could cover more areas of fraud within organisation.

⁵ Association of Certified Fraud Examiners (ACFE) (2010), *Report to the Nations on Occupational Fraud and Abuse*, Austin, TX.

⁶ Ernst & Young (2013), *Building a more ethical business environment. Asia-Pacific Fraud Survey 2013*; Ernst & Young (2013), *Navigating today's complex business risks. Europe, Middle East, India and Africa Fraud Survey 2013*; KPMG Forensic, (2013), *Survey of fraud, bribery and corruption in Australia & New Zealand 2012*; PricewaterhouseCoopers (2014), *Global Economic Crime Survey*.

Anti fraud software situation in Romania

While fraud is a specific problem in Romania as a national level, despite the preoccupations of the multinational acting in the local market, the anti fraud software are not developed at all in comparison to other estates. The anti fraud programs developed by local Romanian software companies are nearly non-existing, most of the companies who own these kind of programs preferred to buy them from other foreigner companies. These approaches bring specific issues when implementing a foreign program not suitable for the local economy. If we consider online fraud, for example, these solutions won't bring implementation issues, but, if we take into consideration specific anti fraud programs for accounting there are several problems that could rise. Starting from the accounts used, the currency or the law, there are all specific problems that could appear when implementing this kind of programs.

Having these pointed out, we consider that a risen preoccupation in developing and implementing specific anti fraud programs suitable for every country should be a national preoccupation of all institutions and professionals involved. This matter requires a good collaboration between different professionals like IT and accounting, or accounting and experts in fraud, or management etc.

Fraud detection software should be able to support a wide variety of devices, and include more than just online financial platforms, including ATM, branch and call center activity. It should also differentiate between consumer and business behaviour. Fraud detection software can be expensive, and it's hard to measure the rate of investment (ROI)⁷. Software as a Service (SaaS) offerings continue to gain market share as organizations look to outsource fraud detection at a lower cost.

Conclusion

Every organisation can effectively perform enterprise fraud management in a centralized or decentralized manner. A decentralized approach sacrifices operational efficiencies and customer service, while a centralized function can make for more efficient operations, hold one area fully accountable for the function, and extend a career track to employees, yielding greater dedication and productivity.

Fraud management has become increasingly important over time as fraud attacks continue to evolve and become more aggressive. An effective, efficient anti fraud department has many components. Usually it covers all of them, from detecting and preventing fraud to handling customer claims, investigating and recovering funds in fraud cases, processing fraud charge-offs, producing desired management reporting, and performing root cause analysis of fraud losses to improve the fraud-prevention function. This is the reason why researchers talk about preventing and detecting fraud all together.

Centralized anti fraud programs improve customer service by providing a single point of contact for the victimized customer. The customer does not have to contact multiple departments, and the organization operates more efficiently as well.

⁷ Albrecht, W.S., Albrecht, C.C., Albrecht, C.O., Zimelman, M., *Fraud Examination*, 3rd edition, South-Western, Mason, 2009.

A number of anti fraud software providers offer a full view of customers and their activity through robust case management tools that can integrate the outputs of all fraud-prevention systems (including their own). This is necessary to detect fraud effectively and reduce false positives to a manageable level.

Anti fraud software providers can offer improved operational efficiency through automated workflows with built-in reminders and review and approval steps. They can also ensure compliance with defined time frames or deadlines. New solution providers that desire to provide new antifraud capabilities are emerging. Organisations which are looking for a provider should consider them as these new providers continue to make progress.

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