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Implementation of Accounts Payable continuous improvement process as part of an organization’s Revenue Assurance initiatives

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I would like to express my sincere gratitude
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Abstract

The purpose of this thesis was to explore the issues, elements and features of Revenue Assurance, which is an internal business process aimed at eliminating and preventing financial leakage, as well as clarify the challenges of embedding the mentioned process into specific business workflows. In particular, the study considered how the Revenue Assurance can be adapted specifically for the needs of the Accounts Payable process within the financial activities of an organization.

The following aims were stated to guide the study: i) to examine how exactly a comprehensive Revenue Assurance approach can be applied to a specific Accounts Payable work process and ii) to produce a logical framework that an organization can follow to ensure a successful transformation of Accounts Payable workflows based on the Revenue Assurance principles. The goals were achieved by applying the Grounded Theory method to literature, knowledge bases of global companies, discussion in business publications and studies on Revenue Assurance initiatives and relevant issues.

Although the study was inspired by an idea of putting the Revenue Assurance process into practice, its results were theoretical. As such, they can be used as a basis for understanding the Revenue Assurance concept and problems, as well as a framework for developing a work process that incorporates the Revenue Assurance approach and logic.

Language: English Key Words: Revenue Assurance, Accounts Payable, process improvement

OPINNÄYTETYÖ

Tekijä: Vera Golisz
Koulutus ja paikkakunta: Tuotantotalous, Vaasa
Ohjaaja(t): Niklas Kallenberg

Nimike: Ostoreskontran jatkuvan parantamisprosessin toteuttaminen osana organisaation tulojen varmistamisen hallintaa.

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Tiivistelmä

Tämän opinnäytetyön tarkoituksena oli tutkia tulojen varmistamisen prosessiin ja sen käyttöönottamiseen liittyviä ongelmia ja haasteita. Tulojen varmistaminen on sisäinen prosessi, jonka tarkoituksena on poistaa ja estää taloudellisia vuotoja, sekä vastata niiden haasteisiin ratkaisukeskeisellä tavalla. Tutkimuksessa tarkasteltiin erityisesti sitä, miten tulojen varmistamisen prosessia voidaan mukauttaa ostoreskontran tarpeisiin sopivaksi.

Tutkimuksella oli seuraavat tavoitteet: i) tutkia, miten ko. menetelmää voi hyödyntää ostoreskontran prosessissa ja ii) luoda loogista mallia ostoreskontraprosessin kehittämiselle tulojen varmistamisen periaatteiden perusteella. Tavoitteet saavutettiin ankkuroidun teorian metodologian avulla.

Vaikka tutkimuksen innoittajana oli ajatus tehostetun prosessin käyttöönottamisesta, tutkimuksen tulokset olivat teoreettisia. Sellaisinaan niitä voidaan käyttää prosessien kehittämiseen ja tulojen varmistamisen ongelmien, lähestymistavan ja logiikan ymmärtämiseen.

Kieli: englanti Avainsanat: tulojen varmistaminen, ostoreskontra, prosessien tehostaminen

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1 Introduction

1.1 Research background and relevance

It is believed that every business, whether large or small, is created with the aim of making and maximizing a profit. Accordingly, there is a need for a business to continuously improve effectiveness and efficiency of its operations in order to ensure the most profitable revenue generation (Coffey, 2022). Traditionally, the main ways for achieving these goals have been such as expansion to new markets or cost reduction. Today, along with traditional revenue improvement techniques in the form of lowering expenses, developing pricing or capturing selling opportunities (15 Commonly Overlooked Ways To Boost Profits And Revenue, n.d.), such revenue protection measures as Revenue Assurance (RA) or Revenue Cycle Management are the crucial elements of revenue maximization (Browning, 2003, p. 2). An effective integration of the revenue leakage management approach into day-to-day processes, implementation of automation, creation of a culture of right leadership, responsibility and accountability, strategic thinking and monitoring mechanisms serve an organization's financial health and have become important aspects of business management (Browning, 2003, pp. 8-10).

Over the recent decades, due to unprecedented economic uncertainty, vague growth prospects, weakness in a number of industries (Global Financial Stability Report: Financial and Climate Policies for a High-Interest-Rate Era 2023 Oct., n.d.), global decline in profits (de Jong, Röder, Stumpner & Zaznov, 2023), the revenue improvement aspects become crucial for businesses and organizations of all levels. Revenue management (RM) that supports customer behavior analysis in supply and demand metrics (Cross, 1997, p. 4), revenue operations (RevOps) model as a management system that pursues to align marketing, sales, customer experience and data technologies (Diorio, 2021), business model optimization that considers adaptation of business structures to contemporary challenges (Business and Entity Transformation (BET), n.d.), revenue cycle management that means a cash flow management through accurate administration of patient data and effective financial clearance in health industry (Revenue cycle management, n.d.), the more generalized revenue lifecycle management as a framework for growing revenue from existing customers (Mastering Revenue Lifecycle management, n.d.), such logically similar approaches as lean management, developed in the automotive industry and based on the idea of eliminating defects, decreasing costs and creatively applying professional skills while pursuing perfection (Womack, Jones & Roos, 1990, p. 12) and other related, partly overlapping, concepts consider every single aspect of revenue processing optimization by the art of capturing and developing revenue through increasing efficiency of operations. Being an integral part of the variety of revenue processing approaches, RA refers to reducing the operating cost by preventing inefficiency and minimizing revenue leakage. A mature RA function, supported by automation and compliance, eliminates revenue leakage on ongoing basis, thus, enhances the revenue maximization (Robinson, Ghosh, Greenlee, Massey & Donaldson, 2020). Although the overall revenue optimization problem is generally considered as being related to financial and managerial functions of an organization, the RA process is important for the entire enterprise and is closely linked

to sustainability aspects of business activities in the segments of risk management, improvement of resources management and operating cost reduction (Bonini & Schwartz, 2014). Accordingly, integration of the RA process to different tasks within an organizational network can improve the overall performance of an organization.

For decades, revenue solutions, emerging business technologies, effectiveness of practices, strategies, functions aimed to increase business profitability have been the subject of lively debate over the future of business development. Profitability issues provoke discussion and arouse interest. Still, profitability does not necessarily mean a simple measurement of the financial success of a company. Mackey & Sisodia (2013) contradicted the traditional assumption that "the ultimate purpose of business is always to maximize profits for the investors" (Mackey & Sisodia, 2013, p. 18) and, instead of "continuing to harp on the tired maxims of self-interest and profit maximization" (Mackey & Sisodia, 2013, p. 23), proposed the idea of deliberately creating value by businesses for everyone involved in their activities (Mackey & Sisodia, 2013, p. 20). The authors develop their thought to the paradigm of Conscious Capitalism that constitutes different kinds of value and well-being for all stakeholders and explains why the business exists and how it creates more value (Mackey & Sisodia, 2013, p. 33). The idea of a higher purpose is too wide for this work but at least one element of the mentioned concept can be related to an RA function, particularly, the element of sustainability of business. "Innovative ways of extracting value" (Mackey & Sisodia, 2013, p. 58) accurately explain the meaning and purpose of RA initiatives that pursue to increase profit by limiting and eliminating waste of organizational resources.

Both an employee's ability to recognize and handle operational discrepancies as well as an accuracy and correctness of systems and processes are crucial elements for the process efficiency. The challenge for an organization is to ensure that everyone who has an operational access to sensitive financial transactions processing is aware of the compliance and procedural requirements but also that the employee's actions are under continuous set of controls. Besides that, the related technological solutions, systems and processes should be properly integrated in order to achieve the required level of data processing quality, expressed in terms of correctly and completely covered revenue with minimum revenue leakage possible. Altogether, it exposes the need of a continuous and effective RA process presence within the general operational activities of an enterprise.

Even though the RA concept along with the leakage management task are well known to the business environment, the RA segment remains quite limited in the field of business research while practical solutions on RA tactics and tools are hidden within a commercial offer of RA products and services provided by specialized businesses. In these circumstances, a deeper examination of RA solutions can be taken into consideration when planning and developing internal work processes. I believe that the following factors should be particularly addressed when considering the problem:

- awareness that the RA problem exists, that it should and can be managed
- understanding of the importance of RA technologies implementation, subsequently, wide development and implementation of automated processes and technology tools to meet RA objectives
- recognition of the need for developing RA operations procedures as well as creation a database on an RA knowledge and practices in an organization
- understanding of the importance of an employee ability to identify opportunities for an RA process development and implementation as well as to recognize the need for cross-functional cooperation and consolidated effort in RA operations, subsequently, an employee training with regard to an RA awareness and competence, an employee involvement into the RA development process.

Synthesis of technologies, policies and employee competence and engagement in RA initiatives in the workplace are crucial elements for the successful RM. I believe that this work, no matter how limited or relatively narrow focused, can make a contribution to academic research of the RA concept as well as arouse an interest for its further implementation into business practices.

1.2 Research problem and objectives

Sustainability is one of the main challenges, but also one of the main opportunities nowadays. It is clear that the idea of achieving higher level of operational efficiency is not easy to be implemented into everyday practices, still, understanding these challenges and consciously working to solve them in a systematic and planned manner are the best ways of bringing the ideas to life. The RA approach, based on the principle of avoiding and preventing the loss of money and effort as well as making environments and practices more efficient, aims to properly address requirements of the sustainable transformation, it is one of many approaches that consider more general idea of sustainability within the frames of empirical application. Being very functional, the RA concept cannot be considered strictly within a theoretical framework, it is not only about the methods and rules but more about how its principles may be adjusted to a practical use and, subsequently, how the RA process can be established within a single specific workflow with its unique features, issues and risks.

At the moment, some of RA issues or segments of application, as the fraud risk management or an RA problem in Telecom industry (Telco), are analyzed more deeply while some other segments are still insufficiently examined. For instance, even when it is obvious that the problem of leakage management exists, there seems to be a limited debate on the RA process implementation to a wider range of organizational activities, both on the entire organization’s level and with regard to some particular elements of organizational

structures. At the same time, nowadays, due to increasing level of technological complexity, compliance requirements, constantly growing scope, frequency and variability of threats, companies cannot afford to neglect technological innovations and efficiency issues. Addressing the problem of conscious, structured, systematic effort on the Accounts Payable (AP) process improvement and safety is one of the crucial elements of cash management. Considering this divergence, there is a reason to analyze how the RA process can be applied for the needs of a specific task within an organization. In this way, the main problem of this study became to explore the opportunities of RA initiatives and their importance within the AP process of a finance department of an organization. When an accounting system of an organization is technologically obsolete and the entire finance process, including, for example, Bookkeeping and closing the books, Payroll, Accounts Receivable (AR), Inventory Management and other related processes, is ineffective, it is obvious that a project of the company's finance transformation will require a broader approach than just looking at the AP process. Still, in this work only the AP process is discussed, in line with the main objective to consider the possibility of applying the RA approach to more specific tasks and challenges.

The objectives of the study, subsequently, refer to i) examining how exactly a comprehensive RA approach can be applied to specific AP workflows in terms of assessing the key concepts and features of the enhanced AP process, and ii) producing a framework that an organization can follow to secure an AP's successful transformation based on the RA principles of continuous control and development of systems and staff. As a result of the study, a descriptive overview of the RA process implementation within the AP task should be developed.

In the next chapter of this thesis, I begin with an overview of the main features and characteristics associated with the concept of RA, then I clarify aspects of the AP function in the financial activities of an organization. This part of the thesis is also complemented by an overview of the technologies involved in the digital transformation of the AP and the problem of a business process reengineering. In the third chapter, the methodology used to transfer the theoretical data into more concrete and specific framework is presented. In the fourth chapter, in which I outline how the theoretical concepts discussed can be applied to the development of an optimized AP process, the results of the study are highlighted. Finally, I present a conclusion on the topic, summarizing the results of my work and suggesting how further research can be developed in the segment of RA initiatives

2 Theoretical background

2.1 Revenue Management

Revenue in accounting can be defined as an exchange value of all goods and services of an enterprise during an accounting period (Wolk, Dodd & Rozycki, 2008, p. 140). Revenue as the inflows of assets (e.g., cash) resulted from sales is measured by the prices agreed on the exchange (e.g., sales) of business products provided by business to its customers. Expenses are the costs of surrendered or consumed assets associated with generating the revenue. In the income statement that reports the profitability of a business during a financial period, the mentioned values are stated as below:

Net income = Revenues – Expences (Edmonds, Hermanson & Maher, 1993, p. 28).

The traditional RM approach implies that the higher the income level and the lower the expenses, the better the profits of an enterprise are. Even when the statement itself is very rational, nowadays, when competition is strong and many businesses are dealing with tiny profit margins, mere increasing sales of goods and services associated with cutting the expenses can sound as a too simplified solution, not necessarily available at the current markets. Contemporary and more sophisticated approach to RM problem can be defined as managing supply and demand by ”predicting customer demand at the micromarket level and optimizing the price and availability of products” (Cross, 1997, pp. 3-4). Still, new approaches are being developed in order to adapt the business management practices to the situation at the markets. In current circumstances, although aspects and strategies of sustainable business growth and product development must be considered with great care, the RA methods and practices should also be discussed and investigated in order to gain more understanding how revenue can be managed in accordance with best practices and with a focus on efficiency improvement.

The origins of the RM operations come from forecasting, controlled overbooking and controlled discounts practices aimed to develop and apply the most possibly adequate match between supply capacities and demand realities at the Airline industry in 1970-s (McGill & van Ryzin, 1999). Having started with examination of how demand-based booking and pricing policies can impact cash flow outcomes and after decades of migration through industries, RM concept has been developed to a broader definition of a fundamental process, which includes complex optimization of structural, price and quantity decisions in terms of maximizing revenue growth and thus, maximizing the business profits (van Ryzin & Talluri, An Introduction to Revenue Management, 2005, p. 143). Structural solutions for sales and segmentation, pricing formats in each specific product category, quantitative solutions – the RM is engaged in the application of strategies and tactics at the level of interaction with the market in order to adapt the existing business capacities, i.e., supply, to the correctly predicted demand (van Ryzin & Talluri, The Theory and Practice of Revenue Management, 2005, p. 3).

The RM approach is a live segment of the contemporary ever-changing and fast-paced business landscape. Although it is hard to state rigid shapes for its features and processes, the RM tasks overall can roughly be shared between the segments of i) price optimization (discounts with focus on gaining desired market share, uncovering hidden demand with focus at price optimization, recognizing consumer tradeoffs between price and other product attribution) and ii) increasing revenue without expanding of products by identifying lost revenue, establishing a revenue-driven organization (Cross, 1997, p. 5). While the first set of tasks is related to external aspects of the RM, mainly expressed in terms of supply chain optimization and overall efficiency improvement, the latter segment can be defined as a "resource optimization", connected to the internal surviving abilities of an organization and, by definition, is related to the RA scope of activities.

2.2 Revenue Assurance concept

RA can be presented as integral part of the RM process aimed to secure revenue and improve cash flow processing. But also features of risk management, which goal is to protect organizations from potential danger, are definitely seen in RA operations. A mature RA function is related to the process of configuration and implementation of innovations into business activities. In this way, it is a complex, cross-functional back-office process, which importance is not necessarily visible and widely recognized, still, it is evident. Before the term RA has been constructed, the concept itself has already existed for a long period of time, as well as its basic solutions originated from common sense and practical understanding that the loss reduction contributes to an increase in revenue. Now it deals with an extensive variety of business and technological problems, ensuring that business is not losing money due to ineffective practices and decisions.

The RA concept evolved within Telco in the 1980 and from the beginning considered mostly the tasks and the problem of competent and sufficient billing and collections. With poor controls and weak organization of internal processes, the complex and interrelated chain of operations supporting Telco business activities will inevitably give a revenue leakage, which means, some services delivered will not be billed and collected on. (Mattison, 2005, p. 15). Accordingly, the RA can be presented as a complex of processes and operations aimed to assure that 'maximum possible revenues are realized" or that the business "is not losing money". (Mattison, 2005, p. 36). By more extended approach, RA can be defined as increasing profits without influencing demand or supply capacities. RA practices pursue to eliminate possible revenue leakage by means of data quality and process improvement methods. (Baamann, 2007). Thus, an RA concept in comparison to the RM approach can be characterized as a back-office process which main task is to ensure that business is not losing money due to revenue leakages caused by ineffective internal processes, systems and poor competences within a complex and interrelated chain of business operations. As seen in Figure 1 below, the general range of RA operations, depending on the RA maturity in an organization, consists from monitoring and elimination of financial leaks as well as possible measures to prevent potential leaks in

accordance with risk management, and is based on the overall RA strategy defined for a particular organization that addresses specific challenges on specific markets during a given time period.

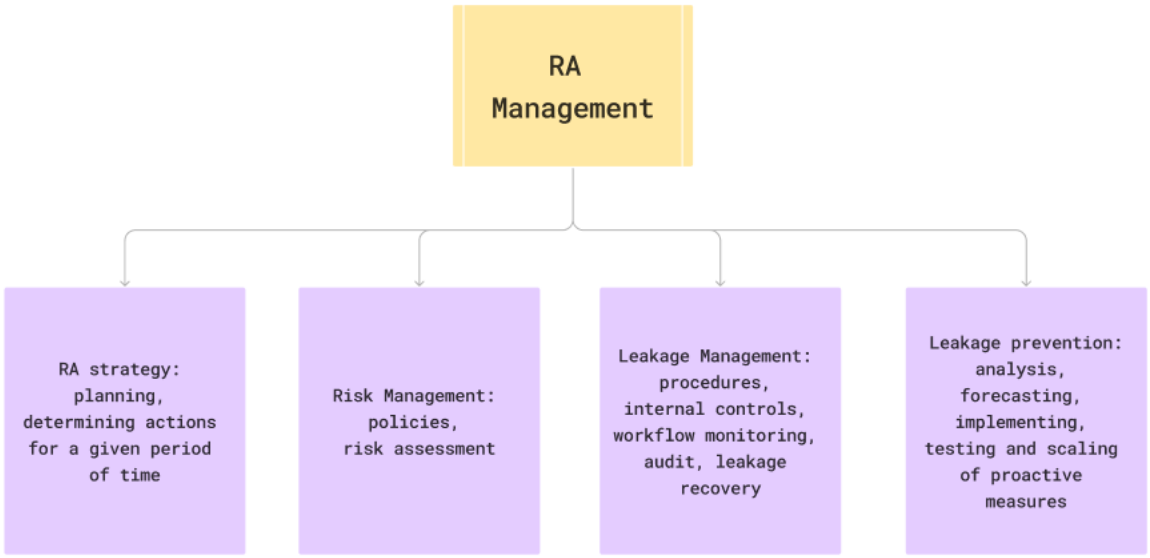


Figure 1. An approximate model of the RA process. (The chart created in www.figma.com).

Even though RA practices are mostly developed within the Telco, the practical qualities of this approach make it essential for every type of business, every specific division of an organization and every industry. Working as an overall improvement agent for many different processes in an organization, the RA is closely interrelated with or even includes such areas as fraud management, risk management, compliance, assurance. (Revenue Assurance, n.d.).

2.3 Revenue leakage

Revenue leakage is a missing amount of earned revenue, which means that service is delivered but not billed and collected (Mattison, 2005, p. 15). The numbers of leakage in Telco can be stated up to 30% of potential revenues (Mattison, 2005, p. 17). EY evaluates that up to 5% of EBITA is being losing unnoticed by companies because their contract management and payment follow-up processes are not held completely in order (Vanderlinden, 2019). In Figure 2 below, the problem of visible (monitored and measured) leakage and invisible, unidentified one, is presented by the RA industry professional to illustrate the leakage problem (Priezkalns, 2011, p. 94). “The challenge is for revenue assurance to make all leakage visible”, in order the methodical and prioritized measures for leakage reduction could be taken (Priezkalns, 2011, p. 95).

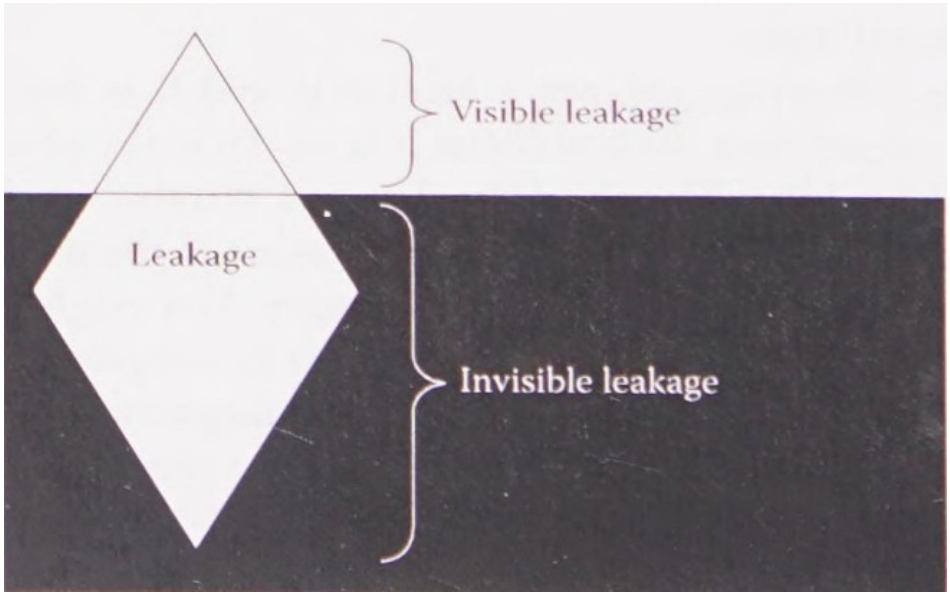


Figure 2. The leakage iceberg. (Priezkalns, 2011, p. 94).

Browning (2003, p. 38) notes that leakage don't always mean mistakes, the leakage happens for reason, it happens within functions, between functions and across functions. One of the main reasons of leakage is faulty billing expressed in underbilling, unbilled sales, billing errors and delays, loss in potential revenue, such as lost subscription renewals, loss in new offerings (Messer, 2021). As Browning claims (2003, p. 39), billing errors are only the symptom. By Baamann (2007), basic causes of revenue leakage are failure in processes, such as manual and bad-defined processes as well as data processing problems, such as inconsistencies or loss of data. In Telco, about half of revenue leakage is located between written off bad debt, fraud and incorrect rating, while 44% of the leakage refer to different types of discrepancy in data, such as services and customers record` s (Mattison, 2005, p. 18). Other general examples of leakage sources may be presented as network related leakage (system errors, discord between operations and systems, data corruption, failures in tracking customer activity properly), mediation related leakage (incorrect records or incorrect application of policies), billing related leakage (confusion in employee roles (who bills what), usage beyond billing, incorrect pricing, billing errors in amounts, currencies, elements or late billing related and fraud related leakage, both in internal and external fraud), collections and dunning related leakage, such as inefficient policies and practices as well as errors on transfer from Billing to AR, provisioning and customer service related leakage (over-budget provisioning, improper updates in systems and data), product development related leakage (inefficiency of cost management) (Mattison, 2005, pp. 19-21).

According to Oracle Netsuite company blog, the most typical leakage issues are related to different kind of mistakes and discrepancies caused by manual operations, particularly in invoicing, lack of automation in data processing, lack of data integration between systems and processes, incompatible technology, relying on spreadsheets in data processing and

operations and all the inefficiencies caused by these factors, inaccurate and/or outdated customer information, lack of clear policies, unenforced policies, inaccessibility of policy information for employee, underbilling, which is the most usual source of leakage for industries that have a wide scope of service revenues and is generally caused, again, by an insufficient data processing, lack of employee competence, pricing errors, which are also commonly produced by bad data processing (Clancy, 2022). Quite definitely, poor competence and employee disengagement also lead to revenue loss.

Main functions of the leakage management are represented by investigation of the leakage sources and fixing the root problem. Generally, the following types of initiatives describe the leakage management techniques in workplaces:

- laissez-faire approach that is expressed by addressing the leakage situations once they arise and by any kind of actions that seem to be appropriate at the time
- leakage management projects considered by management as an appropriate tool for dealing with specifically large or complex revenue leakage issues
- a specialized team or another type of a group that consists of employees with different competence profiles and works together on part time basis when enough amount of leakage appears
- leakage management organization – an actual department that would be responsible for the continuous leakage management (Mattison, 2005, p. 42).

Besides this, the proactive leakage prevention implies intervening into business activity before the damage happened and is aimed mainly in “trying to get people to do things the right way in order to prevent future problems” (Mattison, 2005, p. 46). Prevention approaches are mainly expressed by creation of specific systems, policies and audits that can help to avoid or minimize possible revenue leaks (Mattison, 2005, p. 47).

According to Browning (2003, pp. 40-42), capturing leaks it is more than one-time benefit, as establishing processes or using technology to maximize the number of prevention a “one-time” leak provides with sustainable, incremental revenue and the next stage of RA initiatives should be increasingly focused on opportunity leaks and resolving of cost issues. The researcher defines the following three fundamental causes of leakage:

- change causes, such as mergers and acquisitions, product development, marketing initiatives, adoption of new technology, changing competitive landscape and business model
- susceptibilities that means cultural and mentality causes as, for instance, silo mentality, when employees do not think outside their own tasks and responsibilities leading to poor cooperation between functions, defensiveness of management

against RA initiatives or a culture of extremes, such as an aggressive culture of very fast-paced companies, which are not doing the minimum necessary to prevent the leakage against an exceptionally cautious culture that is prone to overplanning and distrust regarding RA initiatives

- proximate cause, related to flaws, mistakes, omissions of people, processes and technologies that, subsequently, undermine data integrity and availability (Browning, 2003, pp. 46-42).

The problem of revenue leakage is not limited to small and poorly organized businesses but it also spreads through industries and is caused by an overall organizational and sales complexity. Still it prevails rather in industries related to contract and ongoing customer relationships sales than in those sales transactions in which customers just pay for the goods they walk away with. (Clancy, 2022). In addition to the mentioned reasons, some companies experience increased risk of revenue leakage due to the nature of their business operations, such as contractual relationship with customers (as opposed to immediately collected payments), high proportion of service-based revenue, poor policies and processes, such as allowing invoicing discretion, manual processing, invoicing non-contracted and out-of-scope services (Robinson, Ghosh, Greenlee, Massey & Donaldson, 2020).

2.4 Fraud as a specific type of a leakage

Fraud as a specific type of a revenue leakage may involve complex technologies but it also exploits vulnerabilities, inconsistencies, errors of systems and procedures and human mistakes. Significant increase of fraud attempts, aimed at individuals, corporations and governments, forces business and society to create adequate technological and procedural protection measures. Even when the fraud risk management is related to the higher management tasks, awareness of fraud and its techniques, as well as the related control procedures must be present at all levels of an organization. Principles of transparency, responsibility and fairness, promoted by corporate governance, need to be supported by technological and procedural solutions, by raising of awareness regarding the problem.

According to the USA based Association for Financial Professionals (AFP), the share of businesses, that reported attempts of different types of commercial card fraud, increased by up to 10% since 2021. Figure 3 below shows that the most common sources of fraud attempts and actual fraud in 2022 were related to outside fraudster individuals, the Business Email Compromise (BEC) scheme and the vendor impostor fraud. (Payment Fraud and Control Survey Report Key Highlights, 2023).

Sources of Attempted/Actual Payments Fraud Attempts in 2022
(Percent of Organizations)

2022		Annual Revenue Less Than $1 Billion	Annual Revenue At Least $1 Billion	Annual Revenue At Least $1 Billion and Fewer Than 26 Payment Accounts	Annual Revenue At Least $1 Billion and More Than 100 Payment Accounts	2021
Outside individual (e.g., check forged, stolen card, fraudster)	54%	58%	52%	49%	44%	51%
Business Email Compromise (BEC Fraud)	53%	48%	58%	62%	63%	55%
Vendor imposter	37%	29%	46%	49%	48%	–
Bad actor takes over an account, i.e., Account takeover (e.g., hacking a system, adding malicious code – spyware or malware from social network)	20%	19%	23%	17%	30%	16%
Invoice fraud	15%	9%	13%	14%	33%	–
Imposter to client posing as representative from our company	14%	6%	3%	1%	–	–
Third-party or outsourcer (e.g., vendor, professional services provider, business trading partner)	13%	12%	15%	17%	11%	18%
U.S. Postal Service Office interference	11%	7%	13%	9%	22%	–
Organized crime ring (e.g., crime spree that targets other organizations in addition to your own, either in a single city or across the country)	8%	2%	12%	12%	11%	10%
Ransomware	5%	1%	9%	8%	7%	–
Internal party (e.g., malicious insider)	3%	2%	3%	–	7%	2%
Compromised mobile device	3%	2%	2%	3%	4%	3%
Deepfake attempt (e.g., voice and/or video swapping, "deep voice" technology, vishing)	1%	–	–	–	–	–

Figure 3. Sources of Attempted/Actual Payments Fraud Attempts in 2022 (Percent of Organizations). (Payment Fraud and Control Survey Report Key Highlights, 2023).

Fraud can cause significant losses both to private customers and organizations. By AFP, the most reported fraud related to 71% of companies, which fell victim of payment fraud in 2022, is a BEC scheme and this type of fraud has consistently remained at a high percentage level over the recent years. Overall, 65% of the AFP survey respondent organizations became target of payment fraud attempts in 2022, while between the large businesses with annual revenue of at least $1 billion the number of fraud attempts victims stated 78%, and from organizations with more than $1 billion of annual revenue even 84% were attacked by fraudsters. At the same time, less than half of the successful fraud attempt victims were able to recover their lost funds – it was up to 10% of companies overall and 41% of large companies with at least of $1 billion of annual revenue. (Payment Fraud and Control Survey Report Key Highlights, n.d.). The most common payment fraud in the AP function can be defined as a third party's cleared and settled transaction that takes advantage of a vulnerability or security failure of a payment type, method or a system and is initiated without accountholder's authorization with an intent to deceive for a personal gain (Changes in U.S. Payments Fraud from 2012 to 2016, n.d.). Zimbelman (2012, pp. 279-274) specifies such types of financial fraud as:

- fraud committed via the Internet and through other technologies
- fraud associated with taxes, bankruptcies and money
- consumer fraud, including payment and investment fraud

- occupational fraud, committed by employees, vendors or customers as for instance,
    - asset misappropriation that means thefts of money or inventory
    - register disbursement as false refunds, false returns
    - executive cash fraud as a corporate lending.

A fraud leakage can be considered as part of revenue leakage or as an independent form of a revenue loss. By the Risk and Assurance Group global survey on RA and Fraud Management (RAG Revenue Assurance and Fraud Management Survey, 2021), losses caused by fraud can be compared by numbers to the cost of non-fraud leakage. The Society for Worldwide Interbank Financial Telecommunication (SWIFT) refers to Scams and Authorized Push Payment (APP) and Unauthorized Fraud as the most common types of payment fraud. An APP occurs when a victim, usually intentionally deceived by means of social engineering via online channels, authorizes a fraudulent payment that they believe is legitimate, while an Unauthorized Fraud can be presented as, for instance, full bank account take-over based on compromised credentials that lead to unauthorized payments. The victims themselves may provide a fraudster with the credentials or the bank information can be stolen, for instance, by using malware. (Payments Fraud, n.d.).

Johnson (2012) indicates communication fraud as a specific type of financial crime committed by deliberate deception "to secure unfair or unlawful gain or to cause a loss" and illustrates the definition with three main types of fraud as a false representation that means pretending to be someone they not really are, a failure to disclose information (concealing the real situation) and an abusing position of trust that refers to taking unfair advantage from a special position. The techniques of faking, lying or concealing as well as gained advantage are not easily to be understood by an average person. Category of financial crimes, besides fraud, includes such types as tax evasion, cybercrime, corruption while fraud itself can be categorized further to such subcategories as corporate, insurance or credit fraud. Accordingly, the fraudsters can be represented by both owners of business and its customers, by its staff, management or external parties, such as suppliers, distributors and organized crime groups. (Johnson, 2012, Communications Fraud Control). Quite often, fraud has significant negative consequences for both its victims and entire industries, making fraud awareness and fraud prevention measures incredibly important for successful business operations.

2.5 Revenue Assurance scope, objectives, core functions and operations

Since the RA concept itself is not yet defined precisely and its qualities may vary depending on areas of application, different sources provide different specifications of the RA related conditions and its elements. Thus, by Mattison (2005, p. 18), RA scope in its most general interpretation can be related to bad debt, fraud, errors, poor practices and

poor data quality issues. Assurance is a different process than manufacturing a product, selling goods and services. An RA function does not generate profits itself, but it considers the difference between realized and lost profits. In general terms, an RA function can be expressed in saving the cost and effort by doing the right things possible. The lost revenue is caused by sequence of failures and gaps in processing and the main objective of RA initiatives is to close these gaps. (Priezkalns, 2011, p. 70). In this role, RA operations mainly refer to financial and managerial functions, still, they affect the whole profitability of an enterprise. In this way, the purpose of RA is not a generally taken assurance of the efficiency of operations, but more specific assurance of revenue loss prevention, where revenue is income from all sources of business activity of an organization.

The core RA objectives within the framework of organization activities can be presented in the form of i) leakage management assurance of the processes that support the revenue flows in terms of investigation and verification of the roots and nature of existing leaks, determining their extent and the associated risk, identifying and implementing corrective actions, while investigation and correction are carried out by processes of verification that the leakage exists, root cause discovery and determining corrective actions, ii) risk management assurance, which is expressed in monitoring, systematical consequent tracking and analysis of existing operations that identify a possible leakage as quickly as it is possible, baselining, reporting and auditing review aimed to assure that operations are performed correctly, and iii) leakage prevention assurance in terms of proactive auditing and synchronization activities that are addressed to prevent leakage from happening (Mattison, 2005, p. 39, pp. 49-78).

By Mattison (2005, p. 50), practical RA operations contain from two main dimensions: scope dimension, which defines the segment of the revenue processing to be assured, including both core and collateral systems, and functional dimension, which describes the actual actions to be performed in order to assure the revenue. As an example of categorization of contemporary RA practices, applied to a specific area of operations, Johnson (2012, Revenue Assurance) presents the following classification based on billing integrity protective controls: i) billing assurance ensures that billed tariffs, rates and prices correspond to those published or agreed, ii) subscription, configuration or service assurance ensures integration and accuracy of data across core systems and platforms, iii) usage assurance controls refer to accuracy of service usage accounting, iv) cost assurance ensures that unnecessary costs are identified and eliminated, v) process assurance analyzes process gaps that allow these issue to occur.

By Oracle Netsuite, the basic revenue leakage causes are bad data and poorly organized processes (Clancy, 2022). Thus, one of the fundamental approaches to RA functioning is development of data quality and improvement of operational systems efficiency (Baamann, 2007). By operational sector, RA initiatives can be placed within the segments of processes, technology, people and risk management. At the lower operational level there

can be, for example, employees who deal with operational billing problems and the basic RA objective in such duties is a routine recovery of some simple operational loss (revenue loss recovery task). Started out with these strictly practical kinds of tasks, the RA process and RA staff unavoidably come to the necessity of acquiring responsibility of much wider revenue risk mitigation (revenue loss prevention tasks). (Mattison, 2009, p. 6). After having secured proactive control over the leakage across operational areas, there is a challenge to move RA operations to a more strategic role with a broader level of affecting core business operations, such as new products development, marketing, sales activities (Priezkalns, 2011, p. 12). Still, it is impossible to address the final responsibility for RA initiatives to dedicated RA staff only, as everyone in an organization is responsible for blocking an existing leakage and preventing a possible one (Priezkalns, 2011, p. 20).

2.6 Revenue Assurance problems

2.6.1 Revenue Assurance scope problem

One of the most significant problems for revenue loss prevention activities is its relatively broad scope that is hard to clearly distinguish from other operational activities of an organization. In order to be able to act effectively, RA professionals should know what exactly their activities include, to what extent of the revenue recognition chain their activities to be applied. For instance, with regard to every particular case, does prevention include a fraud anticipating, a loss created due to poor management of contracts, a loss created by regulatory compliance failure, a loss created by market competition's marketing activity? (Mattison, 2009, p. 7).

We can characterize the RA in its most mature state as a process for constant improvement and as a continuous controls agent for other processes, including employee development, technological development of operational systems, the systems' integrity. In this way, the scope for implementing RA initiatives becomes too unclear and vast to assure proper efficiency of efforts. Some specific tasks of an RA, for example, fixing the leak, loss prevention or anticipation of fraud, are interrelated with the RM, Risk Management or Fraud Management initiatives and should be considered as such. Synchronization of policies throughout different organizations of the same group, while being a natural administrative tool for ensuring organizational synergy, can also be attributed to RA capacity. The answer to how far RA initiatives can reach depends on particular organizations, their structures and operations. Still, some general elements of the problem can be indicated. As a basic example, TM Forum's (TMF) eTOM Telco RM organizational model can be presented, including such collateral segments as i) Fulfillment segment of operations that is built of customer relationship management, service management, resource management, supplier management operations, ii) Assurance operations, such as customer complaints, service order management, iii) Billing, that involves invoicing, dunning, collections, billing, rating, fraud processing operations. (Mattison, 2005, pp. 28-31). Respectively, the model of an RA scope could contain the following integral parts: i) the core RM chain, which means the process (systems and operations) associated with the

direct revenue generating activities, revenue processing and collection, ii) core RA, i.e., the process of securing correctness of operations of the core RM chain, iii) collateral RA process, which guarantees the proper support of the RM by the collateral RA areas (i.e., the sectors of business activity that do not directly participate in the RM chain activities but are responsible for effectiveness of the Revenue Management Chain (RMC) operations), iv) an extended RA, which defines the process of assuring that the maximum possible revenue is realized for a particular operation, department or product, or that any particular operation, department or product is not operating at a loss (Mattison, 2005, p. 37).

Another operational approach to defining the RA scope is the following 5-dimensional model stated by Yelland & Sherick (2009), as presented by Priezkalns (2011, p. 35):

- single dimension is defined by linear information transfer in which Completeness and Accuracy of Records is expressed in ensuring that each output from particular process is accurately reflected as an input on the next stage; as an example, a customer order processing can be suggested as a flow of data from a customer placing the order to the customer being charged for it
- the two-dimensional approach guarantees Completeness and Accuracy of both Incoming and Outgoing Charges, i.e., considers information from two independent sources, for instance, the service and the tariff; the approach assures that the customer is charged for each service provided and also that the charge is the right monetary value for the service
- the third dimension of Identification of Potential Issues within margins introduces the concept of potential planned leakage in form of discounts, promotions that are not always properly recognized by a business and hence not managed as well as unplanned leakage, for example, discrepancies that occurs within operational routine
- the forth dimension, which is Improvements in Cash Flow, extends the three-dimensional approach by concept of timing of actual cash flows
- finally, Creation of Business Differentiator through a Customer-Specific RA examines the relationship between the company and its major customers that generate considerable impact on revenue – such customers are often treated within special frames of charging such as lower rates which can impact the entire revenue negatively; the task of RA process and its staff in such cases is to assure that it is possible for both parties to win without compromising the margins. (Priezkalns, 2011, p. 35).

Also, an essential contribution to an RA scope aspect is provided by the Maturity Levels concept, which considers different stages of the RA function development within an organization. At the first, initial, level the RA activity is ad hoc, unsystematic, there is no any organized process, no planned controls and periodical audits, no prioritization or

consistence, the work depends on individual commitment towards RA development. At the second level, the RA process becomes repeatable, thus, acquires the features of consistency but, along with some analysis, tests, reconciliations being introduced, most attention is still being held at basic billing, invoicing and cost issues. At the third level, while dedicated RA staff has broader responsibility for the controls, while monitoring the good proportion of revenue streams. Still, their work is predominantly reactive, their dominant practice is finding leaks after they occur and the RA performance itself cannot be recognized in numbers. At level four, the purpose of monitoring the possible leakage moves from cure to prevention, new controls are being deployed promptly in case of changes, the RA team becomes rather a partner and advisor for the core business operations than an auditor and controller. Finally, at the optimized fifth level of maturity, other elements of business are deeply involved to a proactive RA activity by their culture and practices, reactive monitoring is also more decentralized as some of RA activities are now part of operational routine within departments, thus, an RA staff number decreases and the RA function itself evolves into the integral part of the overall risk management process. (Priezkalns, 2011, pp. 42-46).

2.6.2 Cost and profitability of Revenue Assurance initiatives

Another RA problem is measuring the profitability of RA initiatives. How the cost of an RA effort can be evaluated regarding the benefits earned with each separate RA project? Is it possible to forecast the return from RA initiatives during the next financial period? There are different approaches the problem can be addressed. Mattison (2005, p. 83) starts with defining the losses by timeline calculation approach, where the segment of past means how much revenue has already been lost, presence shows in what share of current revenue stream the loss is expressed and future refers to how much can potentially be lost (eventually with revenue opportunity loss caused by corresponding trust and reputation damage included). Thus, the past state of the revenue loss can be indicated in recognized numbers of the leakage that is already discovered and fixed. The present state of the revenue is based on the revenue recognition accounting method represented by a principle that revenue is recognized once it is earned. Earned revenue may be expressed, for example, by goods and services delivered. From this point of view, performance of an RA initiative, addressed to billing and collection improvement, can be evaluated relatively easily.

RA functions, however, can involve not only the sales that already happened but also those opportunities that could possibly happen but were lost due to different internal and external reasons. From this perspective, the question of what the indicators of past, present and future revenue loss are may have diverse answers as it can be considered within a broad range of settings that cause difficulties in added value measurement. It is not easy to evaluate the cost and profitability of monitoring, detective and preventive RA activities as the value of possible losses not always can be defined in exact numbers. Also, improvement of work processes, implementation of new systems and technologies,

improvement of data quality or workforce improvement in skills and competence, caused by the activities performed within the frameworks of RA operations, not necessarily can be considered as the RA's merit or achievement but will rather be seen as a natural part of an overall development, same as both RA operational cost and achieved benefits not necessarily will be addressed to specialized RA activities. While recognizing the above aspects, the basic cost/benefit equation of the RA can be presented as follows:

$$\text{Optimum RA Solution} = \text{Expected Costs} < \text{Expected Benefits},$$

where an RA solution includes revenue loss discovery, leakage correction, prevention of future leakage and a proper risk assessment, i.e., maintaining a certain level of confidence that the RA process is now preventing from the possible leakage, which is to be repaired in future. (Mattison, 2005, p. 92). Each of these activities, performed by specialized personnel and by means of certain tools, is associated with a certain cost. From this point of view, Expected Cost evaluation involves the following fundamental activities:

- baselining in the form of developing standards for high-quality controls
- monitoring, as standard periodic reporting activities related to operational systems performance
- auditing, that systematically validates the integrity of the systems and processes
- correction in the form of providing with organizational, operational, procedural or systems changes aimed to recover the lost revenues
- investigation, such as detection and exploring the leakage areas
- synchronization, which is aimed to ensure that all the systems provide with the same reference information (Mattison, 2005, p. 93).

Related to the RA solutions, i) investigation, baselining and monitoring ensure the revenue loss discovery, and correction provides with the current leakage repair, ii) baselining, monitoring, auditing and synchronization work for prevention of future leakage, iii) while baselining, monitoring and auditing refer to the risk assessment activities in terms of establishing confidence level for the entire process (Mattison, 2005, p. 94).

When considering the cost of a certain RA initiative, the Actual Cost related to it and expressed in Man Hour Cost in terms of the time invested by all staff, involved in the completion of a certain RA task, and Duration cost, i.e., the time of the operation, can be accompanied by Collateral Cost in the form of potential impact of RA initiatives on other organizations, including Credibility/Consensus Cost as investments made, Opportunity Cost that represents the cost related to the time the staff spent on the RA tasks that could be spent on other activities, Collateral Systems Impact Costs, aimed at development of existing IT systems to meet RA demands, but also Investment Cost in the form of investments into infrastructure (e.g., hardware, software), operational and organizational

investments, such as formalization of policies and responsibilities to assure the stability and efficiency of RA initiatives, competency investments into the skills and capabilities of both the RA staff and flexibility investments aimed to continuously adapt the RA infrastructure to ongoing business and technology environment changes (Mattison, 2005, pp. 95-96).

By Priezkanls (2011, p. 70), the most confusing aspect of an RA initiative cost evaluation is that the RA cost is, in general terms, the difference between a realized and lost revenue that means, in other words, between what happened and what should have happened. The possibility of what should have happened or maximum of revenue possible and the reality of gaps closed by an RA initiative may be interpreted differently by different agents of the RA process. The solution of the realized benefit cost can be presented in form of elaboration of certain gaps variances, adjusted to the specific business needs, such as Actual Sales in terms of the monetary charge presented to customers against the Total Value Charged in the form of the value that should have occurred if all goods and services had been charged for at the correct price, evaluation of financial impact of Lost Opportunities, Charges Presented vs Charges Accounted, Charges Presented vs Cash Received from customers. (Priezkalns, 2011, pp. 70-73).

2.6.3 Revenue Assurance strategy problem

According to Beaver (2022, Revenue Management Defined: Ultimate Guide for 2022), the RM strategy refers to a long-term approach that considers maximizing revenue by delivering value to customers, it is all about presentation of the current vision and creation the future oriented plan of the company and its products. Tactics can be defined as smaller and more specific practical actions taken in order to achieve the strategical objectives. Both strategy and tactics have their own specific purpose and goals, while technological advances, changing behaviors of markets and customers increase the complicity of maneuvers.

As discussed in Section 2.2 Revenue Assurance concept, the main purpose of the RA is revenue maximization without affecting supply and demand metrics, while the method utilized for this purpose is data quality and process improvement. Within the given framework, a thoroughly laid RA strategy, which clearly defines the scope and practical goals of each particular RA initiative, becomes crucial for an RA project's profitability and thus, the strategy becomes one the main factors for the RA success. In order to properly define the scope and purpose of each RA initiative, the Project Management (PM) and specialized RA staff must have a clear understanding of the specifics, challenges, operational and technological details of the workflow that should be enhanced by the RA approach. In addition, it is important to understand how specific RA initiatives, aimed at increasing the profitability of a particular workflow, are linked to the overall business strategy. In this way, the problem of an RA strategy can be defined as a task of combining

the knowledge and skills necessary for revenue improvement, knowledge of each particular specific work process details and features, proper determining the appropriate scope and, therefore, the cost of a particular RA initiative within the frameworks of the overall organizational strategy. According to Browning (2003, pp. 8-10), a general RA strategy includes integration of the RA approach into all day-to-day processes of the company (transparent and measurable processes are the basis for preventing revenue leakage at the root cause), implementing automated tools that help to identify, quantify, capture and analyze leakage, building a revenue responsible organization by developing accountability and right leadership, which supports revenue maximization efforts, and embedding the RA strategies with quantifiable, continuously adjusted monitoring mechanisms to achieve a best practices in the RA process. Accordingly, the proposed core strategic approach is being implemented through the following steps:

- identify the leakage points and the best revenue capture opportunities
- quantify the leakage and its causes along with the Return On Investment indicator (ROI) of a corresponding RA initiative
- capture revenue both immediately and with preventing further leakage initiatives (Browning, 2003, p. 10).

In this way, the strategy problem is closely linked to the problem of the RA scope, but also, as Browning (2003, p. 11) suggests, it is focused on the core mission of an organization – shareholder value (today we would say *stakeholder value*), quality, integrity and growth. The organization's mission, its core values define its strategical plan and guide its tactical steps, including those of revenue improvement. Specific RA initiatives on various work processes, as well as the overall RA strategy of an organization, should take into account not only the improvement of each particular process as it is, but the improvement of this process within the entire organization's long-term strategy framework.

2.7 Accounts Payable concept

2.7.1 Accounts Payable definition

The AP figure on the balance sheet of corporate financial statements is a representation of the company's unpaid bills. The term refers to the company's short-term obligations to its vendors, bank loans, salaries and other expenses, which are caused by business operations and are due within a given period, typically within the next 12 months (Schaeffer, 2002, pp. 2-3). The other party records the company's AP transaction as own AR. Accounts Payable, while being integral part of a financial function of an organization, is also an important element of the Procure-to-Pay (P2P, also known as Purchase-to-Pay) process within procurement operations, which cover, in turn, the purchasing task of supply chain management. Accordingly, the P2P process can be presented as integration of supply chain and finance management activities.

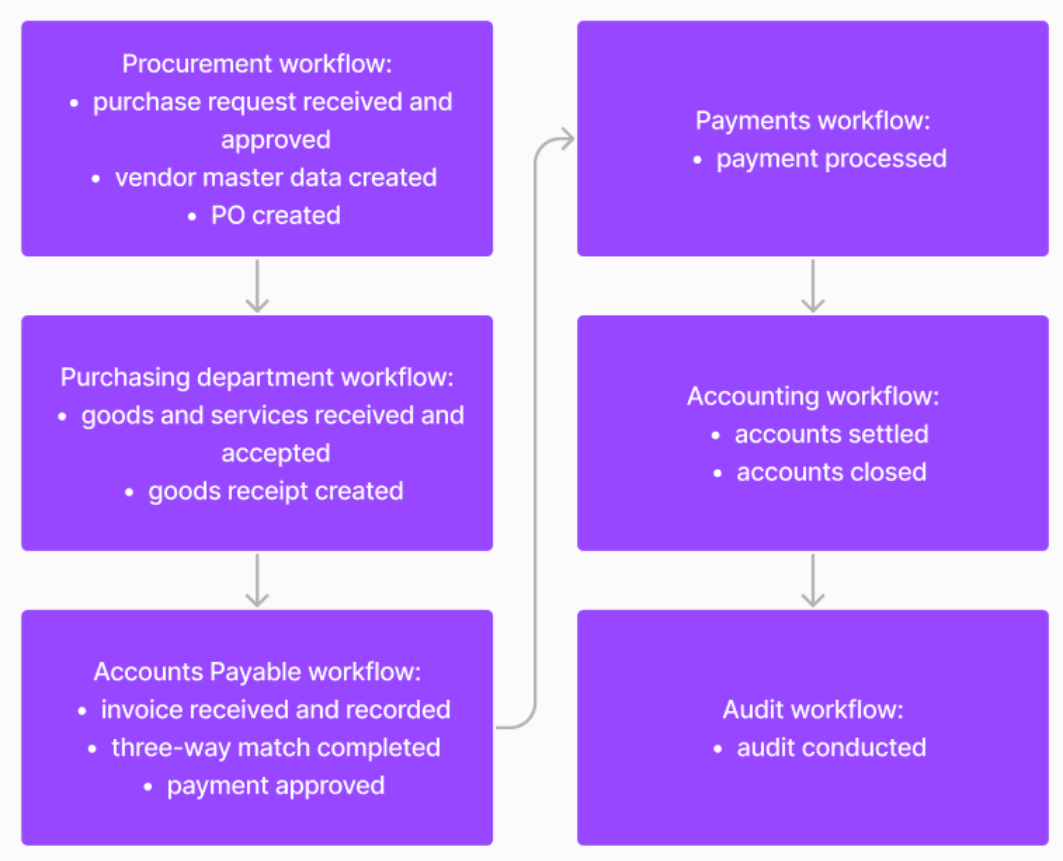


Figure 4. An approximate model of an extended P2P process. (The chart created in www.figma.com).

Figure 4 above shows a standard P2P process as follows:

a) request goods and services, usually by creating a purchase order (PO) but sometimes also another form of agreement with a supplier can be used. A PO is a document that defines a certain quantity of goods and services to be purchased by certain delivery terms and conditions (Purchase Order, n.d.). PO creation usually belongs to procurement function, still, the task is integral part of an AP process. Together with the purchase workflow, the vendor master data is being created in the system or the new purchase is linked to already existing vendor account

b) receive the vendor's invoice and record it to the accounts. Invoices are the key legal documents in accounting and taxation that state the invoice recipient's obligations to the company that sold the goods and services (Invoice in SAP - Everything you need to know, n.d.). There are some mandatory elements each invoice should include, such as an invoice unique number and date of issue, company's contact information including company's name, address and Business ID, invoiced goods and services, their prices and tax rate (Value Added Tax Act, 209 e §). Apart of the mentioned, an invoice may contain details defined as mandatory by a PO, such as a PO number. Initial recording of an invoice to an accounting system involves the formal check of its formal and legal accuracy

c) receive goods and services and create receiving documents, such as goods received note – this task does not belong to AP staff function and usually is a purchasing department responsibility, still, it is part of AP process (Purchase Orders to Be Delivered Quick Guide, n.d.)

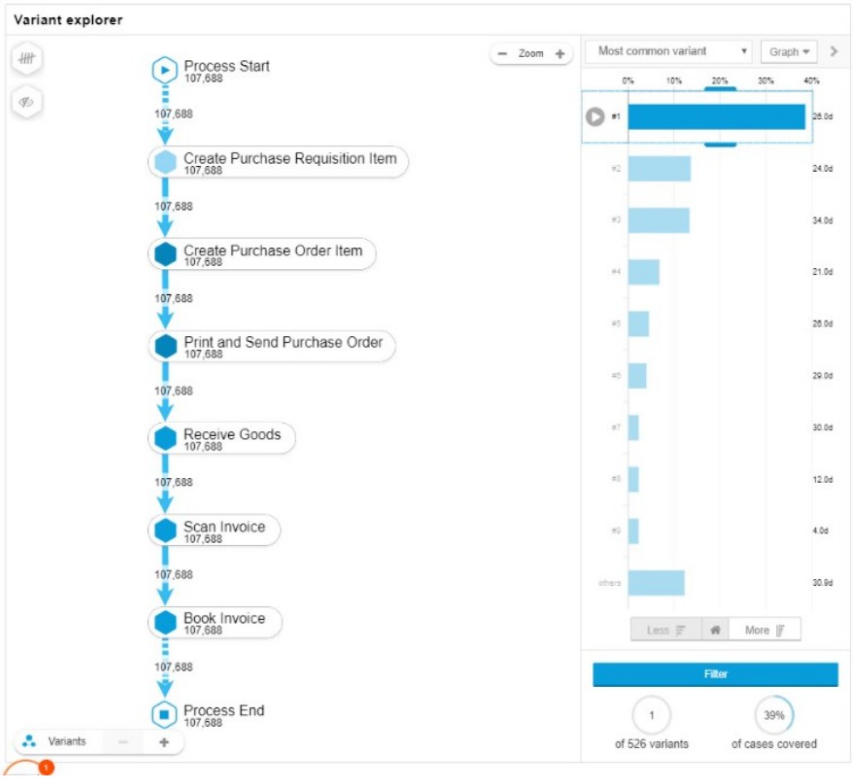
d) review the invoice and approve payment. As stated in the below Subsection 2.7.3 Accounts Payable internal controls, before paying the invoice, the company makes sure in a three-way match process that i) the invoiced goods and services match to ii) the actually received ones and that both invoice and receiving documents match to iii) the ordered goods and services noted in the PO, including involved prices, quantities, terms

e) process the payment: for safety reasons, the payments process should be run apart from the AP function (Beaver, 2020, Accounts Payable Department: Why It's Important and How to Structure It)

f) settle the transaction

g) close the accounts for reporting purposes during a given financial period

h) run an internal audit within specific time frames. Analyze related statistics and performance indicators.



Source Celonis

Figure 5. A standard P2P process model by SAP AG using Celonis. (SAP and Celonis, as presented by Ray (2020)).

As a practical example, a P2P process variant constructed by SAP (Systemanalyse Programmentwicklung, System Analysis Program Development) using Celonis is presented by Figure 5 above: out of 279 000 POs created, 107 000 use the most common process design variant.

AP operations between a company and its stakeholders require an exceptional level of accuracy and consistency in the processing of relevant data, such as invoice database, vendor master data, payments records, related reconciliations. Competence of the AP staff and efficiency of the process itself affect relationships with various groups of stakeholders, the AP management affects the company's cash flow and solvency aspects and, consequently, the entire company's financial stability. All of this makes the challenges of integrity, security and efficiency of the AP process critical to the financial stability of every organization.

2.7.2 Accounts Payable risks

AP security has become a major challenge nowadays. More than a half of surveyed organizations indicated that they have experienced fraud in recent years (PwC's Global Economic Crime and Fraud Survey, n.d.). Human error had been accounted for almost each third of data loss episodes (Smith, 2003). Employee skills and culture are to become top assets to gain the over the next years (Technology companies lean on cyber to go faster and gain trust, n.d.). Lack of clear policies and procedures is one of the business major weaknesses (Internal controls over financial reporting, n.d.).

In general, AP risks can be divided into external and internal risks segments. The internal risks include such as

- outdated practices and organizational design issues, which can be expressed in insufficient controls, manual processes, human errors, poor transparency in operations that causes inaccuracy in data and, subsequently, inaccuracy in processing, such as missing or incorrect information, delays in processing, inefficient fraud prevention and other sources of leakage (Beaver, 2020, Accounts Payable: 15 Challenges and Solutions), disorganized or too complicate internal processes, approval lags (Brooker, 2018)
- internal fraud in terms of
    - unauthorized purchases, as, for instance, reimbursement fraud, when an employee claims false expenses to be reimbursed (Beaver, 2020, Accounts Payable: 15 Challenges and Solutions)
    - false billing (billing schemes), also called collusion or false payment, aimed to address transactions to fraudulent beneficiaries by an involved employee with certain executive rights within the company (Beaver, 2022, Essential Guide to Accounts Payable Fraud: Types, How to Spot It & Prevention; Cosgrove, 2019)

  - kickbacks as another type of compliance violations, when an employee receives a monetary or non-monetary reward from a supplier for a compromised purchase (Beaver, 2022, Essential Guide to Accounts Payable Fraud: Types, How to Spot It & Prevention; Cosgrove, 2019)

  - maverick spending or purchases that are made beyond the company's spending policies (Bichachi, 2022), which generally happens at the procurement or other function of an organization as, for instance, violation of contract terms with suppliers, but can also be related to lack of controls at the AP side

- conflicts of interest, in which an employee has a personal interest in a vendor (Vona, 2018) or is authorized to perform conflicting roles (Accounts Payable Risk Assessment: 8 Questions to Uncover Threats, n.d.; Cosgrove, 2019)

- inaccuracy or lack of an audit trail, a crucial element for keeping relevant and legitimate records, cause difficulties in assembling an accurate picture of processing and decision making (Cosgrove, 2019). Audit trail can be defined as "a record showing who has accessed an information technology (IT) system and what operations the user has performed during a given period" (Audit trail, n.d.). An automated audit trail as a record of history of events monitors user activity and user authorization compliance, helps to detect unauthorized activity, provides with user activity statistics and analysis, including filtering activities by specific information (Marker, 2017)

- human errors as

  - errant payments – different kind of unauthorized transactions made to authorized vendors, such as late or duplicate payments (Brooker, 2018), but also overpayment, missed payments (Cosgrove, 2019)

  - errant records caused by data entry issues (Brooker, 2018), such as different kind of imprecise, invalid, incomplete or double entries

  - errant cash flow forecasting and errant budgeting (Cosgrove, 2019) in the form of discrepancies between real spending and a planned one can affect the company's cash position significantly

- external fraud as

  - phishing scam or BEC aimed to trick employees into a providing access to company's bank account or fraudulent transactions that looks like a legitimate one (Beaver, 2022, Essential Guide to Accounts Payable Fraud: Types, How to Spot It & Prevention)

  - duplicate payments, overpayments or fabricated payments, performed in collaboration between an employee ad a vendor (Cosgrove, 2019).

Of those financial risks that were mentioned in chapter 2.4, the following ones may specifically be related to the AP process:

- billing scheme, when the perpetrator submits a fraudulent invoice (can be also issued by a fictitious company), or alters a legitimate invoice, or it can be a double payment or overpayment to non-accomplice vendor with further refund request, or personal purchases with company funds to a fictitious company, family or others can be made

- fraudulent expense scheme based on false documentation like sales orders, expense reports (overstated, mischaracterized, fictitious expenses) that causes the company to unknowingly make a fraudulent disbursement

- fraudulent payroll scheme, which involves ghost employees, falsified hours, salaries and compensation claims, fraudulent commission scheme, from which the ghost employee scheme is the most costly one (Zimbelman, 2012, pp. 274-276).

Understanding of relevant risks and threats by the staff involved to AP operations, taking the risks into consideration by operational system settings and minimizing the risks to tolerable levels by corresponding controls are the basis requirements for financial risk management at an organization. Risk management refers to "the process of identifying, assessing and controlling financial, legal, strategic and security risks to an organization's capital and earnings" carried out by a system of people, processes and technology that aim to establish objectives in line with values and risks (What is risk management? n.d.). Risk mitigation process, as a set of the key activities of risk management, consists from i) risk identification, which is the process of risk recognition and understanding, ii) performing a risk assessment in terms of quantifying the present threats, evaluating potential severity of their consequences and establishing an acceptable level of specific risks, iii) determining the measures, processes and controls for the risks reduction, tracking and monitoring the risks by corresponding metrics, measures, testing and analysis and by making necessary adjustments (What is risk mitigation? n.d.). From this perspective, the RA process can be presented as integral part of a risk management system, which utilizes risk mitigation activities and aims to reduce potential risks related to the specific area of RA concern.

2.7.3 Accounts Payable internal controls

There are many of different operational problems, caused by a poor and inefficient AP process that lead to security compromise and revenue leakages. On the contrary, accurate AP internal controls help to ensure compliance and financial safety, thus, they support risk reduction and revenue improvement. Generally, in addition to the principles of segregation of duties and limitation of rights, there are also the following types of AP internal controls:

- payment obligation control – in order to ensure that the payment obligation presented in the invoice is real and the invoice is reliable, the concept of three-way

matching, i.e., checking the invoice itself and matching it with the corresponding purchase order and goods receipt, should be applied to the processing of invoices

- data entry control – every invoice must be correctly registered in the system
- payment control to ensure legitimacy of payments and correctness of reconciliation (Accounts Payable Controls, 2023)
- value threshold may be applied for a higher level of operational safety in the form of additional control measures for invoices with an amount exceeding certain thresholds (You Need An Automated Invoice Approval Workflow, Here's Why, n.d.).

In general, the process of internal continuous control can be divided into two main functions within AP operations, namely: i) preventive control (proactive and quality-oriented), such as proper segregation of duties, proper delegation of authority, access control of employees and visitors (including both physical access and system rights and authentication controls) and ii) detective control (review and analysis of performed activities), such as periodic reconciliation of transaction data, analysis of processing efficiency, comparison of budget and actual costs, qualitative measurement, statistics review (Types of internal controls, 2023).

The principle of segregation of duties controls the boundaries of the responsibilities assigned to one staff member. Particularly in the AP, a proper segregation of duties should always be followed as the part of internal controls. The logic of duties segregation in cash transactions generally means that no single employee is in sole control of any process and at least two employees oversee every transaction. The best way to achieve this is to separate duties by function. For instance, transaction initiation, approval, its record and reconciliation should always be handled by at least more that one employee and normally there are more people than two in transaction processing. A person which initiates a purchase should not be responsible for processing invoices or payments, a person who makes a payment should not have the rights to approve invoices or transactions, an employee that approves transactions should not handle bank reconciliation and those responsible for the bank reconciliation should not be a signer on a bank account. (Implement Segregation of Duties for AP in Four Steps, n.d.). According to University of California San Diego, having different people when approving purchases, approving invoices, receiving purchased goods, reviewing and reconciling financial records ensure the correctness in the segregation of duties requirement (Internal Controls Practices, n.d.).

Also, establishing policies and procedures, and following best practices serve as an internal control method to protect a business from internal and external risks. According to McKinsey's global report on productivity, an average employee spend about 20% of their work time searching and gathering information (The social economy: Unlocking value and

productivity through social technologies, n.d). Clear and informative procedures give clarity to operations and help to ensure accuracy and integrity in processing. Policies provide with understanding of rules and requirements in business operations, and help lower-level staff make decisions in accordance to company's standards (What is a business policy and why is it important?, n.d.).

Specific types of legislative and organizational controls, which serve as fraud prevention and detection tools, are mentioned by Zimbelman (2012, pp. 303-305) as a control environment (work regulations, management's communication, role and example, corporate code of conduct, appropriate hiring, clear organizational structure, effective internal audit aimed to loss prevention) that promote professional ethics and deter malpractice. As noted by Zimbelman (2012, p. 305), "most studies have found that internal auditors detect only about 20 percent of all employee frauds" while the rest is detected by other employees or accidentally. Thus, the culture of professional ethics, in which transparency, compliance, communication, management example and effective audit adequately support operations, creates the basis for secure and professional work environments with very limited opportunities for any kind of nonperformance. The controls themselves should be continuously developed and adapted to the challenges of an ever-changing reality. In this way, the mere existence of clear rules and compliance procedures is not enough. Periodical analysis of operational data, as well as the development of employee competencies, assist and support the process of preventive controls.

2.7.4 Key Performance Indicators

AP metrics measure the AP process effectiveness in qualitative values, help evaluate how the process meets specific goals and realizes its objectives. Moreover, by the means of Key Performance Indicators (KPIs) an organization can clarify the points where time and resources are being wasted as well as evaluate the cost of different elements of the process and their performance. AP metrics may be categorized by three main groups: i) AP operational metrics that involve internal processes and employees, ii) financial metrics that work with actual transactions, including all payments, savings, discounts, fees and errors, within the department, iii) AP supplier metrics that consider suppliers and vendors, including integration of their systems into the payer company's own systems. (The Ultimate Guide to Accounts Payable Metrics, n.d.). Following the given categorization, the i) main AP operational metrics can be presented at least by the below examples:

- Days Payable Outstanding (DPO) or AP days ratio measures the average time it takes to an organization to pay its invoices and displays both an organization's AP workflow efficiency and cash flow management effectiveness. In the same time, the ratio has no specific good or bad values, it depends on the size of the company and the type of industry, and rather serves as a strategic tool for AP workflows and cash flow management (Jacobson, 2022):

DPO = (Average AP / Cost of Goods Sold) * Number of Days in the Accounting Period, where

Average AP = (Beginning Accounts Payable – Ending Accounts Payable for the Period) / 2

If DPO is 30, it means that it takes the company 30 days on average to pay off its bills. (Beaver, 2020, Top Accounts Payable (AP) KPIs to Track). Periodical reporting on late payments by percentage and amounts, as well as on late payments patterns and trends, is one of the basic tools a business can apply regarding its AP and cash flow management performance evaluation (How to Reduce Overdue Payments in Accounts Payable, n.d.).

- Average Time to Payment is another one metric to measure processing time. The ratio is counted starting from time the invoice is received until the payment and is closely linked to the invoice processing cost – the longer is the time of processing, the higher is the cost, particularly, the labor costs:

  Average Time to Payment = Total Time Spent Processing Invoices / Total Number of Invoices Processed (6 Essential KPIs for Accounts Payable Teams to Measure, n.d).

  Measuring an average time for different categories of invoices, for instance, invoices of certain big vendors, can help detect gaps in efficiency (10 Key Accounts Payable Metrics To Optimize AP Efficiency, n.d.), measure an impact of certain vendors or certain errors on the overall performance and, subsequently, it helps to determine relevant corrective actions.

- Percentage of Payment Errors metric is critical for the cash flow process performance and strictly affects overall performance and competence image of the AP function, including related people, systems and process organization:

  Payment Errors ratio = Number of Outgoing Payments that contained an error (such as incorrect amount or duplicate payment) / Total Number of Transactions initiated over the same period of time * 100 (Beaver, 2020, Top Accounts Payable (AP) KPIs to Track; 10 Key Accounts Payable Metrics To Optimize AP Efficiency, n.d).

- Percentage of Invoice Exceptions slows down AP workflow processing and, subsequently, leads to an increase in processing cost. Invoice exceptions commonly include such invoice communication errors as incorrect or missing PO number, erroneous credit information, wrong address or date and similar incorrect information present on a supplier invoice (7 KPIs You Should Measure to Improve Your Accounts Payable Process, n.d.), but also approved general exceptions as tax rate, PO, payments or contract inconsistencies (Default invoice exception types, n.d.). A high exception rate can indicate issues with inaccuracy of processing and ineffective processing practices. Accordingly, following this metric helps identify areas for improvement:

Invoice Exceptions ratio = Number of Invoices that contained an exception / Total Number of Processed Invoices during the same period of time * 100 (Top KPIs for Accounts Payable: The Best AP Metrics to Track, n.d.).

- Such values as Total Number of Invoices Received, Total Number of Invoices Processed (10 Key Accounts Payable Metrics To Optimize AP Efficiency, n.d.), Invoices Processed per Employee (6 Essential KPIs for Accounts Payable Teams to Measure, n.d) help to analyze the overall performance during a given time period, make forecasts about current and future operational needs, and plan the future activities.

ii) The below KPIs can be attributed to the main AP financial metrics:

- AP Average Cost per Invoice – an important metric, which includes all AP related costs – people, operating expenses and supplier charges:

  AP Average Cost per Invoice = Total AP Costs / Total Number of Invoices Processed (Beaver, 2020, Top Accounts Payable (AP) KPIs to Track)

  The cost per invoice elements may be structured. For example, measuring only labor cost or infrastructure cost per invoice can help an organization to detect gaps in the process efficiency. Labor cost values cover work time of personnel involved and AP infrastructure costs cover the AP tools/software used to pay invoices. (6 Essential KPIs for Accounts Payable Teams to Measure, n.d).

- Discounts Captured vs. Offered (Number of Invoices with Captured Discounts / Total Number of Invoices eligible for early payment discounts) and Late Payments Penalties (Number of Late Payments that caused penalties / Total Payments) are two financial indicators that directly track the value of both advantage gained by effective processing and money lost due to late payments (Top KPIs for Accounts Payable: The Best AP Metrics to Track, n.d.; 7 Accounts Payable metrics that will grab your CEO's attention, n.d.; King, 2023)

- AP Turnover ratio, similarly to DPO, also helps to evaluate how quickly the suppliers are being paid, but it generally shows how many times the AP total amount is paid off during a given time period. The metric can guide decisions in the AP and cash flow management strategy, it also can indicate cash flow problems or matters of concern in relationships with cuppliers (Top KPIs for Accounts Payable: The Best AP Metrics to Track, n.d.):

  AP Turnover = Net AP / Average AP, where

  Average AP = (Beginning AP – Ending AP) / 2 (Schwarz, 2023).

- finally, such general metrics as AP Expense as a Percentage of Revenue and ROI on specific initiatives, as, for example, ROI on Invoice Automation, are the general indicators that can provide valuable information about the AP performance on macro level. While AP associated cost or investment costs are completely necessary, tracking and understanding the value of the entire function and its

particular parts can help to evaluate the effectiveness of AP operations, provide with numerical evaluation for business cases, highlight areas for improvement.

AP Expense as a Percentage of Revenue = (Total AP Expenses / Total Revenue) * 100 (7 KPIs You Should Measure to Improve Your Accounts Payable Process, n.d.; Accounts payable metrics and KPIs worth tracking, n.d.; 7 Accounts Payable metrics that will grab your CEO's attention, n.d.)

For ROI, the typical formula is: ROI = (Net Profit / Cost of Investment) * 100,

while in PM, the formula is written in the following way:

ROI = [(Financial Value – Project Cost) / Project Cost] * 100 (Stobierski, 2020).

iii) Vendor-related indicators are always useful to monitor in connection with measuring the performance of an organization's external relationship. These are Supplier Satisfaction metric that can be followed anonymously through surveys or during periodic meetings, Time Spent Responding to Inquiries, which is an important indicator of AP productivity and potential errors, Rate of Late Payments or, in another words, Overdue Invoices Rate during a given time period, which may affect the relationship with an organization's suppliers (6 Essential KPIs for Accounts Payable Teams to Measure, n.d.). Such metric as the Number of Supplier Inquiries, Discrepancies and Disputes per Vendor provides with a useful information regarding the specific areas of AP efficiency (7 Accounts Payable metrics that will grab your CEO's attention, n.d.) and, accordingly, the Cost per Invoice ratio, categorized by particular vendors or cost centers. Also, Spend by Vendor analysis is an important indicator, which helps to understand trends and performance gaps by specific vendors, especially by the biggest ones, but also provides insights to overall spending behaviors of a company. Are there any areas where expenses can be saved, any out-of-date subscriptions, unclear purchases, old contracts to be updated, not captured discounts, repetitive late payments and related penalties, repetitive supplier inquiries, errors, exceptional invoices? By following spend analysis an AP team can develop a more strategic approach both to vendor relationship and cost management. (10 Key Accounts Payable Metrics To Optimize AP Efficiency, n.d.; 7 Accounts Payable metrics that will grab your CEO's attention, n.d.). The spending metric is determined by:

Total payments for a given vendor (given cost center) during a set time period (King, 2023).

Another simple classification for the AP KPIs is dividing them by time, cost and error measuring indicators, while taking into account that these three categories are strictly interrelated and mutually affect each other. Thus, the more errors occur in a workflow, the longer time is required for the workflow processing and the more the processing cost increases. The most illustrative KPIs for these categories can be stated as an Average Cost per Invoice, Average Time of Processing (or in the opposite way, an Average Amount of Processed Workflow during a given time period, for instance, per employee), Number of Errors per Unit (per employee, per vendor, per cost center, etc.).

2.8 Impact of technologies

There is a number of definitions for Artificial Intelligence (AI), the main concepts of them are listed by Russell & Norvig (1995): systems that think and act like humans, systems that think and act rationally. According to Luger & Stubblefield (1989, p. 30), AI "may be defined as the branch of computer science that is concerned with the automation of intelligent behavior". AI fields as Machine Learning (ML) that can be defined as "a process of training a piece of software, called a model, to make useful predictions or generate content from data" (What is Machine Learning?, n.d.), Natural Language Processing (NLP) that refers to the ability of computers to understand text and speech (What is natural language processing?, n.d.), Robotic Process Automation (RPA) that uses automation technologies in such tasks as extracting or filling data (What is robotic process automation (RPA)?, n.d.) and other emerging technologies have gained recognition as strong solutions in efficiency improvement and process optimization in variety of tasks.

As mentioned in Section 2.5 Revenue Assurance scope, core functions and operations, an RA function addresses problems of leakage management in terms of controlling possible leakage points within revenue flows processes, ensuring that the leakage can be handled properly in case of happening as well as preventing new leakages from happening, while the fundamental elements in RA operations are data quality, as well as systems effectiveness and efficiency. Even if leakage issues affect all types of organizations, most vulnerable to the revenue leakage, as it was mentioned in Section 2.3 Revenue leakage, are companies with service-based business model, those with contractual type of relationship with their customers or those companies with no or weak invoicing policy and poor processes, including data processing issues. In this way, as it was stated in Section 2.3 Revenue leakage, a leakage commonly occurs as a result of insufficiently automated processes, different kinds of human and system errors, systems inefficiencies and incompatibility, poor data management. Accordingly, the core RA practices that provide with solutions to detecting and preventing a leakage can be presented as a process optimization, continuous advanced analytics of operational performance, data quality improvement, data and risk management based on AI technologies (Kilanko, 2023). AI-driven solutions – those, addressed to handle data quality issues, as well as invisible issues in a procedural (as opposed to a single case related) manner, focused at a specific area of automated solutions with non-engineering (as in health care, economics, etc.) employees involved – are especially beneficial in different industries' assurance tasks (Batarseh, Freeman & Huang, 2021).

In the same way as not so long ago financial professionals moved from manual processing to such digital instruments as an Enterprise Resource Planning (ERP) system, now AI technologies offer their great potential to help on the way to completely automate many repetitive, labor intensive processes in data processing, continuous control and monitoring, data verification and synchronization tasks. The solutions can be expensive, but, undoubtedly, their adoption to day-to-day processing will become necessary for companies

of all sizes in the shortest possible time. According to 2023 KPMG USA survey, 65% of financial reporting leaders report using of AI in their functions and 70% of those companies that already use AI in their operations, expect to apply the technology more broadly over the next two years (AI and Financial Reporting Survey – what are companies doing and where do you stand?, n.d.), while according to the USA based technological research and consulting company Gartner, 10% to 30% of organizations report that they realized significant financial benefit from using AI (AI in Finance: CFO Strategies for Successful AI Deployment, n.d.).

An AP process is all about how money is leaving a company, thus, as it was mentioned in Subsection 2.7.1 Accounts Payable definition, the AP are strictly related to a company's cash flow indicators and, subsequently, its solvency. In this regard, efficiency of AP operations is critical to a business. With support of AI technologies, companies can decrease employee work time, enhance accuracy of operations and analyses, identify red flags easier, improve quality of data analysis and thus, increase their compliance and profitability. Particularly, in the AP function AI technologies can be used in the following examples of operations:

- ML can help in an AP automation as a tool for pattern recognition and making optimal decisions in data entry, fraud detection, payments by matching similarities, tracking discrepancies, providing with regular adjustments to changes (Richardson, 2023). ML-driven analytics support cash flow management by predicting trends, optimization of payment schedules (Noor, 2023)

- AP OCR (Optical Character Recognition) scanning, such as extracting text from images and documents and turning content into data, is now possible for working in cloud with ML model capturing and verifying data from scanned invoices, and training itself on relevant patterns of the documents involved, while continuously improving its functionality (Brooker, 2020; OCR (Optical Character Recognition) with world-class Google Cloud AI, n.d.), OCR scanning in the AP accurately "reads" invoices and feeds the scanned data into an accounting system

- Large Language Model (LLM), a statistical language model trained on huge amounts of data and able to generate and translate content, as well as to perform other NLP tasks (Large Language Models powered by world-class Google AI, n.d.), simplifies AP process by "understanding" invoice details, validating invoice data, tracking errors and discrepancies

- RPA, applied to the AP, is expected to significantly reduce manual processing of repetitive tasks, subsequently, to improve processing efficiency and data quality. Automated Value Added Tax (VAT) code validation, master data processing (Know Your Client (KYC) screening or a bank account update), reminders on overdue invoices, automated payments and an intelligent payment analysis, three-way match automation, user authorization (Intelligent automation & RPA in Finance and Accounting, n.d.), accounts reconciliation – an RPA is rich in

operational details to be enabled for maximizing efficiency and decreasing of manual labor use in AP operations.

By integrating AI technology to the AP processing, companies can easily and quickly verify invoices and payments details, process invoice coding, General Ledger (GL) mapping, detect duplicate invoices (Handa, 2023), handle customer service and perform vendor relationship management tasks. Integration of AI-driven models to the AP systems may benefit an organization with the fraud risk mitigation, reduction of human and system errors, better vendor relationship management and cash flow management transparency as well as easier monitoring and analysis opportunities. Together with an invoice processing automation, communication and payments systems may be automated as well. Automated ticket routing and escalation, automated customer service workflow monitoring and processing time tracking, data analytics and data storage capabilities increase team productivity and customer satisfaction in terms of reducing tickets resolution time and lowering error rates (Rahaman, 2023). In turn, an integrated payment solution automates payments processing and allows to accept and execute all kinds of payments by different payment methods in a transparent and accurate way, reconciles the payments back in the accounting system once a payment is made, keeps all the records safely in centralized database, tracks errors and discrepancies (Gopal, 2023), generates automated payment analytics and reports.

As stated in Section 2.2 Revenue Assurance concept, the core task of the RA is to ensure that maximum potential revenue is realized. In the RA function, Artificial Intelligence (AI) operations can help with identifying possible revenue leakage points by managing and analyzing massive amounts of data, forecasting potential outcomes of various nature based on historical data. For instance, AI-driven solutions are able to ensure an accurate matching of billing and invoicing operations with pricing structures of complex contractual database provided (Kuntz, 2022), analyze and detect leakage points during real-time processing (Singh, 2020) or consider pricing policies under condition of an unknown demand behavior (Gatti Pinheiro, 2023). AI can affect the RA in many different ways and the mentioned AP and RA functions are only a limited example of the technology's performance and cooperation in revenue cycle processing. For instance, in Figure 6 below, 2020 Bain & Company research demonstrates how AI can be used in tracking discount effectiveness across different variables of product, customer segment etc., eliminating ineffective discounts and increasing of profit due to discount optimization.

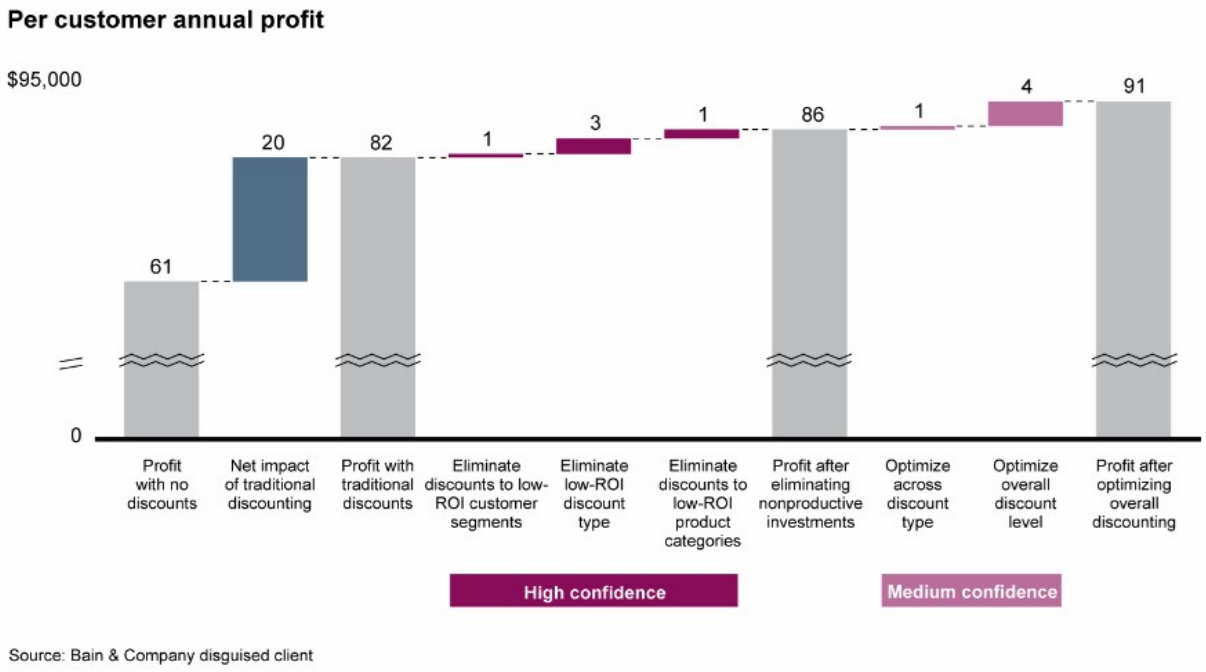


Figure 6. The building products distributor identified a large lift in profits due to optimizing discounts. (Davenport, Burns & Narayan, 2020).

The described above automated invoice processing, as well as a PO and payments processing automation, enhanced by AI tools and supported by a constant and accurate RA process of leakage management, is expected to revolutionize the overall P2P process. Of course, while there are specific RA-related operations for different types of work tasks, still, the RA function as it is is dedicated to control the entire business activities of a company. Other emerging technologies, such as cloud computing in the form of on-demand availability of computing storage and infrastructure resources (What is Cloud Computing?, n.d.) essential for operations flexibility and scalability, as a blockchain network, aimed to track and record transactions and assets including end-to-end tracking of orders, payments and accounts (What is blockchain technology?, n.d.), an Application Programming Interface (API) technology that processes data transfer between different systems and enables different applications to communicate with each other (What is an API?, n.d.) make possible to process a high-volume AP workflow and vast amounts of highly sensitive data with required level of quality, as well as to monitor and document the data concerning potential violations notification.

When considering the impact of technologies on our life and work, all aspects of the problem should be taken in attention. Thus, society and organizations should recognize potential risks caused by emerging technologies, as well as associated legal and ethical responsibilities. Particularly, when speaking about using AI in financial tasks, there should be awareness about the danger of misusing the code (Brundage, Mayer, Eloundou, Agarwal, Adler, Krueger, Leike & Mishkin, 2022) and, subsequently, possibility of

breaches of sensitive data. Another risk is linked to the imminent change of regulations related to new technologies (The Global Risks Report 2022, (n.d.), p. 20, p. 35, p. 48, p. 52). Contemporary AI systems "suffer from a number of unresolved vulnerabilities" (Avin, 2018, p. 17) and many aspects of potential risks, and their impacts "remain hard to measure and therefore hard to monitor, minimize, and disclose in an accountable way" (Brundage, Mayer, Eloundou, Agarwal, Adler, Krueger, Leike & Mishkin, 2022). As the amount of resources consumption by technologies will only be growing, achieving the balance between benefits and risks of emerging technologies will remain an area of concern for industry professionals, researchers and regulators, while gaining adequate awareness of these risks is important for everyone.

2.9 Process transformation

2.9.1 Organizational development and transformation

Organization theory that focuses on understanding organizations as complex mechanisms, their structures and ways in achieving success (Foster, 2016) is strictly related to scientific consideration of organizational structures, organizational change and design, organizational culture. Respectively, an organizational process can be defined as "the steps and procedures that govern how resources are used to create products and services that meet the needs of particular customers" (Business Process Reengineering Assessment Guide, n.d.). Gouillart & Kelly (1996, pp. 2-3) compare organizations to living mechanisms, complete with body, spirit and mind, that are born, they grow, they learn, some are stronger than others, some are healthier, some are charlatans, some suffer or miss values. Like people, companies are mortal, however, organizational demise is not inevitable. For corporations, the secret of eternal life is their ability to effectively transform their systems in a unified pursuit of common goals. The authors propose the following phases for transformation, as shown in Figure 7 below: i) reframing, which is a shift in an organization's perception of what it is and what it can achieve, opens the corporate mind and fulfills it with a new vision of perspective and determination to change, ii) restructuring, that is an important preparatory stage, allowing an organization to achieve a level of efficiency that ensures its competitiveness, iii) revitalization, the enhancement of growth by establishing a connection between the organizational body and its environment – of the four elements of change, revitalization is the most important factor that clearly distinguishes transformation from mere downsizing, and iv) renewal, the most difficult and powerful stage or transformation, which is linked to people and includes creation of new metabolism, the adaptation to changes in the environment, allows the company to regenerate and grow new skills and new purposes (Gouillart & Kelly, 1996, pp. 5-7).

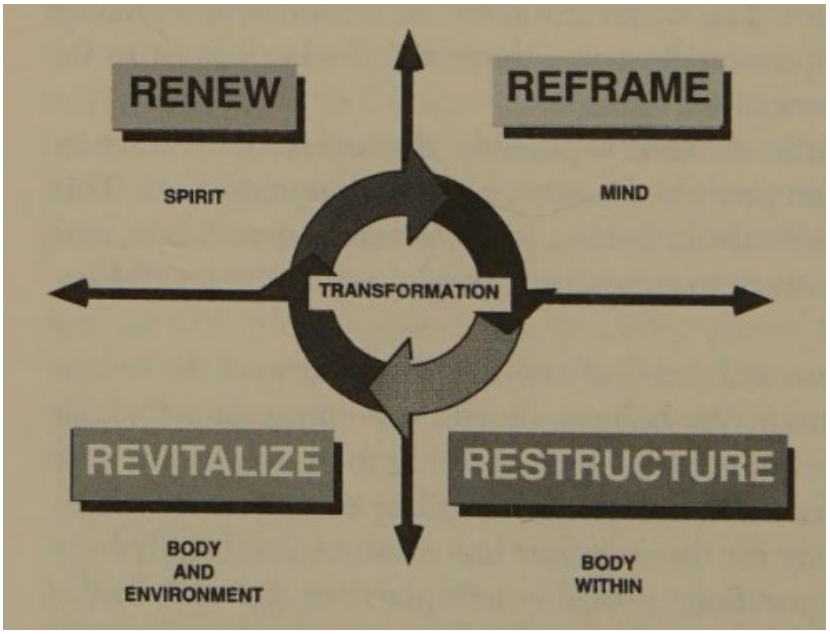


Figure 7. The Four R's of Transformation. (Gouillart & Kelly, 1996, p. 6).

2.9.2 Process Management and Business Process Transformation

The above scheme of organizational development is strictly linked to the narrower concept of PM that can be defined as a management of specific planned efforts aimed to achieve a particular purpose over a certain period of time (Project, n.d.). A single project of a Business Process's (BP) "revitalization" can be performed in the form of a BP's redesign or reengineering (BPR) that is a larger scale all-encompassing change or a smaller scale process improvement intended to fulfill gaps and reduce inefficiencies (Laoyan, How to start fresh with business process reengineering, 2022; 2023). The United States General Accounting Office defines the BPR as an "approach for redesigning the way work is done to better support the organization's mission and reduce costs" (Business Process Reengineering Assessment Guide, n.d.). Through BPR, organizations intend to achieve radical improvements in productivity, quality and stakeholder satisfaction; due to complexity of tasks, BP redesign can be performed by outsourced third parties (Business Process Reengineering, n.d.). The choice between different strategies of change depend on practical needs and goals of the PM process.

As presented in Figure 8 below, five main phases of the PM life cycle are usually applied to a single project of transformation: initiation, planning, execution, control (also called monitoring or performance phase) and closure (Haugan, 2010). Each phase includes specific processes and development of related documentation.

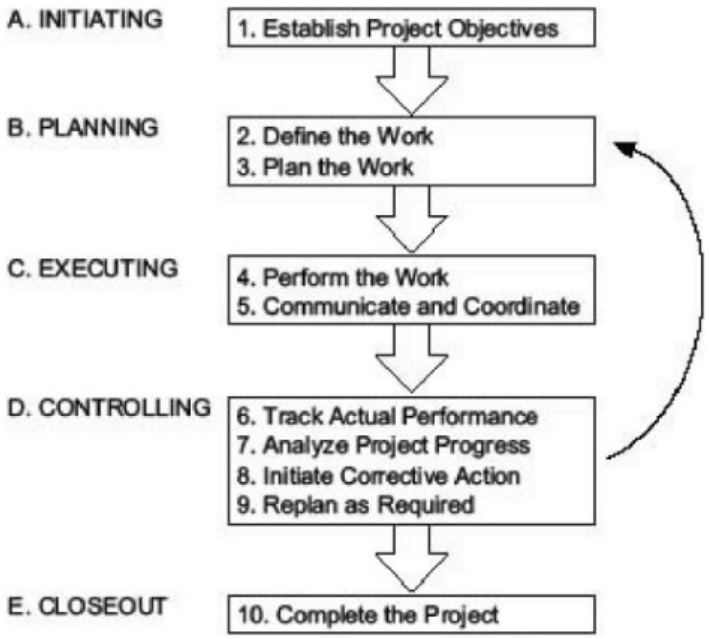


Figure 8. Basic Project Management Process. (Haugan, 2010, Introduction and Overview).

Process initiation starts the life cycle of a project, its main goal is to ensure that the project to be implemented is in line with the strategy and values of an organization. During this stage, the projects objectives as well as deliverables or specific project outputs are defined and a project charter is composed (MacNeil, 2022). The project charter is a document that establishes a general framework of the future project, provides information on its purpose, objectives and responsibilities, yet without details on dates and milestones. Also, the initiation phase involves evaluation of the project's feasibility by performing cost estimation (Haugan, 2010, Introduction and Overview), identifying success metrics and related risks (Knutson, 1999). Final figures of the project cost may differ significantly from preliminary estimates due to unknown variables and potential risks. Still, a preliminary estimate is necessary for the evaluation of the project's future success. Moreover, a contingency in time, resources and, therefore, cost, should be taken into account, while pursuing to control the scope of expectations. In this way, more detailed planning provides with clearer understanding of potential cost. (Bisson, 2015). The initial project cost estimation, which is a process of assembling and predicting the project cost, is combined of economic evaluation of the project's economic and technical feasibility, project investment cost, which can be defined as a prediction of future cost even though all project characteristics are not yet defined, and cost forecasting in terms of assessing of uncertainties that could occur during the project lifecycle (Georgas & Vallance, 1987).

More detailed project plan is developed during the project planning phase and can include project scope, SMART (Specific, Measurable, Achievable, Realistic, Time-bound) goals and roles, sets schedules, milestones and KPIs, evaluates project budget and deliverables, develop communication plan (Martins, 2023). The plan can be presented in the form of a Work Breakdown Structure (WBS) or a roadmap that maps the tasks by deadlines,

milestones, deliverables (Understanding the project management phases, n.d.). The WBS is often developed as a Gantt chart that outlines the entire project through the milestones of dates and deliverables, logically decomposed into the more detailed activities and then to certain actions or tasks, each one with its own scope, duration, cost and resources required (Work Breakdown Structure (WBS) & Gantt chart for Jira - The ultimate guide, n.d.). By decomposing the WBS by activities and work packages, and evaluating the costs of specific units, the project budget is estimated. According to Project Management Institute (Project Management Institute, 2004, pp. 164-166), the cost estimation methods include such as analogous estimating that means using the cost of similar projects as the reference for estimating the cost of the actual project, determining resource cost rates in the form of calculating the cost by units prices (work hour, cubic yard), bottom-up technique that involves estimating the cost of work packages starting from the lowest level of detail, parametric estimation that uses a statistical relationship between historical cost and other variables (e.g., work hours), vendor bid analysis. The cost budgeting process establishes budget, standards and monitoring system by which the project investment cost is measured and managed, while by economic evaluation of a project the value of the project, related to the project's profitability and other corporate benchmarks and interest rates, is being established (Georgas & Vallance, 1987). Thus, the quality of project planning directly affects the effectiveness of the entire project.

During the execution phase, the project implementation is being activated by a specialized project team under a project manager supervision (Definition of project life cycle: Exploring the 5 phases, n.d.). Along with traditional PM roles, another one key executive vital for process improvement may be a process owner, who is responsible for managing a specific workflow, overseeing its performance and making the necessary changes to achieve the process objectives (What Is a Process Owner? (Plus Requirements to Become One), n.d.). The process owner holds ultimate accountability for the process design, master data, technological solutions and service delivery model definition (Brown & Lepeak, 2016). In turn, the controlling phase usually includes tracking and monitoring the project through progress and financial reports, controlling cost, schedule, quality, risk and changes (Somma, 2008) on an ongoing basis. The project execution quality measuring is also being controlled by examining KPIs and reporting the performance to project stakeholders (5 project management phases to improve your team's workflow, n.d.). The project closure phase, in general, is linked to determining areas for improvement and documenting lessons learned (Definition of project life cycle: Exploring the 5 phases, n.d.), retrospective review and discussion, final reporting and project documentation archiving (Understanding the project management phases, n.d.).

According to Project Management Institute (Project Management Institute, 2004, p. 85), a PM methodology "defines a set of Project Management Process Groups, their related processes and the related control functions that are consolidated and combined into a functioning unified whole". Two most general PM methodologies, Agile and Waterfall, in general terms can be presented as, respectively, more flexible and more strictly planned

approaches, the choice of which is determined be the specifics of a particular project and industry. While Agile methodology is flexible to changes in budget and schedule, more open to experimenting in approaches and techniques, Waterfall generally is outlined from its start to the finish of the project and the next stage cannot be started until completion of the previous one. (Hoory & Bottorff, 2022). Still, both methods have their strengths, depending to the nature of the project to be implemented. A faster and more flexible transformation, proposed by Agile methodology, suits better for small and middle-sized projects, especially in digital products development. The project elements, stages, commonly known as sprints, can easily be added, moved to the next phase or removed, while the team can adjust their strategy to changing circumstances and to the new findings, gained during the project development (Laoyan, 2022, What is Agile methodology? (A beginner's guide)). On the other hand, the Waterfall approach that has a well-defined end goal and implies strict following to sequential steps, is usually being applied in construction and manufacturing, while can be used in other industries, too (Laoyan, 2022, Everything you need to know about waterfall project management). In turn, an evolutionary model of the Continuous Improvement (CI) process may be defined as an ongoing process of improvement, when repetitious evaluation of current efficiency and constant implementation of smaller changes, instead of radical "breakthrough" improvement, is applied by Plan-Do-Check-Act (PDCA) model (Continuous Improvement, n.d.). The PDCA cycle focuses on the actual results of an improvement effort, comparing them to the planned outcomes and applying needed corrections. In turn, the Plan-Do-Study-Act (PDSA) approach of the method focuses on the knowledge generated by the process, when the outcomes are monitored in order to test the plan for success or to find areas for improvement, where the Act step can be used to adjust the goal or broaden the learning (PDSA, n.d.). Both approaches consider improvement as a systematic, cyclical, never-ending set of activities of planning and implementing changes, studying and testing the outcomes.

Projects are different in sizes, goals, products and complexity, accordingly, different approaches can and should be applied to the project architecture, dictated by the project's nature and characteristics (Burgan & Burgan, 2014). Process redesign or creation of a new process are implemented differently in different companies but are rarely a one-person project. Usually, workflow transformation is carried out by a cross-functional team of managers and employees, who work and interact in a creative atmosphere. Sometimes, such projects involve several departments or entire organizations, they may imply radical rethinking of work processes or entire systems. Process transformation project activities can also cover specific functions or tasks, they can be focused on the needs of a specific department or a process. In case of the AP process, since invoice processing can take place both within the entire organization's ERP and apart from it in a specific accounting software, the project team will have to consider a fairly wide range of solutions, depending on the specific AP process characteristics and systems already present in an organization. Awareness of the diversity of methods, approaches and principles in leading organizational change provides the better opportunity to accurately shape the change management process and manage change in the most effective way that meets the relevant quality requirements.

3 Research methodology

3.1 Research scope

As stated in Section 1.2 Research problem and objectives, the study aims to explore the problem of practical implementation of the specific AP work process enhanced by the RA approach. Respectively, the work will involve analyzing material on the RA, AP and work process design problems with regard to examination the key concepts and issues of the mentioned subjects, identification of areas in the AP process where the RA approach can be applied to as well as development of recommendations on how the specific design of the AP work process, based on an RA logic and principles, can be established. Whilst general problems of RM are relatively well examined, its particular approaches, techniques, ways of practical application to specific business areas, such as considered in this work application of RA method to an AP process, still need further research and development.

Since the scope of this study, as discussed, is restricted by a very narrow and relatively new business problem of an RA, prior research in the field is limited as well. Most of empirical developments and theoretical findings in the area of improving such specific BPs as the mentioned above and similar ones are hidden behind the commercial offers of companies professionally engaged in their clients' process optimization, often combined with technological renewal of the conceptually outdated software. The lack of available data and case studies in open databases undermines decision making and risk management capabilities in practical consideration of the problem. With regard to the given limitations, the study also aims to make a contribution, albeit relatively modest, to the available knowledge on the subject. Another challenge for the work success is linked to the natural limits of my personal resources to design a work process as a final product usable by concrete users with their specific needs, objectives, preferences: in general, workflow design is a team work that involves collaboration of professionals of different disciplines and assumes the presence of specific requirements as for the final product. Sharing knowledge, brainstorming, real life testing possibilities are the basic requirements for a work process creation. Still, by analyzing the related data, by making the problem more visible and exploring the ways of possible realization of the task we can always support developing more functional solutions. In this way, whilst the results of the study will be limited by theoretical frameworks, the model can still be useful for any person or organization interested in the AP improvement using an RA approach and, in general, in various examples of process improvement.

3.2 Grounded Theory

The study was inspired by my interest to the RA process and the desire to clarify how the process can be applied to a single specific function with its own features and tasks within an overall BP network of an organization (in this case this was a specific AP function). In this way, according to the purpose of the study, aimed to contribute to expansion of

theoretical knowledge on the RA and exploration of practical application of an RA approach, the study methodology can be introduced as a GT deductive qualitative exploratory research, through which, applied to this study, i) was explored the existing knowledge on the RA, ii) were identified key concepts and features of the RA and iii) was presented a theoretical framework concerning utilization of the RA concept in practical AP settings.

In this thesis, due to its exploratory nature, the methodology is based on the Grounded Theory (GT) qualitative method, developed by sociologists B. Glaser and A. Strauss in the 1960s, which involves building of theoretical constructions, hypotheses based on systematic and subsequent analysis of qualitative data (Charmaz, 2014, p. 7). By Makri & Neely (2021), Creswell (2012, p. 423) defines GT as "a systematic, qualitative procedure used to generate a theory that explains, at a broad conceptual level, a process, an action, or an interaction about a substantive topic". The method is used mostly in such disciplines as medicine, social sciences, but also in management and accounting, computer science, technologies (Makri & Neely, 2021).

An important element of the method is an aim to build a change in response to conditions. GT research does not only uncover information on a phenomenon, but it also seeks to determine how the situation can be developed. The data for it may come from different sources as observations, interviews, documents, books, anything that might contain information on the area of a researcher's interest. Processes of data collection and analysis are interrelated in GT, the analysis begins together with starting the data collection because the running analysis is important for outlining further development of the study; systematical and subsequent execution of data collecting and analysis expands the research process to cover all potentially relevant aspects once they are noted that allows to link the theory to reality. Every single element of a phenomenon to be grouped as a concept and these conceptualized basic units are accumulated into theoretical network of categories and their interrelations. Analysis happens within abstract frameworks by identifying the categories of elements and constant comparison and coding of elements, their patterns, relationships, stages and processes, by making and verifying hypotheses regarding the categories and their relationships with both macro- and microscopic structural conditions brought into the analysis. (Corbin & Strauss, 1990, pp. 419-420). The result of analysis is a theoretical framework that is grounded in the integrated, structured data and presents a comprehensive description of the concept under examination. The developed theoretical scheme does not only provide with understanding of the examined phenomena, but allows the researcher to explain the phenomena and predict its further development. (Corbin & Strauss, 1998, p. 25).

A GT research may be carried out autonomously, under a supervision of an experienced researcher, or by a team. Previous experience or prior knowledge in the area of inquiry do not necessarily prevent the proper analysis of data. (Birks, Hoare & Mills, 2019).

Moreover, stating pre-identified research questions or propositions is not required for GT research (Makri & Neely, 2021). By O'Reilly, Papr & Marx (2012), Glaser & Strauss (1967) defined the GT method as discovery of theory from data. While, according to Birks, Hoare & Mills (2019), Glaser (1998) argued that "all is data", there are conflicting views on use of literature in GT. By Thornberg & Dunne (2019, p. 208), Glaser (1978, 1998, 2001) proposed that literature should not be reviewed prior to data collection in order to prevent a researcher from developing pre-existing biased concepts and keeping an open-minded approach while, according to Birks, Hoare & Mills (2019), Glaser & Strauss (1967) originally suggested that researchers "do not enter the field as *tabula rasa* or blank slate, meaning that they bring with them a wealth of personal and professional knowledge and experience". Charmaz (2014, p. 305) claimed that "the literature review and theoretical framework are ideological sites in which you claim, locate, evaluate, and defend your position", they "should contain much more than summaries" and should be considered in relation to the original theory that is developed under the current GT research.

3.3 Research data

When a study is based on a qualitative method, it is mostly linked to theoretical knowledge, even if this theory itself relies on the real-world settings. In order to ensure that the material used in this study is reliable, multidimensional and evidence-based, three different data sources were used: i) guidebooks of RA practitioners, in particular, Mattison (2005, 2009) and Priezkalns (2011), along with the literature dedicated to RM, which contains comprehensive theoretical database on the RA issues, ii) digital knowledge bases of global corporations that develop accounting software and operations (such as KPMG, MineralTree, Oracle Netsuite, SAP, Stampli, Taulia), as well as organizations that provide insight into practical aspects of the AP, PM, AI problems (such as Asana, Atlassian, Google, IBM, MIT, PM Institute, Open AI), iii) the current discussion on the RA problem in business publications (including Forbes, Gartner) and research papers that complements the study with additional details on the matter. Only information openly available in the Internet and books was used in the study, while paid or subscription content, presumed to be protected by the commercial interest of the content owners, was not used.

The wide range secondary material was i) limited by relation of its subjects to the thesis aspects aimed to address the needs of the AP and RA functions, ii) thematically analyzed and, subsequently, categorized in terms of key concept and features of the subject under study and iv) the resulting categories of RA, AP and PM with corresponding key concepts and features were organized according to the logical design of the study, aimed to produce a theoretical image of the combined process, i.e., the conceptual design of the AP process strengthened by the RA approach. The key aspects of each category, highlighted in the theoretical part, were developed in the practical part through the prism of their application in a potential project. In this way, the theory of process re-engineering was reflected in the samples of documents of different stages of the new AP process, the RA theory was reworked as a framework of a new AP process together with some examples of some

possible solutions presented on particular workflows transformation. Of course, the proposed solutions serve as ideas that can be implemented in different ways, depending on the real and specific needs of each individual department and workflow.

Also, the necessary expansion of the material presented in the study was carried out for research purposes, as, for example, in order to formulate the role of AP in the financial function of an organization, it was necessary to present the entire P2P process. Accordingly, the subjects that are located beyond the scope of AP activities, such as the contract management function, were excluded from the study, although their quality directly affects AP operations and the RA activities are important for them as well. A deductive reasoning method, in which an appropriately examined theory becomes a basis and a driver for its practical application, served as a data analysis strategy for the study.

4 Research findings

4.1 Project initiation and planning

My interest in streamlining AP workflows has developed throughout my career in various segments of the AP process in large organizations. Probably because of this interest in process improvement initiatives, when I had to choose a topic for my master's thesis, the AP transformation came to my mind as the first choice. However, when I started writing this work, I did not know what the outcome might be. Previously, I took part in some partial improvements, in the implementation of new systems in the workplace, but still, I have never been involved in a broader process developments. In large companies, process design and process transformation is handled by a group of invisible professionals who are "out there" rather than by ordinary specialists working in the field and these realities certainly have their reasons. Still, the transition from monolithic solutions to a more flexible transformation architecture of relatively independent workflows, created with contribution of people directly involved in a specific task, seemed to me more appropriate for the current realities than the more traditional fixed process design. Indeed, the constant monitoring of a process relevance allows us to quickly develop and implement initiatives to improve and optimize it, while continuing to maintain the logic and structure of current organizational activities. In response to the ever-changing reality, the holistic RA approach is one of the methods that allows us to manage both current problems, which should be resolved, and also potential risks, optimize and improve processes on an ongoing basis without slowing down work operations or negatively impacting workflows. The RA seemed to be such a successful solution for improving the quality of financial operations that I decided to examine both the AP and RA at least in the ideal space of a thesis work in order to discover how they can be combined to build more efficient and secure processes.

As it was stated in Section 2.2 Revenue Assurance concept, the RA is generally defined as increasing profits without influencing demand or supply metrics by fixing and preventing a revenue leakage. While in the AR (Accounts Receivable, billing) the process improvement can be achieved by elimination of billing errors and discrepancies (such as service provided is not billed or billed amount is not received), an AP process improvement and, as a result, a revenue improvement, can be achieved by eliminating errors and discrepancies in the AP (such as incorrect payments or a significant amount of overdue invoices) by means of the leakage management. In this way, the problem of the thesis was to find out how the RA approach can be integrated into the AP workflows in order to improve its efficiency and thus, its profitability.

Again, in line with Section 2.2 Revenue Assurance concept, RA initiatives are closely related to the overall risk management in terms of protecting organizations from potential hazards, as well as to the RM objectives, aimed to secure revenue flows of organizations by balancing costs and improving processing practices. Whilst it may seem that RA initiatives overlap with risk management initiatives or that the RA function can be

mistakenly confused with the RM function, the RA process, nevertheless, has its own scope of activity for the organization, in particular: i) protective assurance that any potential revenue leakage is recognized and addressed as soon as it occurs and ii) preventive assurance that organization is not losing revenue due to inefficiencies in operations and poor data quality.

Based on the above, I decided to outline a possible scenario for improving an AP process based on the RA approach. The scenario was intended to present a general framework for the AP process reengineering and consider how such a project can be developed and what documents it may contain. In the same way as with any other project, I started with the usual project planning, but in strict accordance with the RA principles, which were described in the theoretical part of this work. First of all, it was important to choose the project methodology, main types of which are presented in Section 2.9 Process Transformation. At first, I thought of the Agile-Waterfall hybrid PM model, which provides a sufficiently flexible work environment, supports both multitasking and understanding of boundaries and is suitable for projects of different sizes. It contains clearly defined milestones and sprints, roles and deliverables, while still allowing team members to work independently. However, considering the RA's objective and nature to constantly monitor the managed process for improvement needs, the completeness of Agile and Waterfall approaches does not leave enough space and flexibility for the concept of constant change and development of the same subject without changing its core logic and purpose that underlies the RA method and process. The RA does not produce any finished product - it is a process that may involve specialized personnel and technology solutions, but it is also an approach, a technique by which other processes are managed and controlled. Accordingly, the CI method of PM, with its repetitive cycle of the existing processes examination, continuous planning and applying necessary changes, appeared to be well suited to an RA initiative implementation. With the help of CI, we can fix the managed process for the time required, constantly monitor its performance and modify it with planned activities when new solutions emerge. Despite the uncertainties that may arise along the way, we can regularly check relevant metrics at certain milestones and make adjustments if something went wrong.

Once the method of integrating the RA into the AP process transformation was determined, I had to define the scope of the project at an early stage of the planning. Since we have the RA dedicated project, there are leakage management, risk management and leakage prevention measures in scope, where, according to Section 2.5 Revenue Assurance scope, objectives, core functions and operations, leakage management involves leakage investigation and correction, risk management ensures monitoring and controlling day-to-day operations, auditing of performed operations and baselining in terms of development of standards to promote processes efficiency, while leakage prevention aims to provide proactive identification and management of potential risks as well as synchronization activities. Only solutions related to the project scope should be considered as project deliverables, which, together with the project objectives, are described in the initial project

document, the Project Charter. In addition to defining the scope of the project, the document also includes a summary that briefly but accurately presents the main essence of the planned activities, links the project to the overall strategy of the organization and presents quantifiable goals and indicators.

When we start a process optimization project, we already have some kind of an active workflow with certain units (in our case, invoices) actually processed. Accordingly, there is no need to redesign the entire process from scratch and the optimization activities can be performed incrementally during an active workflow processing, depending on the cost of particular tasks and their prioritization in a way that avoids complete halt in the current workflows. In this case, the sequence of optimization phases must be built as studying of the current process, finding problem areas, prioritizing them and gradually improving their performance. This allows to get a portion of improvements already on the early stage of the optimization process and, subsequently, to complete the further segments of improvement by more or less separate developments that is important from the investment and recourse management perspectives. Accordingly, in this thesis the task of AP optimization was divided into the segments of automation, development of additional internal controls in terms of risk management and audit, and creation of an employee performance development system and knowledge database that is reflected in the below Project Charter. As it is noted in Section 2.9 Process Transformation, a Project Charter is the document that outlines the main details of the project at a higher level, without going into details. The charter of the AP process improvement project based on the RA principles may be stated as follows:

1 Project Charter

1.1 Project team members, contact information, roles and responsibilities:

- 1.1.1 Project manager – leads the project, plans and coordinates execution of the project activities, controls alignment of the activities with objectives of the project and with organizational values and goals, communicates with project stakeholders, reports to key authorizing stakeholders
- 1.1.2 Project controller – participates in project budget preparation, oversees project progress with respect to budget and compliance requirements, handles project accounting and financial function of the project, reports to the project manager and key authorizing stakeholders
- 1.1.3 IT specialist – provides expertise in the implementation of technological changes and technology integration, provides technical support in project matters, monitors work progress against schedules, reports to the project manager and key authorizing stakeholders

- 1.1.4 AP specialist – coordinates the AP part of the project, participates in the development and implementation of new systems, ensures alignment of activities with the project plan and objectives

- 1.1.5 Project key authorizing stakeholders, the head of the finance department, the top management of the organization – evaluate and approve the project proposals provided by the project team, evaluate and approve the project outcomes.

1.2 Project stakeholders (users of the planned AP process):

- 1.2.1 AP team

- 1.2.2 Procurement

- 1.2.3 Purchasing departments

- 1.2.4 Suppliers

- 1.2.5 Accounting team

- 1.2.6 AP Team Lead, Finance Department Manager, the management of the organization.

1.3 Project business need, description, rationale, assumptions and constraints:

The current AP process is based on outdated tools and principles that do not meet contemporary needs of the RM, such as minimizing of existing and potential risks, continuously adapting work systems to technological changes, reducing manual processing and constantly monitoring current workflows, increasing quality of internal controls and employee performance. The project aims to implement a new AP process enhanced by the RA approach, which includes AP process automation, an embedded audit and risk management functions and an employee performance management system in addition to the existing internal detective and protective controls. The proposed optimization will significantly improve security and quality of operations by reducing the number of errors, systematic monitoring of current operations and periodic inspection of those already performed, by building of a system of personnel continuous professional development and implementation of technological solutions on a systematic planned basis. The project will be developed by the AP staff and representatives of IT and financial departments. The project will involve acquisition of external software solutions to meet the AP operational needs. The main cost of the project will consist of the working time of the staff involved and the related software purchase and further maintenance cost. The new system implementation is planned to be completed within two months after the project plan and budget will be approved. A team of four persons will manage the project during its lifecycle, while investing between 5 and 15% of their total working time in the project activities over this period.

1.4 Project strategy

The key strategic goal of the project is to establish a process for continuous improvement of the effectiveness and security of AP operations in accordance with the overall strategic goal of developing the efficiency and effectiveness of the organization's processes.

1.5 Project objectives

The project main objective is to create a cost-effective work environment of processes, technologies and people, which strategically improves the AP process through operational efficiency, internal controls and employee awareness. The measurable objectives are stated as reducing AP costs by (planned result)% and AP leakage to less than (planned result)%. The project ROI is expected to reach (planned result).

1.6 SMART Goals

- 1.6.1 Quick wins and AP Risk assessment goals:
    - 1.6.1.1 Reduce errors and eliminate simple existing leakages: reduce the number of simple processing errors to insignificant values close to 0 and eliminate the related leakage
    - 1.6.1.2 Recognize current and short-term future risks and develop a plan to create an environment that prevents both simple and more complex potential leakage
- 1.6.2 The most important goals:
    - 1.6.2.1 Complement the current AP, vendor management, payments and communication workflows with a constant monitoring system to prevent potential leaks
    - 1.6.2.2 Implement automation in the AP workflows
    - 1.6.2.3 Complement the current AP process with an embedded audit and risk management processes
    - 1.6.2.4 Establish an employee awareness and development program
    - 1.6.2.5 Create a centralized knowledge database with policies, procedures, work instructions, training material and technical data
- 1.6.3 Auxiliary goals
    - 1.6.3.1 Develop scalability of the RA process
    - 1.6.3.2 Reduce cost of AP operations by (planned result)% during the next financial year period

1.7 Project major deliverables

- 1.7.1 Conduct an AP risk assessment, identify and repair simple leaks

- 1.7.2 Identify the current RA coverage of AP workflows and plan for enhanced RA activities
- 1.7.3 Implement AP process automation
    - 1.7.3.1 Eliminate paper invoices
    - 1.7.3.2 Implement an automated payments system
    - 1.7.3.3 Implement an automated help desk solution
- 1.7.4 Implement an internal control monitoring system
- 1.7.5 Establish an internal audit system
- 1.7.6 Establish a process of employee performance development and training
- 1.7.7 Establish knowledge management system and create a knowledge database
- 1.7.8 Establish vendor management system
- 1.7.9 Develop risk management process with periodic risk assessments, creation of related policies and procedures, set up automated monitoring of the AP process to constantly extract analytical value from data to assess processing efficiency, quality of internal controls and data as well as evaluate staff performance both by automated controls and KPIs.

1.8 Project timeline and KPIs

- 1.8.1 Project implementation period (specific dates and milestones)
- 1.8.2 The metrics for measuring success of the project:
    - 1.8.2.1 Invoice Exceptions ratio, Payment Errors ratio, Average Time to Payment, AP Average Cost per Invoice, ROI (planned results)
    - 1.8.2.2 DPO, Total Number of Invoices Received, Total Number of Invoices Processed, Discounts Captured vs. Offered, AP Expense as a Percentage of Revenue (actual numbers)
    - 1.8.2.3 Supplier Satisfaction metric, Employee Satisfaction. (End of the Project Charter).

The above Project Charter example lists the project team members and defines their roles, notes the optimized AP process stakeholders, describes the project business need and rationale, states more detailed project goals together with concrete deliverables. It also determines the project timelines and performance metrics.

A possible additional step in innovating the AP process can be to rethink its decision making model. Similarly to the PM, a regular process management, such as an AP process management, may also be a subject to a process ownership model. Thus, in a traditional model, that proposes the vertical type of management (AP team – AP team lead – Finance department manager), it is not always clear who is responsible for continuous process improvement and to what extent. In a process ownership model, as it is mentioned in Section 2.9. Process Transformation, a single process owner manages the process itself, its recourses and design, and also leads the process transformation throughout its entire lifecycle, aiming to ensure that the process creates value in the most efficient way. In process optimization, the process owner manages a transformation project or even a portfolio of several projects, each one focused on transformation of a specific segment of the process in question, engages qualified specialists to develop changes, motivates people and ensures the compliance of work with the plan and scope of the project. In this way, the reengineering of the entire process with all its specific segments is managed by a single decision-making center that has a transparent picture of all operations and is able to simultaneously implement and control a number of smaller projects according to a unified methodology and quality control measures as well as a centralized control over cross-functional collaboration and compliance with system integration requirements.

4.2 Risk Assessment

Successful BP planning requires understanding of the company's business model, its organizational structure and the network of its internal processes. In addition, before starting to plan a new process the project team must review the current workflows in order to understand how the entire consolidated P2P process works in the organization and what is the AP's position and role in it. A risk assessment provides insight to the risks that should be prioritized in the upcoming process transformation, based on the severity and likelihood of specific risks. We can also decompose the risks into their component parts and link them to the actions that need to be taken within the framework of certain processes.

Figure 9 below shows a fragment of an AP process approximate Risk Assessment Matrix. The Matrix describes and categorizes specific risks in the AP process, defines corrective activities and links the risks to specific team members and dates and thus, creates milestones that will be checked and evaluated over the project lifecycle.

Warning signs	Risk description	What should be done? Risk mitigating	Who must do it? Risk owner	When should it be done?	Risk impact	Risk likelihood	Risk rating	Risk type
Not having policies and procedures	Gaps in knowledge, lack of awareness of employees about the requirements and rules of work, non-compliance with best practices, disputes in the workplace, waste of time searching for information, lack of organizational maturity	Development and implementation of relevant policies and procedures, their regular updating, constant monitoring of compliance with policies	Risk owner name and contact information	Date	High	High	High	Compliance risk
Lack of an Audit Trail	Risk of unauthorized access and unauthorized activities	Maintain automated audit trail and sufficient log retention into internal controls, monitor performance	Risk owner name and contact information	Date	High	High	High	Compliance risk
Receiving invoices by regular post	Duplicate invoices, missing invoices, manual processing, insecure channels	Elimination of paper invoices from the workflows, implementation of e-invoicing system	Risk owner name and contact information	Date	Moderate	High	Moderate	Process risk
Communicating with suppliers via employee email and not through an automated helpdesk solution	An insecure channel with a low transparency level causes risk of information loss, data discrepancies, customer service risks, cybersecurity risk, fraud risk, supplier risk	Implementation of an automated helpdesk solution	Risk owner name and contact information	Date	Moderate	High	Moderate	Communication risk

Figure 9. An approximate AP Risk Assessment Matrix. (The chart created in www.figma.com).

In the AP function, risk assessment involves examining how exactly invoices and other relevant documentation are received, verified, approved for payment, recorded in the system and audited. By categorizing and decomposing the risks, the project team obtains a transparent picture of the entire AP process and can understand what actions need to be taken for the process improvement. For instance, documentation workflows, mentioned in the communication risks, may be highlighted as follows:

2 Risk Assessment

2.1 Communication risks

- 2.1.1 Documentation processing
    - 2.1.1.1 Policies and procedures: Do we have a communication policy and procedure?
    - 2.1.1.2 Workflows: Do we still receive paper invoices? How many (what percentage) of invoices come by regular post?

- 2.1.1.3 Workflows: Are there any other documents or information (employee timesheets, employee reimbursement claims and related documents, etc.) that stakeholders receive by regular post or email?
- 2.1.1.4 Workflows: How often duplicate, missing or late payments occur in our workflow and on what reasons?
- 2.1.1.5 Workflows: Does any particular vendor regularly send us duplicate or non-compliant invoices?
- 2.1.1.6 Workflows: Is our accounting system programmed to detect duplicate invoices, invoices that are due soon and overdue invoices?

- 2.1.2 Documentation storage:
  - 2.1.2.1 Policies and procedures: Do we have a schedule and procedure for archiving incoming and outgoing documentation and correspondence?
  - 2.1.2.2 Databases: How exactly are invoices, contracts, POs, and other documentation stored, for how long? Is there a centralized location for documentation storage? Is it safe? Who has access to it and why? (End of the Risk Assessment fragment).

Based on an understanding of existing realities and needs, and in accordance with available resources, a new process can be designed. Due to the fact that the discussed AP optimization process involves purchase of an external automation solution, the project team and authorizing stakeholders will have to make a choice between at least two most probable options: either to some extent adjust the existing AP process to the ready-made software solution or to customize the software product to the existing process. The first option requires readiness to change and sometimes even to reengineer existing processes and their structure, while the second option rather involves a significant cost of the software customization and maintenance. In order to get a clear picture of reality and make the right decisions, the assessment of existing systems and processes must be transparent and adequate, while successful planning presumes a correct understanding of the goals and requirements of the new process. The implementation stage will probably bring some unexpected results and findings, quite possibly, even new risks, as well as a certain level of disappointment or even frustration of the process stakeholders. It is important to understand future difficulties in advance, so that we could be ready to deal with them as soon as they arise. We must plan the whole process with our eyes open, with a transparent and honest approach in order to be able to properly integrate it into the organizational structure with the planned results obtained and the goals achieved.

4.3 Work Breakdown Structure

The role of thoughtfully clarifying what the process optimization project will look like is played by the WBS, in which we can present the project deliverables previously stated in the project charter in the form of clear actions connected to specific completion dates and specific members of the project team. In the WBS, it is important not to fall into the trap of excessive detailization, and, at the same time, we need to be able to cover all the necessary elements of the future AP process.

3 WBS

3.1 Conduct an AP risk assessment

- 3.1.1 Develop safeguarding policies and schedule for regular reconciliation and internal AP audit
- 3.1.2 Gather requirements, plan and document the process for periodic AP risk assessment conducting to identify and track potential risks, including assessing potential inefficiencies in the AP workflow, approval and payment processes, vendor management risks, internal and external fraud as well as unauthorized spending risks, related data processing and storage characteristics
- 3.1.3 Examine the AP related risks in the organization's workflow, conduct a risk assessment for current and short-term risks, develop a short-term risk mitigation strategy
- 3.1.4 Prioritize the risks based on their likelihood, severity and impact of potential risks on the organization
- 3.1.5 Determine relevant risk mitigation actions

3.2 Analyze current internal controls, identify current RA coverage to the AP workflows, plan enhanced RA activities and achieve quick wins

- 3.2.1 Conduct research to determine what internal controls are currently in place
- 3.2.2 Recognize what kind of monitoring (KPIs, statistics analysis) is already being carried out. What metrics are provided by the system? What metrics are being tracked manually?
- 3.2.3 Examine characteristics and level of integration of the existing systems
- 3.2.4 Identify current gaps in RA coverage, recognize obvious leaks in workflows, determine corrective measures, set priorities
- 3.2.5 Identify which RA tasks are currently being performed, in what scope. Are there any specific RA roles and responsibilities?
- 3.2.6 Detect is there any documentation on RA activities

- 3.2.7 Develop an RA strategy, create policies and schedule on the RA audit and changes implementation
- 3.2.8 Identify RA needs, set RA goals, define roles, activities, dates, KPIs
- 3.2.9 Evaluate requirements, rules and cost, document the findings. Get key authorizing stakeholders' approval

3.3 Optimize the AP process

- 3.3.1 Plan AP process automation
    - 3.3.1.1 Evaluate the current AP, vendor management, payments and related communication (help desk) workflows characteristics. Conduct an employee survey about the current characteristics and experiences of the workflows. Examine previous audits, logs, statistics records, if available. Analyze the current P2P process structure and the AP's position in it, roles and responsibilities in the current AP workflows, ways of receiving and approving invoices, cost allocation, approving payments, creating and updating vendor master data
    - 3.3.1.2 Identify obvious error and leakage points in the workflows, recurring issues, bottlenecks and their reasons, cases of noncompliance, such as mixing of duties, unclear rights and responsibilities of processors, multiple vendors on the same vendor account, number of paper invoices vs. number of electronic invoices, unnecessary complex or overlapping workflows, main points of manual processing and other points of concern
    - 3.3.1.3 Identify technical weaknesses, such as limited OCR, non-integrated systems
    - 3.3.1.4 Analyze needs for improvements, including security measures, integration characteristics, regulatory requirements as data protection compliance, set requirements for specific AP and payments automation solutions, help desk software, if necessary, define specific KPIs to be tracked to monitor performance
    - 3.3.1.5 Identify strengths of the current systems to be retained and, if needed, improved in the new process
    - 3.3.1.6 Recover simple leaks and non-compliant practices, detected during the initial analysis, and determine corrective actions for more complex ones within the frames of the AP automation process
- 3.3.2 Eliminate paper invoices
    - 3.3.2.1 Inform suppliers about changes regarding the elimination of paper invoices from your system and new requirements for incoming invoices

- 3.3.2.2 Provide the suppliers with instructions and training materials if necessary

- 3.3.3 Implement AP process automation
  - 3.3.3.1 Describe the improved process, define its main rules, workflows and roles, assign responsibilities to each role, link roles and responsibilities to certain team members
  - 3.3.3.2 Identify your requirements to the AP, vendor management, payments and help desk automation solutions
  - 3.3.3.3 Make a market research for specific software products that can be integrated with the organization's ERP. Evaluate the cost of solutions, depending on organization's workflows and specifics of the AP process automation software products, including their technical capabilities and pricing model. Consider the new system's data storage and reporting characteristics, the system's accessibility from mobile phones. Obtain key authorizing stakeholders' approval to the requirements, rules and budget. Choose the solutions
  - 3.3.3.4 Implement new systems
  - 3.3.3.5 Train employees
  - 3.3.3.6 Communicate the changes to stakeholders as necessary
  - 3.3.3.7 Test the new process, apply adjustments if needed
  - 3.3.3.8 Keep monitoring the new AP process to ensure that it is efficient and meets the requirements

3.4 Implement an internal control monitoring system

- 3.4.1 Establish criteria for proper and accurate internal controls, both in the accounting system and in the processing of operations, develop policies and procedures, ensure that employees know and understand policies
- 3.4.2 Ensure proper access control procedures by aligning them with access control rules
- 3.4.3 Make sure what information an employee should have access to based on their roles and what they actually have access to
- 3.4.4 Ensure proper segregation of duties by aligning the current system with the segregation of duties rules
- 3.4.5 Ensure the proper three-way match processing by the current AP system, including correctness of GL codes, evaluate the current OCR scanning quality and ways of its improvement if necessary

- 3.4.6 Establish specific amount thresholds for invoice and payment approval
- 3.4.7 Keep monitoring compliance with policies and procedures across workflows and systems by tracking KPIs and statistics

3.5 Establish an internal auditing system

- 3.5.1 Establish audit reporting and follow-up policy and procedure
- 3.5.2 Establish daily bank account reconciliation
- 3.5.3 Automate monitoring of due invoices by specific due dates and overdue invoices
- 3.5.4 Automate monitoring of funds available on bank accounts by payment days
- 3.5.5 Periodically review employee authorizations
- 3.5.6 Automate budget to payments comparison reporting by payment days
- 3.5.7 Develop a policy and procedure for periodic audit of processed AP and payment workflows, audit of actual expenditure against budget, audit of current internal controls as well as current procedures and their compliance
- 3.5.8 Automate periodic tracking of system statistics and KPIs concerning the systems as well as employee performance measurement and analysis
- 3.5.9 Establish a process for periodic security and compliance review of the existing AP and related accounting workflows

3.6 Establish employee training and performance development process

- 3.6.1 Identify skills required to manage AP workflows and work in team
- 3.6.2 Analyze current skills of the employees at the individual and team level through surveys, performance reviews, skill assessments
- 3.6.3 Identify relevant needs for recruitment, training and performance improvement, set goals for staff development
- 3.6.4 Establish the policy, procedures, schedules for mentoring, training, performance improvement processes
- 3.6.5 Develop relevant documents in the form of instructions and training materials in line with the values and development strategy of the organization, explore the possibilities of external training if necessary
- 3.6.6 Establish an employee development process with schedules, goals, milestones and metrics to measure performance
- 3.6.7 Keep monitoring the team and employee performance development process by tracking relevant metrics

3.7 Establish a knowledge management system

- 3.7.1 Create knowledge management policy and procedures in line with the company's values and culture
- 3.7.2 Organize existing data, fill in gaps in existing data if necessary
- 3.7.3 Create an accessible database with relevant data and documentation, such as policies, procedures, instructions, document templates, training materials
- 3.7.4 Define policies and procedures for handling and storing confidential and sensitive data
- 3.7.5 Make sure employees understand the policies and know how to handle the database

3.8 Develop vendor management activities

- 3.8.1 Establish secure policies and procedures for creating and updating vendor master data, and vendor risk management
- 3.8.2 Create a database of vendor data, organize vendor contacts in a separate file for everyday use, regularly update the data and monitor its accuracy
- 3.8.3 Keep monitoring customer service performance metrics

3.9 Develop and implement RA monitoring process

- 3.9.1 Establish a policy, procedure and schedule for periodic RA analysis of the efficiency and relevance of current processes and technologies, quality of internal controls and data processing, effectiveness of personnel work
- 3.9.2 Distribute RA roles and responsibilities to specialized personnel
- 3.9.3 Keep monitoring and analyzing current processes, and getting analytical value from data. (End of the WBS).

The WBS often comes as a Gantt chart, which visually represents the whole project with all its phases and activities at a glance, as it is shown in Figure 10 below. The project charter and WBS define the overall scope of the AP process improvement project, taking into account that the project schedule, roles and responsibilities, as well as the project costs may differ, depending on the specific needs, project deliverables and the corresponding budget. Within the framework of the project activities, the main RA methods are integrated into the AP process, in particular, baselining (development of policies and procedures), monitoring, auditing, investigation and correction of detected leaks, as well as the systems synchronization.

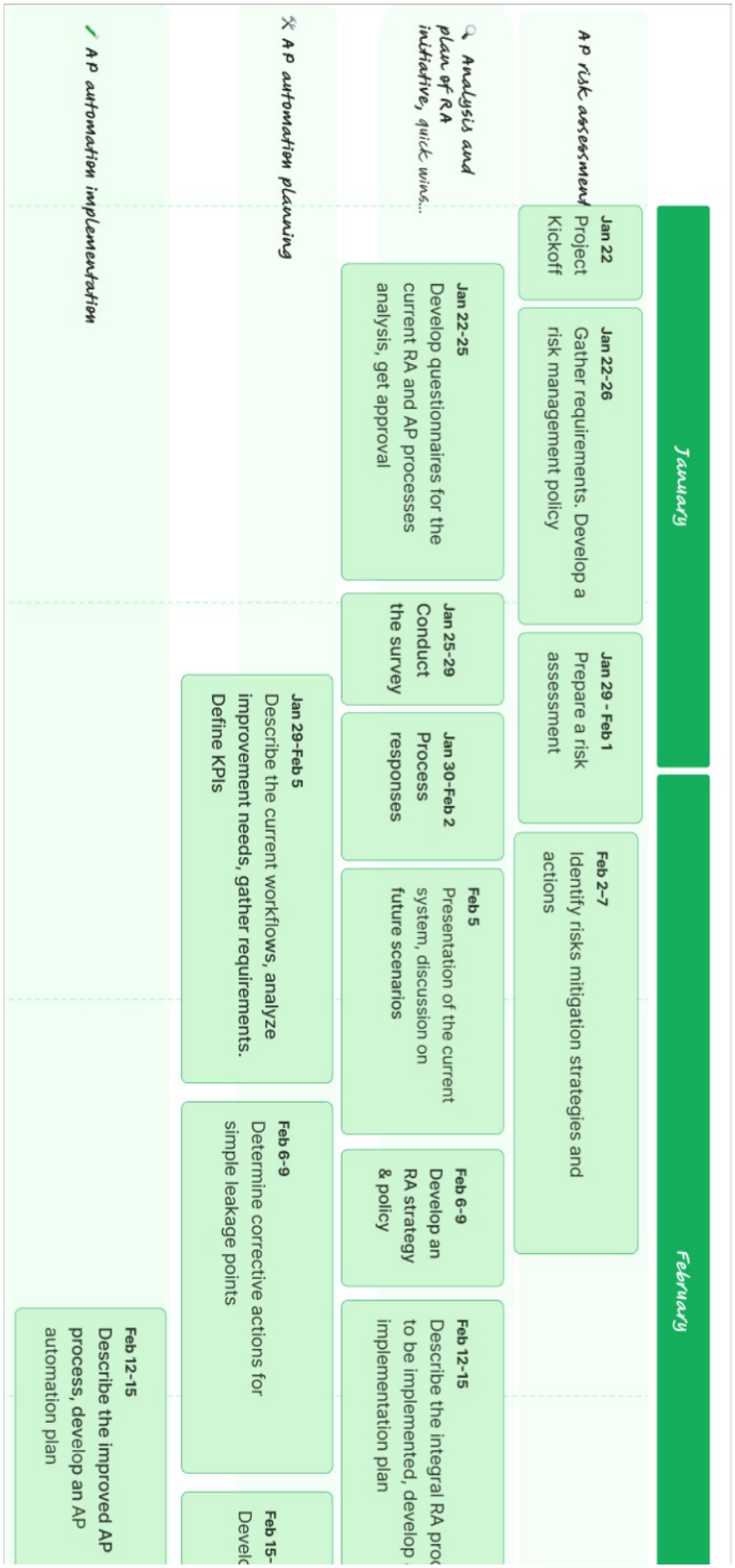


Figure 10. Detail of an approximate project sequencing based on the presented WBS. (The roadmap created in www.figma.com).

4.4 Models of the process

Once the plan is completed, a project team can begin reviewing the current workflows in order to understand where users are experiencing difficulties, where the weak points of the process are located and what the stakeholders value in the current process. The project team can investigate how exactly the current process works by conducting a research survey among the users of the current system, interviewing stakeholders, analyzing activities and responsibilities of different categories of the process stakeholders, relevant KPIs, statistics and work patterns. We can also use brainstorming, knowledge sharing between stakeholders or ask the users to evaluate the usability of hypotheses about the future process. As a result, we clarify the current problems that should be avoided in the future reengineered process, as well as the most valuable segments of the existing process that will be retained or even improved in the future process, we note the most useful ideas that can be developed into future solutions. At the same research initiative, the project team may consider different elements of the project to be interrelated, as, for example, the task of automating a system may be related to the task of creating a database in the form of automated reports that are issued and periodically sent and then archived by the system. The combination of these findings will allow the project team to design a process optimization map and prioritize the segments of the process that need to be optimized. Accordingly, the process scenarios can be simplified or redesigned in order to make interaction with the system and between the roles in the process easier and more comfortable.

In the next Figures 11 and 12 we can see an example of optimizing a single project task, such as an incoming invoice processing. According to the presented in above Figure 10 project sequensing, the RA strategy development task will be started after the current AP process review is completed and before the AP automation plan is developed. The challenge of the task is to simplify the workflow through automation without losing attention to detail. For instance, as it is seen in Figure 11, which represents the traditional invoice processing method, in the initial workflow an AP specialist verifies all the necessary information provided in each invoice (invoice number and date, reference to a PO number, vendor name, address and business number, vendor bank account number, etc.), verifies that the invoice corresponds to the relevant PO and goods receipt both in terms of product quantities and prices, allocates the invoice costs on the PO (including tax rates processing and considering the total PO value) and, in the case of inconsistencies noted during processing, the employee either rejects the invoice or determines and implements corrective actions, sometimes with the support of other stakeholders. In this case, the invoice approval by the purchasing department can only be obtained after the invoice has been registered in the system and its processing has been initiated by the AP specialist.

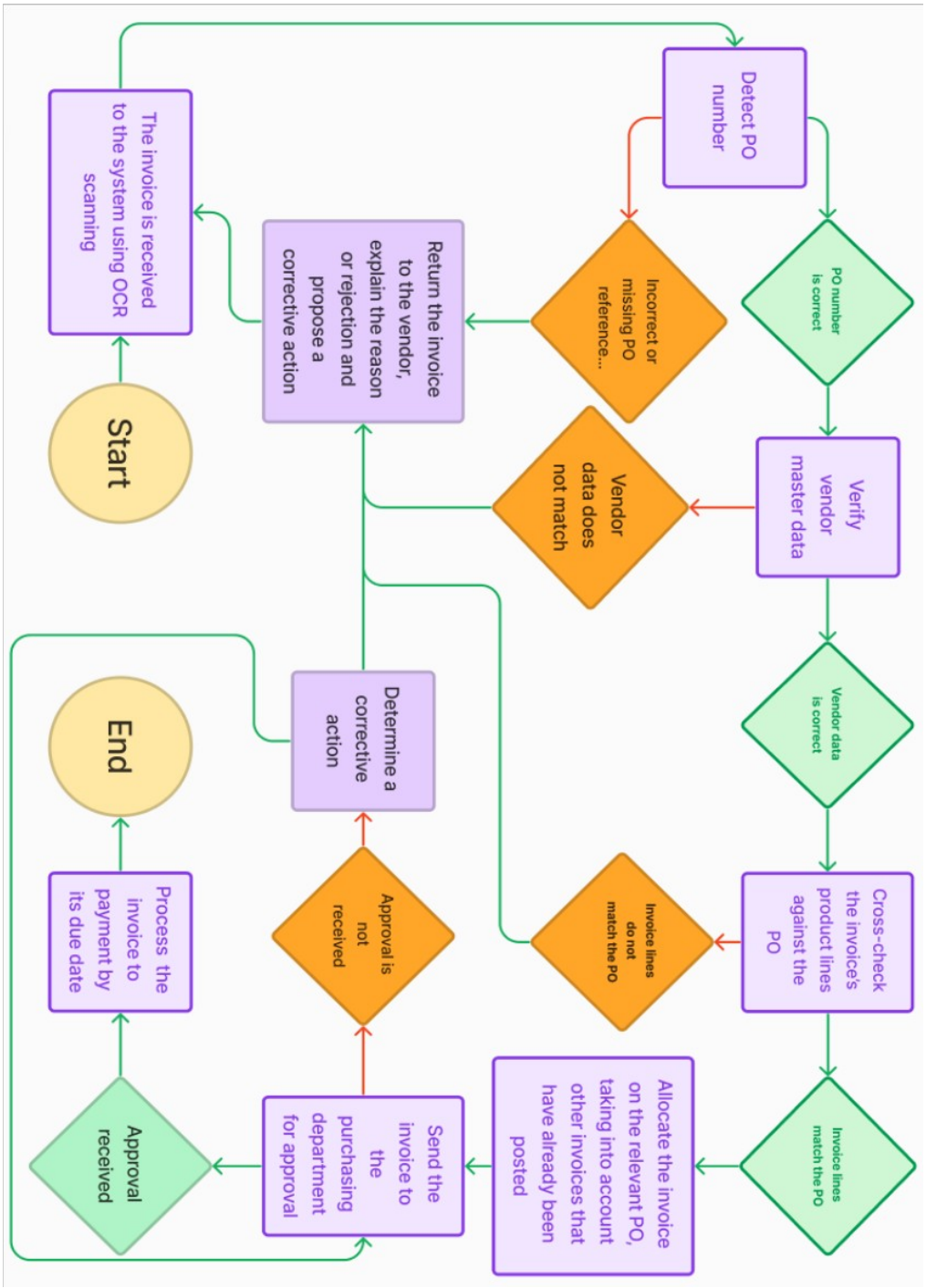


Figure 11. An approximate example of a traditional invoice processing workflow. (The flowchart created in www.figma.com).

As in an optimized workflow example, presented by Figure 12, manual processing is significantly reduced by the fact that the system simultaneously verifies the invoice data correctness and its relevance to the PO and goods receipt already created on the stage of the goods delivery to the purchasing department (which requires the entire ERP system optimization) and, accordingly, allocates the invoice on the related PO.

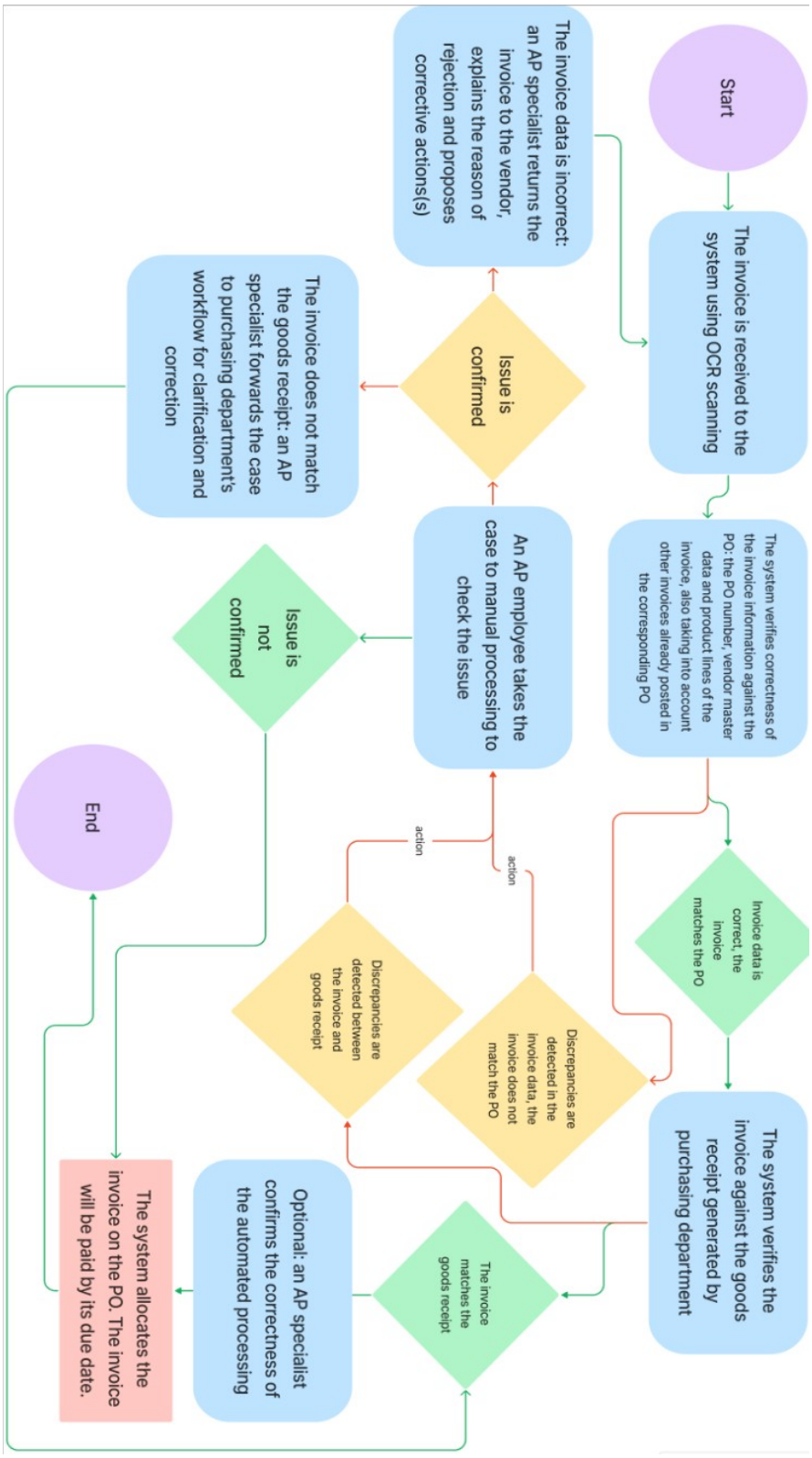


Figure 12. An example of a partially automated invoice processing workflow. (The flowchart created in www.figma.com).

In this way, manual processing appears only in the case of inconsistencies found during invoice processing or in the case of specific complex invoices that the system is not able to

process independently, while all the correct invoices go through the workflow without the staff intervention and an AP specialist can briefly verify the correctness of the automated processing in its final stage. The automated workflow can have different settings depending on the needs and details of the process. Thus, apart of the goods receipt automatically generated in the system at the time of the goods delivery, the purchasing department's approving staff may still be present in the process, but invoices will be easily routed by automation software to the responsible person, instead of using manual routing performed by an AP specialist. At the testing stage of the project, the project team can test various scenarios and study the detected errors or successes in each of them – the difference between the test mode and the usual work mode is that in the test mode either each processing unit or a selection of them is additionally checked by a specialist.

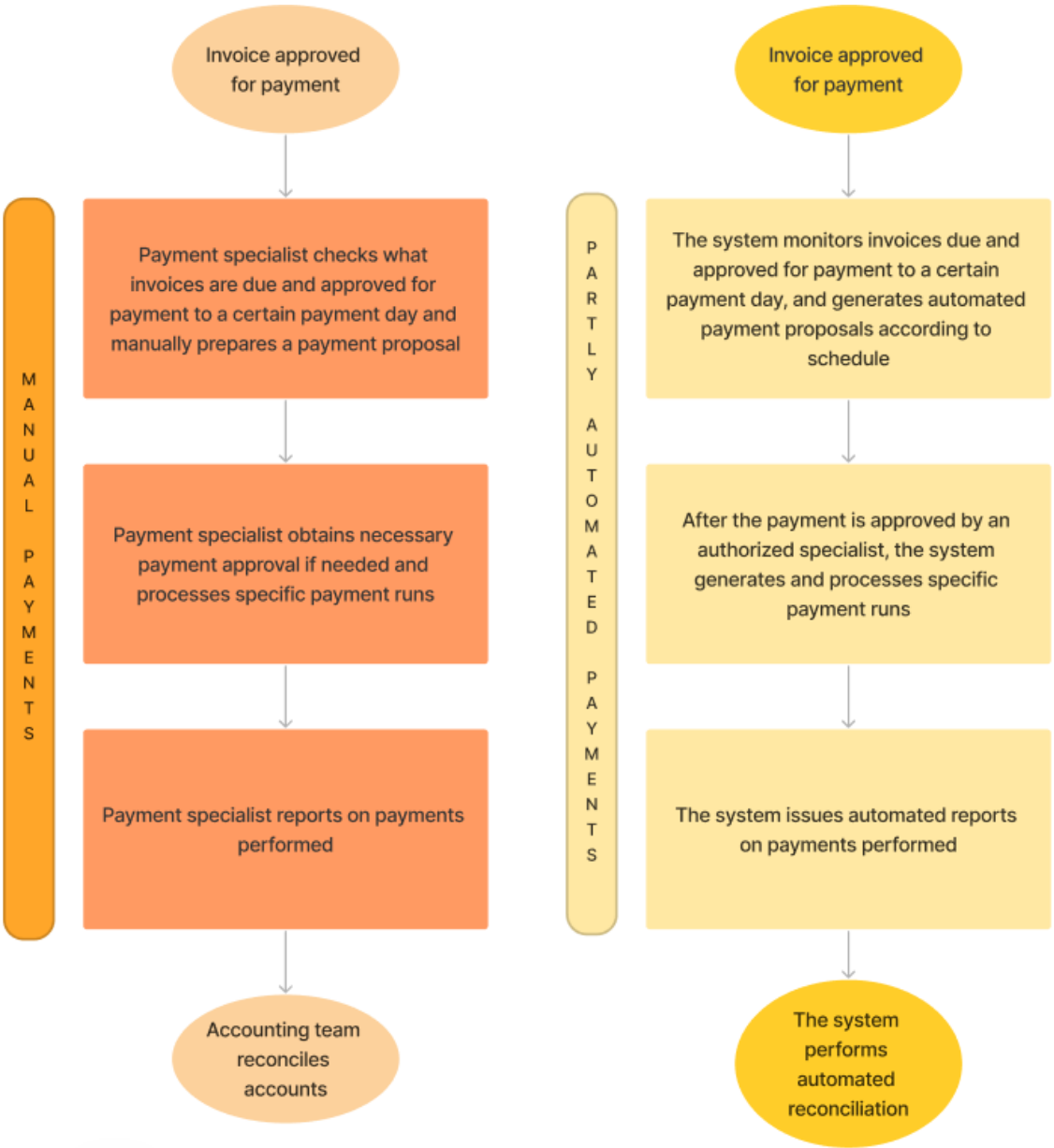


Figure 13. Comparison of approximate models of manual and partly automated wire payments processing. (The flowchart created in www.figma.com).

Accordingly, as seen on the approximate model of wire payments workflow automation, represented in above Figure 13, the payments automation significantly reduces manual

processing and thus, decreases the cost of processing and limits possibility of errors. The systems now are able to perform automated reconciliations and issue automated reports both to internal and external entities that strengthen the processing transparency.

When designing a new process we have to remember that new technologies and new approaches may entail possibilities of radically new solutions. A new process may look not just as a slightly transformed and improved initial process with some segments of it removed or some new solutions added, but it also may work in an absolutely different way than before. We can create various models and test them in real processing to ensure do they really work the way they are intended to and how we can make them even better.

4.5 Revenue Assurance in frames of Accounts Payable function

Since AP operations mostly consist of repetitive validation and data entry tasks and only a limited fraction of cases involves more complex analytical work, automation has huge potential to transform the entire AP workflow. In the discussed AP process, the process automation with all its benefits acts mostly as a technical support for monitoring the workflows' correctness and tracking the workflows' performance by system statistics, KPIs and automated reporting, while the next level of leakage management and risk management function of the RA, in addition to regular three-way match controls of AP workflows, are presented as an embedded internal AP audit workflow together with a risk management workflow in the form of periodic risk assessment, investigation of leakage sources and developing corrective and preventive measures. Apart from the leakage management and risk management RA functions, there is also a baselining function of the RA, which ensures continuous improvement of compliance control and is presented in development of the RA strategy, creation of RA and AP policies and procedures, staff competence development process, creation of knowledge database, which serves the needs of all the above mentioned functions. As a result, an integrated RA process must support the following AP functions:

- invoice data accuracy (formal details) and data entry accuracy (OCR scanning quality)
- the AP process compliance (monitoring of three-way match accuracy)
- data transmission accuracy between systems (systems integration) and cross-functional data transmission (cross-functional collaboration, cooperation between departments, teams and roles)
- accounting records and reconciliation accuracy
- payments accuracy, including the accuracy of vendor master data
- internal audit accuracy

- reporting accuracy
- data storage accuracy (an accessible centralized database, an accurate archiving).

An approximate model of the AP function, enhanced by an RA approach, is presented the flow chart in Figure 14 below, where an RA strategy states the general AP objectives in frames of risk management requirements and in the form of policies, instructions, techniques and technology settings. Leakage management, both of leakage detection and prevention nature, is carried out continuously throughout processing, while internal audit ensures compliance of already processed workflow by periodic analysis of both quantifiable system statistics and KPIs, as well as thoughtful workflow review by specialized professionals.

Figure 14. An approximate model of the RA process integrated to P2P operations. (The flowchart created in www.figma.com).

The map visualizes how a proactive RA function can be integrated into the AP process through strengthened by internal audit AP controls, constant development of employee competence, thoughtful data processing and baselining. In the presented model, process

automation works to eliminate errors and discrepancies in processing, caused by system inaccuracies and human mistakes, as well as reduces the risk of fraud, system integration supports synchronization and quality of data aimed to ensure that all systems are coordinated and provide the same undistorted data, while continuous automated monitoring of internal controls and performance indicators ensures detection and prevention of leakage. In this paper, we consider the RA function applied to only one specific process, but in real life, where all the BPs of the enterprise are interconnected and represent an integral process network, the RA process, which performs the role of monitoring, correcting and continuously improvement workflows, will extend to nearby work processes and support the AP process with similarly controlled by the RA procurement workflows (POs, contracts, agreements, engagements processing), and the AP workflows themselves will support cash management and accounting operations.

4.6 Project executing and closing

The quality of planning has a direct impact on the project implementation phase success. PM combines leading the project stakeholders and managing the process transformation in line with the project objectives, deliverables, timeline and budget. Regular updates, weekly and monthly reports, comparison of planned results with the actual ones according to milestones and acceptance criteria establish the usual control framework throughout the project lifecycle.

When optimizing a process, it is important to remember that the main objective and purpose of an optimization project is not the process itself, but the increased efficiency in terms of costs and effort reduced along with the quality of processing improved. To ensure that the applied solutions meet the project goals we must constantly measure the effectiveness of the work completed. Two sets of KPIs can be used for this purpose: the first set contains metrics that measure how well the new solutions perform, how do the project deliverables satisfy the acceptance criteria and achieve the planned objectives. For example, does the new solution really simplify the process or make it even more complex? Has the processing time really decreased? Have any unintended consequences of the new process arisen? And the next question is, how the metrics of the transformed process itself have changed since the process optimization was performed? Regarding the second question, benchmarking can provide insights into the success of a new process, measure the extent to which the project goals have been reached or compare different solutions. In both cases, benchmarking becomes an integral and necessary part of the process, helping us to continuously measure how the process deliverables are aligned with its goals.

The easiest way to measure the change is to compare KPIs before and after the process redesign. We can estimate technical characteristics extracted from the system statistics and KPIs, such as the number, percentage and types of errors, the average time to complete the task in minutes or days, the number of invoices processed over a given time or the cost of

an invoice processing, but also an employee productivity, user satisfaction, their acceptance of the new systems or processes. We can evaluate progress by measuring the variance between planned and actual project outcomes at least in cost, schedule and scope by milestones, document and visualize the results and report the results to stakeholders in order to obtain an approval for the next stage or for changes in plans to adjust the planned activities to actual situation as necessary. Metrics can be evaluated at the end of each phase of the optimization project. Surveys also help to make sure that we are on the right path. We also can compare the performance against our previous metrics or to benchmark data available from other sources, such as industry rates, and these metrics we have to keep gathering over the entire lifecycle of the new process in order to track its efficiency and plan the possible transformation as necessary. Benchmarking allows to track progress, continually align the ongoing activities with the project goals and calculate the ROI values. In the final phase of the project, we complete the event log, reporting documentation, project ROI and other relevant metrics, and also prepare the Lessons Learned, in which we document our findings and note what could be done better and what valuable experience we gained during the project.

As a result of a properly built AP improvement project, the optimized AP process will allow us to solve the problems of the visible and invisible leaks detection and elimination. In this work, the process transformation project deliverables are focused on securing AP workflows processing, compliance and risk management functions under a single RA process and presented as

- implementation of process automation that ensures data quality, proper integration of systems, transparency of cross-functional interaction and data transfer
- development of a process for continuous employee training and performance management
- development of internal policies and creation of an integrated knowledge database (procedures, instructions, archives)
- development of an improved process architecture, based on continuous monitoring of the performance and compliance of both systems and personnel, i.e., creation of a process that is constantly monitored for relevance and efficiency so that it can be easily optimized by specialized and competent professionals according to a standardized methodology when necessary.

Still, with regard to other BPs, the nature and functionality of specific RA controls and their elements may look different, while the general logic of the RA approach in all possible BP will remain unchanged, in particular, being aimed at increasing efficiency by identifying and eliminating financial leaks.

As was discussed in Subsections 2.7.1 Accounts Payable definition and 2.7.3 Accounts Payable risks, an overall P2P process structure and generally accepted internal controls already consider the revenue loss risk mitigation problem in the AP process. Indeed, a well organized P2P process, along with accurately followed procedures and operating controls, are the fundamental prerequisites for the secure and efficient AP operations. However, due to an increasingly complex nature of the systems and processes involved in the financial function of an organization in general and, particularly, in the AP process, as well as growing importance of sensitive financial data processing quality, a consolidated cross-functional RA process can serve as a practical tool that effectively assures security and compliance needs. More precisely, the financial function, including AP operations, can be presented as the main point of interest of the RA operations with focus on financial leakage management. RA concept of detecting, recovering and preventing leakage may be transferred from relatively narrow specific segments or industries, as Telco, to a wider scope of generally accepted objectives, duties and procedures of the resource management improvement.

5 Summary

When we start a new project, we often do not know where it will take us. We can have plans, expectations, assumptions, but only practice will prove which of our plans and assumptions were feasible. Many different factors affect the results of our actions, there are many different ways to advance with our solutions, including those unknown that we

cannot see and understand in advance. Even if we try to achieve seemingly limited deliverables, it is important to take into account that our actual plans rather will be influenced by circumstances outside of our control: the general state of the markets, behaviors of other players on the markets, trends in technology. We also need to understand what our company is doing, where it is going, what motivation drives its development, what challenges it faces now and what problems may arise in the future. Therefore, it is important to plan our efforts a little more broadly than it seems necessary now, at the moment. At the point we begin to introduce the changes we need today, we must already understand that tomorrow this will not be enough, and what is a breakthrough today will become obsolete tomorrow.

In this work is considered how we can simplify a specific work process while analyzing it as a more complex mechanism. Every transformation project proposes to take a new look at the existing processes in organizations. While operating in a dynamic, constantly transforming environments, where a rapid and effective adaptation to change is required we need to be able to respond quickly to changes on the market and in technologies. Still, even though there is a need to constantly transform and develop, the change must be managed in a systematic and planned way. It is necessary to implement changes consistently and gradually in order to maintain the manageability of an organization and control risks. In our endeavors we must conduct an in-depth analyses of an existing situation and potential risks, state goals and plan relevant actions to achieve these goals. When preparing a transformation project, we also should consider how we can adapt the existing solutions to the specifics of our company.

We can introduce a process improvement as a step-by-step change approach, when the transformation is being run by continuous implementing repetitive stages of the existing BPs analysis and identification of the segments to be transformed, planning the transformation, implementing and controlling the change. The constant readiness to change allows organizations to quickly make decisions based on the data obtained, determine and implement actions and correctly monitor their effectiveness. Transparent methodology helps us to improve accuracy and reduce the errors.

This study was intended to explore the opportunities and details of application of the RA approach in the specific workflows development, particularly, in the AP process within financial function of an organization. Based on the literature concerning RA problems, knowledge bases of global companies and the discussion of the RA problem in business publications and business research, covered in Chapter 2 Theoretical background, a theoretical model of AP workflows supplemented by the concept of RA and the related internal RA process was constructed, and the logic and potential structure of such a process was presented in Chapter 4 Research findings. The proposed model does not answer all possible questions of the AP and RA processes, but it was not intended to. The model is intended to show the potential of the idea of continuous improvement and systematic

change that can be applied to each workflow and process design. In this case, the possible improvement of the AP process based on the RA approach is considered, as well as potential steps and solutions on the way of practical implementation of a relevant project. Every empirical application of such an approach will undoubtedly lead to the search for new strategies and solutions, adapted to specific processes and thus, complement the core of the model based on the concept of systematic continuous development, constant monitoring and auditing, and aimed at the continuously detection of financial leaks and elimination of their root causes in order to save cost and effort.

The concept of RA itself is quite general in meaning, it is based on a pragmatic logic of preventing the loss of money and effort. It can be applied to various segments of business activities, ranging from an industry segment, such as TelCo, to a very specific narrow process and workflow, such as AP processing. Further in-depth exploration of how the RA concept can be applied within specific business environments, as well as development of practical outcomes of such research, will be beneficial for a deeper understanding of how to integrate the idea of greater sustainability into business models and practices.

6 Abbreviations

AI – Artificial Intelligence

AFP – Association for Financial Professionals

AP – Accounts Payable

AR – Accounts Receivable

API – Application Programming Interface

APP – Authorized Push Payment

BEC – Business Email Compromise

BP – Business Process

BPR – Business Process Reengineering

CI – Continuous Improvement

DPO – Day Payable Outstanding

EBITA – Earnings Before Interest, Taxes, Depreciation and Amortization

ERP – Enterprise Resource Planning

eTOM – enhanced Telecom Operations Map

GL – General Ledger

GT – Grounded Theory

IT – Information Technology

KPI – Key Performance Indicator

KYC – Know Your Client

LLM – Large Language Model

ML – Machine Learning

NLP – Natural Language Processing

OCR – Optical Character Recognition

P2P – Procure-to-Pay

PM – Project Management

PO – Purchase Order

RA – Revenue Assurance

RM – Revenue management

RMC – Revenue Management Chain

ROI – Return On Investment

RPA – Robotic Process Automation

SAP – Systemanalyse Programmentwicklung, one of the enterprise recourse planning (ERP) software leading producers

SWIFT – The Society for Worldwide Interbank Financial Telecommunication

Telco – Telecom Operations industry

TMF – TM Forum, TeleManagement Forum

VAT – Value Added Tax

WBS – Work Breakdown Structure

7 List of Figures

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