Recovering Lost Revenue by Augmenting Internal Customer Data with External Data for Accurate Invoicing for Large B2B Enterprises

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Abstract: *In today's competitive business environment, accurate invoicing plays a pivotal role in ensuring financial stability. Organizations often face challenges in maintaining precise customer data, leading to lost revenue due to incorrect invoicing. This paper presents a solution to recover lost revenue by augmenting internal customer data with data from external data providers such as Zoominfo, Dun & Bradstreet. By improving customer data accuracy and targeting the right contacts for invoicing, organizations can minimize billing errors and enhance revenue recovery. The proposed approach combines advanced data integration techniques with robust data governance practices to ensure that customer information is up - to - date, reliable, and sufficient for accurate billing processes across enterprise systems that either contribute or consume customer data. Towards the end of the paper, I will present a case study where proposed approach was applied within a large global enterprise to recover $1.8M unpaid elevator maintenance bills by resending the invoice to right email address.*

Keywords: Data augmentation, revenue recovery, customer data management, external data providers, invoicing accuracy, data governance, data integration, data platform, data quality

1. Introduction

Inaccurate customer data can result in substantial financial losses for organizations, particularly when it comes to billing and invoicing. Incomplete or outdated contact information, missing financial details, or incorrect account records often lead to invoices being sent to the wrong departments, delaying payments or resulting in unpaid invoices. To address this, organizations can leverage data augmentation techniques by integrating data from external providers with their internal customer databases. By ensuring that the correct billing contacts and accurate account information are used, companies can reduce invoicing errors and recover potential lost revenue.

Many organizations maintain siloed customer data, which is prone to inconsistencies. Internal data alone may not always provide the full picture needed to ensure accurate invoicing. Augmenting internal data with verified information from trusted external data providers offers a comprehensive solution to this issue. However, integrating and reconciling external data with internal records poses significant challenges, including data quality, governance, and automation.

This paper proposes a data augmentation approach to improve invoicing accuracy by:
- Enhancing internal customer data with external data sources.
- Syncing customer data across enterprise systems
- Automating data validation processes for accurate contact and account details.
- Implementing a systematic invoicing workflow to send invoices to the correct contacts.

Main Body
Organizations have long struggled with incomplete or incorrect customer data, particularly in financial operations such as invoicing. Previous studies highlight the importance of clean and accurate data for minimizing operational inefficiencies and optimizing revenue streams. Various methods, such as data cleansing and data governance frameworks, have been explored in the literature. However, limited research has focused on the integration of external data to enhance the quality of internal customer data, especially in the context of invoicing processes.

Data Quality and Invoicing
Data quality is critical in financial operations, as inaccuracies can lead to invoice disputes, delayed payments, and revenue loss. According to journal of financial data management, poor data management practices account for up to 30% of revenue loss in some industries.

Data Augmentation with External Providers
Augmenting internal data with external sources is a promising approach to improving data accuracy. External providers, such as Dun & Bradstreet, zoom info provide verified customer data especially for companies that are in Business to Business (B2B) sector, which can be used to supplement existing records. Several studies have emphasized the effectiveness of using third -
party data to fill gaps in customer profiles, thereby enabling more accurate invoicing.

Benefits of external data providers
- **Reduce Human Errors**: Automate the data cleansing process, ensuring accurate, current information is always used in billing processes.
- **Increase Revenue Recovery**: With up - to - date contact details, invoices are more likely to reach the right individuals, reducing payment delays or defaults.
- **Enhance Customer Relations**: Ensuring accurate communication fosters better business relationships, leading to improved customer satisfaction and loyalty.

Volume 13 Issue 11, November 2024
Fully Refereed | Open Access | Double Blind Peer Reviewed Journal
www.ijsr.net

Paper ID: SR241031200134   DOI: https://dx.doi.org/10.21275/SR241031200134   613

2. Methodology

This section outlines the proposed methodology for augmenting internal customer data with external data sources to improve the accuracy of the invoicing process.

1) Data Integration Framework
The proposed system integrates internal customer data with external data from providers such as Dun & Bradstreet, Zoominfo, and Experian. The integration framework consists of the following components:
- **Data Extraction:** Internal and external data sources are ingested into the system using ETL (Extract, Transform, Load) processes.
- **Data Matching:** Customer records are matched across internal and external datasets using unique identifiers such as customer IDs, names, tax numbers, or email addresses.

- **Data Validation:** A validation process ensures that data from external sources is accurate, complete, and consistent with internal records.
- **Data Synchronization:** Synchronizing accurate customer data is a critical step to ensure all enterprise systems are operating with up to date accurate customer data.

2) Workflow for Invoicing
The invoicing process is enhanced by:
- **Contact Augmentation:** Augmenting internal customer contacts with external contact data to ensure that invoices are sent to the correct individuals or departments.
- **Invoice Automation:** Automating the generation and distribution of invoices to validated contacts.
- **Monitoring and Reconciliation:** Implementing a monitoring system to track sent invoices and ensure timely payments.

Architecture for augmenting internal customer data with external customer data
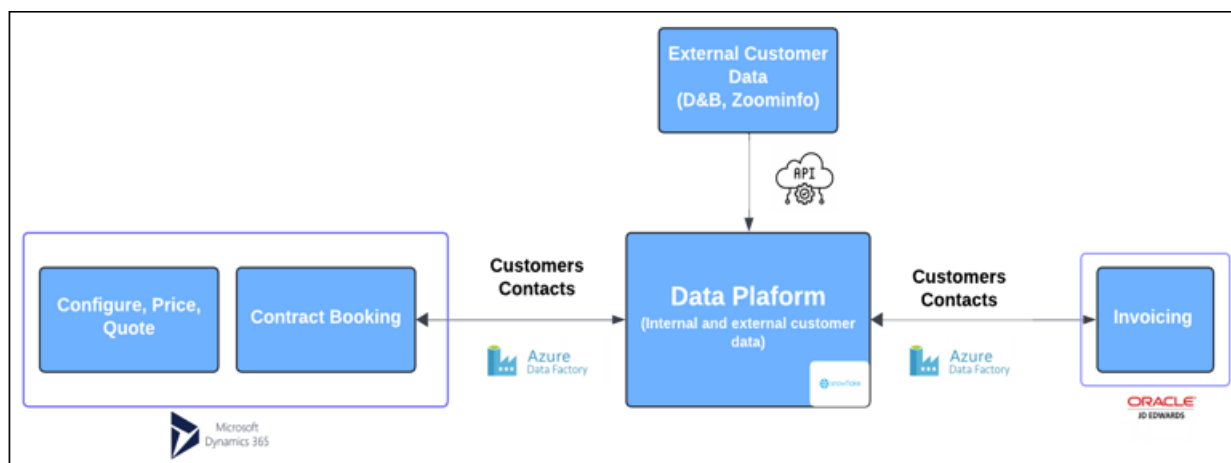
Case Study

Background: A large global elevator and escalator manufacturing firm was losing close to $3M in unpaid dues for its elevator service work per year due to not having right contact name, email address and phone number to send the invoice. Firm was operating in B2B space and historically enterprise had challenge with capturing and maintaining accurate customer/contact information due to lack of data governance along with inconsistent data model between CRM and ERP systems.

Implementation
Following key steps are followed to correct customer data in CRM and ERP systems:
- CRM system was taken as the master for contact information. Customer number, name and address information was extracted from enterprise data platform built on Snowflake for ~35000 accounts with unpaid dues.
- A data request form was prepared with the available customer information along with the fields for which company is expecting data. Format is shown below.

Customer #	Customer Name	Street Address	Street Address Line 2	City	State	Zip	Contact Name	Contact Job Title	Contact Email	Contact Phone (M)	Contact Phone(O)
1334	ABC corp	110 high street		New York	New York	11012					
452347	XYZ corp	20 main street		Jersey City	New Jersey	09912					
78901	GHI Inc	10 Oak Tree Ave		Edison	New Jersey	08820					
56234	KEG Inc	10 Lincoln Highway		Princeton	New Jersey	08540					

- Data request form was shared with Zoominfo an external B2B customer data provider.
- Zoominfo was able to provide customer information with contact details for more than 17000 customer accounts.
- External data was loaded to enterprise data platform and merged with internal data from CRM system through combination of data engineering and machine learning.

- Corrected customer and contact data was synchronized back to CRM and ERP systems.
- Invoices are sent again for customers with unpaid bill and corrected contact information.

3. Results and Benefits

The implementation resulted in:
- Recovery of ~$1.9M/year in unpaid dues by resending the invoices to right contact.
- 30% reduction in future invoicing errors due to augmented customer data.
- 25% improvement in marketing campaign response due improved customer data quality,

This case study demonstrates the potential of data augmentation in reducing revenue loss caused by inaccurate invoicing. Augmenting internal data with external sources ensures the correctness of customer details and allows for more precise targeting of invoices and marketing campaigns. However, there are challenges associated with data governance, data privacy, and the cost of external data acquisition that organizations must address. Maintaining high quality customer data through internal business and technical processes would save any dependency on external data acquisition and cost.

4. Conclusion

The integration of external data sources into internal customer data systems represents a transformative approach for businesses aiming to reduce revenue loss caused by incomplete or outdated customer information. Revenue leakage, resulting from undelivered or misdirected invoices, poses a financial threat to organizations across various sectors. By leveraging external data providers to enrich and validate internal data, companies can significantly improve the accuracy of their customer records, ensuring invoices reach the correct individuals or departments, thereby enhancing the billing cycle's efficiency and reducing operational costs.

This paper outlined how integrating external data can help businesses identify and update inaccurate or incomplete contact information within their customer databases. This process enables companies to maintain current and accurate customer records, a critical factor in ensuring that invoices are successfully delivered and payments are received on time. The benefits of this approach are numerous and include faster revenue recovery, reduced instances of undelivered invoices, and improved relationships with customers by reducing instances of miscommunication and erroneous billing.

In conclusion, augmenting internal customer data with data from external providers offers a comprehensive solution to the challenge of revenue leakage caused by data inaccuracies. Organizations implementing these strategies can not only recover lost revenue but also optimize their billing processes and foster stronger relationships with their customers. As the digital landscape evolves, companies should explore further applications of this strategy, incorporating emerging technologies like AI and machine learning to automate data maintenance, predict changes in customer information, and prevent data degradation over time. Through continued research and technological advancements, businesses can enhance the accuracy, efficiency, and profitability of their customer data management practices, making data - driven revenue recovery a central component of modern financial operations.

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