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**IMPACT OF ITIL PRINCIPLES ON CUSTOMER
ANALYSIS**

İpek Çağla GENÇ

Master's Thesis

Supervisor

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XXXXXXXXXX

DEDICATION

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ABSTRACT

IMPACT OF ITIL PRINCIPLES ON CUSTOMER ANALYSIS

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The Information Technology Infrastructure Library (ITIL) is a widely recognized framework that provides best practices for IT service management (ITSM). Its principles are designed to enhance the quality of IT services, align IT operations with business objectives, and ultimately improve customer satisfaction. The purpose of this thesis is to explore the impact of ITIL principles on customer analysis, focusing on how these principles can be leveraged to better understand and meet customer needs within IT service contexts.

The framework encourages the alignment of IT services with customer expectations and business goals, thereby fostering a culture of continuous improvement and service excellence. For instance, the implementation of ITIL processes has been shown to enhance service quality, increase reliability, and improve overall customer satisfaction. This alignment is not merely operational; it requires a strategic approach to understanding customer needs and integrating those insights into service design and delivery.

Moreover, the ITIL framework facilitates the standardization of IT services, which can lead to more predictable and efficient service delivery. By adopting ITIL principles, organizations can create structured processes that allow for better incident management and service operation, ultimately leading to enhanced customer experiences. The focus on service operation within ITIL is particularly important, as it is during this phase that customers directly perceive the quality of IT services.

The integration of ITIL with other governance frameworks, such as COBIT, further strengthens its impact on customer analysis. This integration allows organizations to align

IT governance with customer-centric strategies, ensuring that IT services not only meet internal operational goals but also deliver value to customers.

In conclusion, the principles of ITIL provide a robust framework for enhancing customer analysis within IT service management. By focusing on service quality, aligning IT operations with customer expectations, and fostering a culture of continuous improvement, organizations can significantly improve their service delivery and customer satisfaction. This thesis aims to delve deeper into these aspects, providing empirical evidence and case studies to illustrate the transformative impact of ITIL principles on customer analysis.

Keywords: ITIL, Ai, Customer services, Software, Management.



ÖZET

ITIL'IN MÜŞTERİ ANALİZİNDEKİ ETKİSİ

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Bilgi Teknolojileri Altyapı Kütüphanesi (ITIL), BT hizmet yönetimi (ITSM) için en iyi uygulamaları sağlayan yaygın olarak tanınan bir çerçevedir. İlkeleri, BT hizmetlerinin kalitesini artırmak, BT operasyonlarını iş hedefleriyle uyumlu hale getirmek ve nihayetinde müşteri memnuniyetini iyileştirmek için tasarlanmıştır. Bu tezin amacı, ITIL ilkelerinin müşteri analizi üzerindeki etkisini araştırmak ve bu ilkelerin BT hizmet bağlamlarında müşteri ihtiyaçlarını daha iyi anlamak ve karşılamak için nasıl kullanılabileceğine odaklanmaktır.

Çerçeve, BT hizmetlerinin müşteri beklentileri ve iş hedefleriyle uyumlu hale getirilmesini teşvik ederek, sürekli iyileştirme ve hizmet mükemmelliği kültürünü teşvik eder. Örneğin, ITIL süreçlerinin uygulanmasının hizmet kalitesini artırdığı, güvenilirliği artırdığı ve genel müşteri memnuniyetini iyileştirdiği gösterilmiştir. Bu uyum yalnızca operasyonel değildir; müşteri ihtiyaçlarını anlamak ve bu içgörülerini hizmet tasarımı ve teslimatına entegre etmek için stratejik bir yaklaşım gerektirir.

Ayrıca, ITIL çerçevesi, daha öngörülebilir ve verimli hizmet sunumuna yol açabilen BT hizmetlerinin standardizasyonunu kolaylaştırır. Kuruluşlar, ITIL ilkelerini benimseyerek, daha iyi olay yönetimi ve hizmet operasyonuna olanak tanıyan ve nihayetinde gelişmiş müşteri deneyimlerine yol açan yapılandırılmış süreçler oluşturabilir. ITIL içinde hizmet operasyonuna odaklanmak özellikle önemlidir, çünkü bu aşamada müşteriler BT hizmetlerinin kalitesini doğrudan algılar.

ITIL'in COBIT gibi diğer yönetim çerçeveleriyle entegrasyonu, müşteri analizi üzerindeki etkisini daha da güçlendirir. Bu entegrasyon, kuruluşların BT yönetimini müşteri merkezli stratejilerle uyumlu hale getirmesine olanak tanır ve BT hizmetlerinin yalnızca dahili

operasyonel hedefleri karřılamasını deęil, aynı zamanda müşterilere deęer saęlamasını da saęlar.

Sonu olarak, ITIL ilkeleri, BT hizmet ynetimi iinde müşteri analizini geliřtirmek iin saęlam bir ereve saęlar. Hizmet kalitesine odaklanarak, BT operasyonlarını müşteri beklentileriyle uyumlu hale getirerek ve srekli iyileřtirme kltrn teřvik ederek kuruluřlar, hizmet sunumunu ve müşteri memnuniyetini nemli lde artırabilir. Bu tez, ITIL ilkelerinin müşteri analizi zerindeki dnřtrc etkisini gstermek iin deneysel kanıtlar ve vaka alıřmaları sunarak bu ynleri daha derinlemesine incelemeyi amalamaktadır.

Anahtar Kelimeler: ITIL, Yapay zeka, Mřteri hizmetleri, Yazılım, Ynetim.



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ABBREVIATIONS

AI	:	Artificial Intelligence
ITIL	:	Information Technologies Infrastructure Library
ITSM	:	Information Technology Service Management
IT	:	Information Technologies
COBIT	:	Control Objectives for Information and Related Technology
SLA	:	Service Level Agreements

1. INTRODUCTION TO ITIL

ITIL is an abbreviation consisting of the first letters of the words Information Technology Infrastructure Library. ITIL, also known as the Information Technology Infrastructure Library, is a service management methodology developed to manage IT services completely and at the best quality. It can also be referred to as an administrative map.

ITIL has become a recognized standard for service management best practice processes. It serves as a lens that enables the value of IT services to be seen and measured. ITIL encourages better management and optimization of the cost and capacity of IT services, with ITIL emphasizing standardizing IT processes and creating a common language.

By managing IT services, ITIL ensures that IT can support one or more business units. Essentially, the ITIL philosophy has a process-centered approach that can be scaled to all IT organizations, large or small.

The IT service management style actually focuses on information technology services and operations. IT service management has identified the identification, management and distribution of IT services as its main business objectives to achieve business objectives and customer service. Since ITIL ensures effective and efficient use of resources, it is also expected to reduce IT costs. [15]

ITIL reveals extensive knowledge and culture about IT services management. What is meant by accumulation here appears in the form of various articles, studies and books; The breadth and richness of ITIL's business management processes have made it more than just books and publications. It has become the best IT service management practice that is accepted worldwide. However, ITIL is not a ready-made solution. Various applications have been developed by evaluating the ITIL processes and principles of multiple companies.

Due to the differences in application, institutions that want to benefit from ITIL and the services offered by companies must make a choice that suits their own structure. It will be their own choice to understand ITIL processes and principles and to implement them in

accordance with their information technology infrastructure. Another situation would be the use and implementation of ready-made software offered by companies.

1.1 HISTORY AND EVOLUTION

The concept of service management in the IT field emerged in the 1980s, when the complexity of IT systems increased and their management became difficult. Over the years, it has been seen that the impact of IT services on the total IT budget is very high and that the total cost of the service consists of approximately ninety percent of maintenance and operating costs; Thus, it was understood that IT services should be managed and businesses were introduced to the concept of ITSY. [33]

ITSY ensures the correct identification, management, distribution and support of IT services to achieve organizational goals. It is the subset of service science that focuses on [31]. Same at the same time, ITSY provides “resource” and Organizational capabilities in the form of services using “capabilities” to present. “Sources”; people, knowledge, infrastructure, applications, financial power, etc. While it is an input used directly for value production, management is organisation, process, etc. concepts are seen as "capabilities". ITSY's fundamental purpose is to transfer resources to valuable services for customers [35]

The focus of ITSY is to understand the end user and customer correctly and to provide products and services that add value to them. Process, people and technology are three of the ITSY's is an important factor. The process combines inputs into correct outputs that produce value. Transformation activity. Processes depending on the structure of the organization, they are procedures that are supported by a set of activities and appropriate flows. Thanks to itsy all inputs throughout the institution are planned effectively, and as soon as the system is running, are monitored end-to-end, and possible problems are prevented or resolved in a short time. [11]

In addition, by ensuring ITSY roles and responsibilities in the best possible way, value increase is guaranteed with the determined process, human and technology harmony, and a service-oriented strategic approach. Within the scope of ITSY, organizations develop an effective process operating model, people, it is very important that the relationship between

Iden and Dec is managed continuously and correctly so that it can create processes, products and stakeholders (4Ps - people, process, product, partner). [16] Organizations meet the promised service level and deliver the expected.

It must develop a common understanding between customers and suppliers to ensure that services are distributed and supported in accordance with the outcome. For this reason, businesses; It requires software, hardware and contracts with third party companies to design ITSY and the process operating model. [36] In order to prepare these contracts in question, first of all, a list of all the services offered by the organization to its customers must be prepared. A service catalog is needed. Service components within the catalog name, description, continuity, criticality, responsible information, etc. diverse It is presented to its users with its features.[37]

Depending on the catalog, the contract signed between the service provider and the customer using the service is defined as Service Level Agreement (SSA), while the contract between the units within the service provider organization is addressed as Operational Level Agreement (OSA). In these agreements, the service level expected by the receiving party is defined, and the metrics and measurement methods agreed between the parties are clearly presented. Performance of the services and whether the contract is complied with by reporting by the service provider in accordance with the predetermined period. Non-compliance can be tracked, so ITSY can be continuously improved. [1]

The increasing complexity of IT due to technological developments and the ever-increasing number of organizations have made it necessary to focus on the quality and continuous improvement of IT services, as ITSY increases its importance. Accurate measurement of ITSY processes, which is increasingly popular in the industrial field, has become a difficult process for most organizations. This is due to the fact that businesses do not have a structured approach for accurate measurement of IT service and service management processes, the tools used do not support the metrics that are desired to be measured, and ITSY frameworks do not offer an applied solution to improve service performance. Unfortunately, academic studies on ITSY have not been at the pace to respond to the demand in the industrial field.

Exactly in this section, ITIL principles, which have implications for the development, operation, measurement and continuous improvement of an effective ITSY, are mentioned.

1.2 ITIL

ITIL emerged in the 1980s in England; It is an approach aimed at standardizing IT infrastructure and service processes. Quality and effective presentation of ITIL and ITYS, end-to-end continuous It is an operating model implemented in businesses for the purpose of improving. Adding value to the organization, alignment of business and IT strategies, IT Continuous monitoring-improvement and optimization of the performance of the services effective management of IT investment and budget, monitoring and monitoring risks management of capabilities and resources for quality service delivery, adoption of a common culture for ITSY throughout the organization and ITIL due to the benefits it provides in effective communication with stakeholders. It is a management framework often preferred by businesses. ITIL; At the same time, by bringing together the best ITSY practices, it improves service quality and accessibility, reduces service costs, and improves resources. It provides efficient use and optimizes service security and continuity [20]. The framework published with ITIL 4, the most current version of ITIL as of 2019, includes 5 strategic elements based on the alignment of ITSY and organizational requirements. These 5 elements that constitute the ITIL service value system are respectively; ITIL practices, called the service value chain (SVC) and four dimensions model, are guiding principles, governance and continuous improvement.

In general terms, the service value system represents the organization's work as a whole, with the main purpose being to produce value for the customer.

While the main inputs of the service value system are opportunities and demands, the output is value. Opportunities are options that can improve the organization in all areas. Demands are the needs of all the organization's customers for the products and services offered. [38] Value is the perceived usefulness of the product or service. According to the service value system, guiding principles, governance, service value chain, ITIL practices and continuous improvement are required to transform opportunities and demands into value. Improvement must be correctly understood and implemented in the organization.

While we are on the subject, we should also mention the service value chain. Service value chain is an operating model needed in enterprises. It is a system that covers all activities required for the effective management of products and services. The service value chain is inspired by Michael Porter's classic value chain model but involves service-oriented rather than product-based processes. It is usually defined through these steps in order:

- a. Supply and Resource Management: Procurement of the resources required for the service, coordination of the supply chain and management of the manpower and technologies required to provide the service.
- b. Service Development and Design: The limitations of the service, its adaptation to users and the design of features that will create competitive advantage.
- c. Service Delivery: This is the moment when the designed service meets the customer. At this stage, speed, efficiency and customer satisfaction are very important.
- d. Customer Relationship Management: Monitoring customer experience, evaluating feedback and developing strategies that will increase customer satisfaction.
- e. Continuous Improvement: Monitoring service performance, eliminating process bottlenecks and assessing innovation opportunities.

If we are going to give an example from here, let's consider a large company that offers digital health services. [18] The software used in this system, which enables patients to make online doctor appointments, receive digital prescriptions and track their results online, is at the center of customer experience. The company will increase customer satisfaction by constantly improving service quality by implementing the service value chain model.

The service value chain passes through the following steps:

- a. Resource Management: Appropriate management of physicians and digital platforms.
- b. Service Design: Developing user friendly downloads that are easily accessible to patients.
- c. Service Delivery: Uninterrupted and fast delivery of doctor's patients.

- d. Customer Relations Management: Carrying out processes related to patients' feedback.
- e. Continuous Improvement: Operating the speed of digital platforms, early prediction of customer expectations using data analytics.

1.3 INCIDENT MANAGEMENT, ISSUE MANAGEMENT AND CHANGE MANAGEMENT IN ITIL PRINCIPLES

ITIL (Information Technology Infrastructure Library) is a globally accepted framework for IT service management and guides the streamlining of service management processes. The ITIL framework helps organizations effectively manage the incidents, issues, and changes they encounter while managing IT services. Incident management, problem management and change management processes, which are the basic components of ITIL, are critical in IT service management. While these processes ensure uninterrupted service delivery, they quickly solve problems and increase organizations' ability to adapt to changes.

Incident management is the process of quickly handling this incident and returning the service to normal in case of a service interruption or deterioration of service quality. The purpose of incident management is to ensure that the service is back up and running as quickly as possible with minimal disruption. ITIL incident management is generally triggered by customer complaints, user notifications or errors occurring in the system and includes the stages of recording, categorizing, prioritizing, resolving and finalizing these incidents. As a digital streaming platform that serves millions of users, Netflix must handle event management with great care. Netflix uses advanced monitoring tools and incident management processes based on ITIL principles to quickly detect any outages on its servers and resolve them in a way that minimizes the impact on user experience. For example, this is the only reason why their competitors competing in the same track are so far behind. While Netflix provides quick feedback to its users when an event occurs and informs them about the resolution process of the outage, the same is not the case for EXXEN, which can be seen as another competitor.

In academic studies, ITIL incident management is also emphasized; have shown that the process plays a critical role in improving organizational efficiency. [36] State that an incident

management structured within the ITIL framework provides significant operational benefits to organizations by shortening incident resolution times. In addition, incident management has a direct impact on customer satisfaction, and quickly resolving interruptions in services increases customer loyalty.

And yet there is also the big topic of incident management. We need to talk about that when explaining incident management. Major Incident Management is a process used to manage critical incidents that cause a major disruption to an organization's services or seriously impact its operation. A major incident refers to a situation that is more serious and urgent than regular events. Such events are typically large-scale system outages, critical infrastructure failures, or serious security breaches and can adversely affect the organization's business processes, customers, or operations. The main aim of Major Incident Management is to minimize the impact of such critical incidents on the service and to ensure that the incident is resolved quickly. Whenever there is a major disruption to the organization's operations or services, a rapid, structured and coordinated response is required. This process is designed to minimize the effects of the incident and restore services as quickly as possible. [31] In 2021, Facebook experienced a major global outage that simultaneously affected Instagram and WhatsApp services. This outage left billions of users around the world unable to access the platforms. The incident took approximately 6 hours to resolve and major incident management processes were put in place during this time. Facebook shared the reasons for the outage and the solution process by constantly communicating during this incident. This incident is an example of just how critical major incident management can be.

Major Incident Management Steps:

Classifying an incident as a major incident is generally based on the impact the incident has on services. Such events must be quickly identified and differentiated from normal events. Identifying and classifying major incidents is a critical step for prioritizing and responding in a timely manner. Then, once the incident is classified as a major incident, the incident management team takes action immediately. Major events, unlike ordinary events, require rapid intervention by senior management and expert teams. Therefore, the incident is often

escalated to a crisis team and this team manages the incident. During the incident management process, a crisis management team is created. This team includes a variety of technical experts, service management teams and senior managers when necessary.[29] The team is responsible for assessing the effects of the incident and taking action quickly. The crisis management team identifies all necessary resources and steps for resolution of the major incident. For a quick solution, temporary solutions are applied if necessary. For a permanent solution, root cause analysis of the incident is performed and recurrence is prevented. Because major incidents often affect a wide range of customers, it is important to provide regular notification to both internal and external stakeholders during and after the incident is resolved. Customers should be informed about the potential downtime and management within the organization should be informed of the course of the incident. After the incident is resolved, a post-mortem analysis is performed to assess the impact caused by the incident and take preventive measures to prevent similar incidents from occurring again. This analysis evaluates how the incident was handled and what improvements can be made in the future.

Major Incident Management is a subject that has been examined by many researchers in the context of IT service management. As of 2000, it has become a topic that has attracted attention in academic terms. [10] state that effective management of major events is critical for organizations to ensure customer satisfaction and business continuity. Similarly, emphasized the importance of major incident management within the framework of IT service management and stated that the rapid resolution of such incidents can minimize the financial and operational effects on organizations.

As a result, the titles of incident management and major incident management show us that; It is a critical process for the effective management of large-scale events and the rapid return of services to normal. This process plays a vital role in maintaining the service quality of organizations, ensuring business continuity and increasing customer satisfaction. Major Incident Management includes effective crisis management, incident escalation and communication strategies, minimizing the negative effects of major incidents on organizations.

Problem management involves efforts to find the root cause of one or more events and eliminate these causes. While incident management temporarily solves a problem and makes the service operational again, ITIL problem management produces a permanent solution and prevents it from occurring again. ITIL problem management consists of two main processes: reactive problem management (finding the root cause of the problem after the incident) and proactive problem management (anticipating and preventing potential problems).

Instagram (Meta) strictly implements issue management processes in order to prevent the recurrence of various errors experienced on the platform. For example, to solve a problem that occurred in the users' news feed during a certain period, the source of the error was found and a permanent solution was provided by using problem management processes. After temporarily resolving the incident, Instagram's technical teams strengthened the system by conducting root cause analysis to prevent the problem from recurring.

In academic studies on ITIL's problem management, the contribution of this process to the long-term functioning of organizations is emphasized.[10] state that problem management increases the reliability and sustainability of IT services by preventing the recurrence of events by eliminating the root causes. Moreover, effective problem management increases the performance of organizations while also reducing costs.

Change management is the ITIL process that enables changes to be made to an IT system or service to be managed in a controlled manner. Change management includes planning, evaluation, approval, implementation and review of changes to the system. The goal is to implement changes effectively and safely without causing interruptions to services.

Change management is divided into three main categories. Standard changes (low-risk and frequent changes), urgent changes (changes that require rapid response to critical issues), and regular changes (planned changes).

Amazon Web Services (AWS) is a platform that constantly improves the cloud services it offers to its customers and adds new features. AWS plans and implements these changes carefully using ITIL change management processes. For example, when adding a new security feature, AWS assesses the impact of this change on services and completes the

change process with minimal disruption. After each change is implemented, feedback is received and the process is reviewed again.

The impact of change management on IT service management has been addressed in various academic studies.[39] emphasize that change management is important for the uninterrupted continuity of services and that a good change management process increases customer satisfaction while minimizing service disruptions. This study also states that carrying out change processes in an uncontrolled manner can cause serious decreases in service quality.

When we summarize it; ITIL principles include various processes that contribute to the effective management of IT services. Incident management, problem management and change management are among the basic processes of ITIL, and each plays an important role in continuously optimizing services and increasing customer satisfaction. Incident management keeps service interruptions to a minimum, while problem management aims to permanently resolve recurring errors. Change management ensures that changes made to systems are implemented safely and effectively. Current examples and academic studies support the critical importance of these processes in IT service management and their application areas.

2. ITIL PURPOSES OF USE

ITIL (Information Technology Infrastructure Library) is one of the most commonly used systems for information technology service management (ITSM). ITIL was developed to help organizations manage their IT services in a more efficient, effective and customer-focused manner. [32] The main purpose of ITIL is to ensure that IT services are aligned with business objectives and to continuously improve service quality by optimizing processes. ITIL provides a set of best practices that help organizations worldwide structure, monitor and improve their IT processes.

The purposes of use are as follows;

- a. Improving the Quality of IT Services: ITIL ensures consistent and high quality of service delivery. Through standardization of processes, IT teams are better able to continuously improve services and meet customer expectations.
- b. Reducing Costs: ITIL aims to reduce costs by ensuring efficient use of resources. Unnecessary repetitive processes are eliminated, automation increased and operational efficiency improved.
- c. Risk Management: ITIL guides in predicting and managing risks that may be encountered in IT processes. In this way, organizations can detect and intervene in advance of possible service outages and security vulnerabilities.
- d. Increasing Customer Satisfaction: ITIL offers a customer-oriented structure. Service levels are clearly defined and customer feedback is considered during service delivery. In this way, the quality of services and customer satisfaction are constantly increased.
- e. Continuous Improvement: ITIL is based on the principle of “Continuous Service Improvement”. This means reviewing, analyzing and meaning IT all the time. It creates continuously intermittent, long-term, more sustainable and efficient uses.

Let's look at current examples to draw attention to the positive effects of ITIL applications on operational efficiency and customer satisfaction.

Spotify uses ITIL as a platform offering digital music streaming services. ITIL practices, especially in incident management and service interruption management processes, help Spotify ensure service continuity. As the user base of the platform expands, thanks to ITIL, the growing infrastructure is more easily managed and service quality is maintained.

AXA Sigorta, also a global insurance company, effectively uses ITIL in its IT infrastructure. By applying ITIL processes, AXA has achieved standardization in IT operations and significantly reduced response times to service requests. For example, thanks to service request management, customer demands are quickly resolved and operational efficiency is increased. [27]

And finally, Amazon Web Services is a leader in providing cloud services globally. AWS optimizes its service management using ITIL processes. For example, by adopting ITIL best practices in incident management and change management processes, it can respond quickly to customer demands and ensure the uninterrupted operation of cloud services. In this way, the user experience is improved and customer satisfaction is increased. [14]

Consequently; ITIL is an essential tool in managing IT services of modern organizations. Used for purposes such as reducing costs, increasing customer satisfaction and ensuring operational efficiency, ITIL helps organizations gain a competitive advantage in today's rapidly changing technology environment. The effective use of ITIL processes by large companies such as Amazon Web Services, AXA Insurance and Spotify clearly reveals the value and impact of ITIL.

2.1 ITIL SERVICE MANAGEMENT

ITIL Service Management (ITSM) is a framework that helps an organization best manage information technology (IT) services. ITIL (Information Technology Infrastructure Library) is a set of best practices that cover the delivery, management and improvement of IT services. ITIL Service Management focuses on aligning IT services with an organization's business objectives, creating customer-focused processes and improving service quality.

Its biggest advantage is that IT services are placed at the center of business processes and customer expectations, rather than being merely a technical process. ITIL Service

Management offers a model that structures and standardises processes. IT services ; It is handled through a number of processes such as demand management, incident management, problem management, change management and service continuity.

ITIL's five commonly used main processes stand out as incident management, problem management, change management, service level management, and assets and configuration management.

Incident management aims to quickly resolve unexpected interruptions or performance problems in services, ensuring that services provided to the customer are restored as quickly as possible [33]. This process aims to preserve business continuity by minimizing the impact of service interruptions. Problem management aims to find the root causes of events and prevent them from recurring by eliminating these reasons. This process improves service quality in the long run and prevents repeated outages [36]. Change management ensures that changes to the IT infrastructure are planned, implemented and controlled. This process aims to make changes and harmonize business processes without interrupting services [25]. Service level management ensures that service levels agreed with the customer are constantly monitored and maintained. This process aims to maximize customer satisfaction and guarantee service performance [20]. Asset and configuration management aims to ensure full control of IT assets and systems, ensuring that the inventory is managed correctly and the systems operate efficiently. This process ensures efficient use of IT resources and control of operational costs [16].

Let's reinforce the subject with current examples. Netflix uses ITIL processes to manage its IT infrastructure and deliver uninterrupted service to its users. In particular, the incident management process helps to quickly resolve any outages that may occur on the platform. By optimizing its incident management and change management processes, Netflix increased customer satisfaction and minimized service disruptions. Then let's take Facebook, which is a platform that provides services to billions of users. Updates and improvements made on this platform, whose change management processes are managed within the ITIL framework, are planned and implemented through change management processes. In this way, the user experience is continuously improved with minimal interruption. Turkish

Airlines likewise uses ITIL Service Management processes to increase operational efficiency. Especially in airport operations, service continuity management is handled within the scope of ITIL. ITIL processes are used to prevent system interruptions and ensure that passengers receive uninterrupted service. Through processes such as incident management, change management and problem management, the quality of services is increased, costs are reduced and customer satisfaction is ensured. It is seen that large companies such as Netflix, Facebook and Turkish Airlines provide service continuity and operational efficiency by using ITIL processes.

2.2 SERVICE DESIGN AND ITIL

It is a framework that ensures that IT units are planned in accordance with the business and designed to meet customer demands. ITIL service design helps things maintain continuous service, control costs and improve customer performance. This design process is an important step in the lifestyle narrative and includes the parts necessary to bring service solutions to life. ITIL's service design principles aim to provide efficient and sustainable services that are user-friendly and workforce-friendly.

Customer Orientation: The most important principle of the service design process is to shape services according to customer needs. Meeting customer expectations and aligning with business goals is the main goal of service design. For example, Apple optimizes its service processes within the framework of ITIL by adopting the principle of customer orientation in the design of its products and services. In cloud services such as iCloud and Apple Music, customer satisfaction is increased by providing user-friendly interfaces and uninterrupted experience [16].

Capacity and Performance Management: ITIL prioritizes optimizing performance in the design of services and adjusting capacity according to need. The smooth operation and scalability of services requires the effective implementation of capacity management processes. Netflix ensures that content streaming services operate at high performance by optimizing capacity management in line with ITIL principles. It increases capacity by using big data and cloud infrastructure, while keeping service interruptions to a minimum with incident management processes [33].

Accessibility and Security Management: Another important principle of ITIL service design is to take into account the accessibility and security requirements of services. This principle ensures that services are always available and made available securely. Google Cloud Platform (GCP) applies ITIL security and accessibility principles in service design. GCP designs multi-layered security protocols and access controls to secure user data. It also ensures that services are provided to customers with high availability rates [20].

Service Continuity Management: ITIL prioritizes the uninterrupted operation of critical infrastructures and systems in order to ensure the continuity of services. Precautions such as multiple recovery plans, data backup and emergency management should be taken to ensure continuity. Let's consider Turkish Airlines again. It aims to provide seamless service in aviation operations by using ITIL service design principles. It optimizes service continuity plans for the uninterrupted operation of flight and reservation systems and develops disaster recovery strategies against possible disruptions.

Design of SLAs (Service Level Agreements): ITIL ensures that the service levels (SLA) agreed upon with the customer are determined in the design of services and that these agreements are at the basis of service delivery. SLAs define how the service will be delivered, when it will be delivered, and quality criteria. Microsoft Azure ensures the continuity, availability and performance of cloud services by making detailed SLA agreements with its customers within the framework of ITIL. [9] These agreements are an important part of service designs to meet customer expectations [25].

Tesla implements ITIL policies in software and hardware design of electric vehicles. It provides tool updates continuously and securely, in compliance with ITIL rules, especially in security management and service continuity design. Tesla improves user experience and ensures continuity of service by performing software updates of vehicles remotely. [23]

Now that we have emphasized the contribution of designing services in line with customer needs to organizational success in this section, we can move on to another topic.

2.3 ITIL AND SERVICE TRANSITION

It is the name given to the framework that enables IT services to be successfully transitioned from the design phase to the operational phase. Service migration aims at the managed deployment of new or changed services. This process includes important components such as change management, release and deployment management, information management, migration planning and risk management. ITIL's service migration principles focus on the risk-free and successful migration of services to the operating environment, maintaining customer satisfaction and service continuity in the process.

When we consider the basic principles; According to ITIL, any changes should be managed during the service migration process. With change management, it ensures that all changes to the IT infrastructure are carried out in a controlled manner. Microsoft Azure, as a successful example, adopts ITIL principles in its change management processes. [9] By using change management strategies during software updates and the deployment of new features in cloud services, it keeps service disruptions to a minimum and carries out transition processes without negatively affecting the customer experience [20].

Then, ITIL ensures the planned distribution of new or changed services in a certain order with version and distribution management within the framework of service transition. In this process, both technical infrastructure and user experience are taken into consideration. For example, Tidal uses version and distribution management when deploying software updates and new features on its music streaming platform in line with ITIL principles. These updates, made without disrupting the user experience, enable the transition process to be completed in a controlled and risk-free manner [33].

When we think about ITIL service transition from the perspective of businesses, we must emphasize that information management plays an additional critical role in all transition processes. Information management ensures that all information and data arising during changes are shared and used correctly. Google Cloud Platform (GCP) effectively provides users with information about the migration process using ITIL information management principles. GCP provides customers with detailed guidance when announcing new service updates, minimizing errors caused by lack of knowledge during migration processes [16].

ITIL requires careful transition planning and adequate support to ensure a successful service transition. This process ensures that the transition is carried out in a phased manner and that potential problems are responded to quickly. Tesla implements ITIL transition planning principles during software updates. Remote software updates to Tesla vehicles are performed in a planned and phased manner. In this way, new software versions are deployed without any errors or glitches during the transition [25].

Pre-determining and managing the risks that may arise during service transition is one of the most important principles of ITIL. Risk management plays a critical role in ensuring that services are not interrupted during the transition process and customer satisfaction is maintained. Amazon Web Services (AWS) successfully manages migration processes for large-scale cloud services using ITIL risk management principles. AWS performs analyses to predict risks that may occur during service transition and takes comprehensive security measures during transition processes to protect customer data [36].

2.4 ITIL AND SERVICE OPERATION

The system that covers the management and support of the daily operations of IT services is called service operation. Service operation aims to ensure that the services offered by the organization are delivered consistently, customer expectations are met and service interruptions are kept to a minimum. ITIL service operation includes incident management, problem management, demand management, access management, and operational control processes. The aim of the processes is to ensure the continuity of IT services and increase operational efficiency. ITIL service operations principles are successfully applied by many large organizations today.

The incident management principle within the scope of ITIL's service operation aims to respond quickly to incidents in order to resolve service outages as soon as possible and minimize the impact on the customer. Incident management ensures that root causes are analyzed and solutions are developed to prevent outages from recurring. Problem management in the context of service operations aims to develop long-term solutions to find the root causes of incidents and prevent their recurrence. This process contains both reactive and proactive approaches. ITIL demand management process aims to fulfill users' demands

for services. These requests could be new services, information requests or standard changes. For example, when an employee wants to increase the storage space on Google Drive, this request is instantly evaluated through the demand management process and the necessary resources are provided. In this way, user needs are met quickly and effectively. The ITIL access management process ensures that users have access to services and data for which they are authorized and prevents unauthorized access. While employees have access to only the data and tools they need in line with their business needs, authorization systems are meticulously controlled to prevent security breaches. This plays an important role in ensuring privacy and security of data. Another important component of ITIL service operation is the implementation of monitoring and control processes to ensure the smooth operation of the IT infrastructure. Tesla carries out operational control of the software and hardware infrastructure in its vehicles in accordance with ITIL principles. Tesla's vehicles have constant monitoring and reporting systems; Through these systems, any hardware or software problem is immediately detected and intervened. Safe and trouble-free operation of vehicles is ensured thanks to operational control processes. Google responds quickly to user demands by using ITIL demand management processes. For example, when a user requests an increase in storage space, this request is quickly processed and provided immediately through the Google Workspace infrastructure. These processes demonstrate the efficiency of demand management processes while improving user satisfaction.

2.5 CONTINUAL SERVICE IMPROVEMENT

It is focused on improving quality and meeting customer needs better. This principle of ITIL improves service operations while contributing to reducing costs and increasing customer satisfaction. The CSI cycle is consistent with the plan-do-check (PDCA) model and provides organizations with a competitive advantage by identifying strategic improvement opportunities. ITIL CSI requires analyzing the performance of existing services on a regular basis. This process begins with performance evaluations to determine the potential for improving service quality and identify areas for improvement. Within the ITIL CSI framework, data collection and analysis processes are critical to identify opportunities for improvement. Collecting data about the effectiveness of service operations and identifying areas for improvement by analyzing this data is the foundation of a successful service

improvement process. The ITIL continuous service improvement process includes identifying improvement opportunities to achieve long-term strategic objectives. In this process, organizations continually optimize service processes to better meet customer needs. Another important principle of CSI is that improvement opportunities are evaluated and implemented. This process includes the implementation of improvement steps determined to increase service performance. ITIL CSI includes ongoing monitoring processes to measure and report the effectiveness of improvements made. This process includes monitoring the performance of service operations and assessing the impact of improvements. Let's take Google as a successful example. Applies continuous service improvement processes in its search engine and other digital services. By analyzing user data, it determines how to optimize the services and improves its services in the light of this data. Google's improvements to its search engine algorithms are a CSI practice that aims to continually improve user experience.

3. WATERFALL AND AGILE

Project management processes are a discipline used to plan, manage and finalize complex projects. For the successful completion of projects, certain processes must be followed. Let's focus on the effects of ITIL principles on customer analysis by examining the processes closely. Let's first talk about the waterfall project system. Waterfall process model is one of the most well-known and used methodologies in project management and software development. This model, which has a linear structure, is based on the principle of step-by-step progress and one cannot move on to the next stage before completing one stage. The Waterfall model is a process model proposed for software development by Winston W. Royce in the 1970s [40]. This model divides the software development process into stages like a waterfall, adopting the idea that each step must be completed completely. With its traditional and hierarchical structure, it is especially preferred in situations where clear steps and results are needed in project management. However, with the rise of more flexible processes in the modern project management world, the use of the Waterfall model has been the subject of several debates. Because the Waterfall process is a linear process model consisting of successive stages. In this model, one stage is not completed before moving on to the next stage, and each stage is clearly separated from each other. Waterfall process is not a flexible model. Using this model in projects where changes are frequent and requirements evolve over time may create problems. The Waterfall model does not envisage going back, making changes or reconsidering intermediate stages. For this reason, the Waterfall model would not be an appropriate solution, especially in projects that require constant feedback and iterative development.

First, the project requirements are analyzed in detail and documented.

In the second stage, how the software or system will be constructed is determined and technical design is carried out.

After the technical design is made, the software coding phase begins and the developers create the software appropriate to the determined design.

Testing is carried out to check the accuracy and functionality of the Software currently in operation.

After the tests are completed, the software is presented to the end user and distributed.

And in case of any error after the final software is put into use, the error is fixed and the necessary updates are made.

Although it requires clear planning and solid documentation from the beginning of the project, it is closed to changes. The requirements identified at the beginning of project planning are assumed to affect the entire process and changes are kept to a minimum. This being the case, the interactive structure is closed and drawn with sharp boundaries. Feedback from customers or users is only received after the final version of the software is reached. And it can also be difficult and costly to go back and make changes once you've completed any phase.

As with every project process model, Waterfall is a model with basic principles. Each step follows each other and each step must be completed. At the end of one step, the product to be output forms the input of the next step. This is the principle of gradual and sequential advancement. All requirements should be completely determined at the beginning of the project. This is the clear requirement definition. Detailed documentation at every stage and strict follow-up throughout the process is a must. This points to the importance of documentation. And finally, the principle of constant time, constant cost. In project planning, time and cost are fixed; these parameters do not change much throughout the project.

Let's fix the topic with examples, examine the criticisms made about the Waterfall process and move on to the other topic.

The Waterfall model is generally preferred in projects that take a long time, are complex and involve high risk. It is widely used especially in the development of large systems used in the defense and aviation industry. NASA's spacecraft development projects are examples of projects implemented in accordance with the Waterfall model. In such projects, determining clear requirements from the beginning and keeping changes to a minimum is critical to the success of the project.

The development of software used in the healthcare industry is also generally based on the Waterfall model. In such projects, security and regulatory compliance requirements are very high, so each stage must be carefully documented and verified. The Waterfall model is especially preferred in large-scale software projects such as electronic health records (EHR).

Let's look at unsuccessful examples as well as successful ones. For example, KODAK. Kodak, which has a very deep-rooted history, actually went bankrupt not because of product inadequacy but because it could not adapt to current trends. On the other hand, another example is the Sony brand. Sony, which is only a PlayStation brand today, initially entered the market with a wide range of products. However, like every Waterfall brand, Sony could not adapt and could not keep up with the current state of affairs due to its sharp boundaries.

So what should be the alternative? In today's rapidly changing business environment, businesses' need for flexible and quickly adaptable methods is increasing in order to gain competitive advantage. In this context, agile processes have been widely adopted especially in the field of software development and have brought revolutionary changes in project management.

Agile processes are methodologies in the fields of software development and project management based on the principles of flexibility, rapid adaptation and continuous improvement. It is a set of flexible, iterative and collaborative methods developed to respond quickly and effectively to customer needs in complex and ambiguous projects. The agile approach has a structure in which projects are continuously improved by dividing them into small parts and feedback is received at each iteration. When we think of it in this context, it is characterized by iterative and incremental development, customer collaboration, it contains flexibility and adaptation, have extensive communication it is a process with self-managing teams. Although it replaces the traditional (waterfall) model, we cannot talk about a completely free and irregular method. Agile methodologies adhere to certain principles and rules. Furthermore, agile processes may not be suitable for every project; Traditional methods can be more effective, especially in projects with very strict and pre-determined requirements. While we are on this subject, let's go into detail.

Agile processes are based on four key values and twelve principles known as the Agile Manifesto. These principles underlie agile approaches.

Firstly, Agile Manifesto Values:

- a. Individuals and Interactions are prioritized over processes and tools.
- b. Working Software takes precedence over comprehensive documentation.
- c. Customer Collaboration is valued above contract negotiation.
- d. Openness to change takes precedence over plans.

Then there are twelve principles that we need to address.:

- e. Valuable software is continuously delivered to maximize customer satisfaction.
- f. Flexibility is provided to meet changing needs.
- g. Constant communication is encouraged among employees.
- h. Projects are constructed with motivated individuals.
- i. Technical perfection and good design are encouraged.
- j. Simplicity is achieved by avoiding unnecessary work.
- k. The best architecture is developed so that the requirements and design remain up to date.
- l. Self-organised teams produce better results.
- m. Team performance is regularly evaluated and ways for improvement are sought.
- n. Face-to-face communication is the most effective way of information transfer.
- o. Working software is the main criterion of progress.
- p. Sustainable development is ensured.

Agile processes are a flexible and dynamic approach that enables businesses to adapt to rapidly changing market conditions and respond to customer needs more effectively. The successes of leading companies such as Spotify, Microsoft, Tesla and Google by adopting agile methodologies clearly demonstrate the effectiveness and feasibility of agile processes. Academic studies also confirm that agile processes play an important role in increasing innovation, productivity and customer satisfaction in businesses. In this context, the correct implementation of agile processes stands out as a critical factor for modern businesses to gain competitive advantage. Before explaining with examples, we need to mention two agile methodologies that are widely used in modern project management and software development processes. Scrum and Kanban. Both methodologies allow teams to optimize work processes and achieve faster and more efficient results. However, their application methods, areas of focus and process management approaches differ. Scrum and Kanban are fundamental components of agile project management and software development approaches. Agile methodologies focus on improving flexibility, continuous improvement, and customer satisfaction in complex projects [5]. While Scrum offers a structured framework with specific roles and rituals, Kanban is a more flexible and continuous-flow approach [30].

Scrum, which has an iterative structure, allows small and cross-functional teams to develop products by working in short-term time periods called "sprints". Scrum was developed in 1990 by Jeff Sutherland and Ken Schwaber; It has five fundamental elements. With sprints, called short development cycles lasting 2-4 weeks, a working product or a functional increase is achieved at the end of each sprint. Scrum master, who is responsible for the healthy progress of the process, it has three roles: the product owner, which represents customer needs, and the development team, which is responsible for the development process. Another key element of Scrum is meetings. Daily short meetings (daily stand-ups), sprint planning meetings, sprint review and retrospective (evaluation) meetings constitute Scrum's process rituals. Another basic element of scrum is that it has two separate backlogs: a list containing all the to-do tasks and features, and a list in which the tasks to be done for each sprint are selected and ranked.

Scrum is especially commonly used in software development projects. Teams have the opportunity to continuously evaluate customer requirements and change direction as necessary, providing flexibility on large projects.

Kanban is a method developed to optimize Toyota's manufacturing processes and is based on continuous improvement, workflow visualization and process optimization [2]. Kanban is based on continuous monitoring and optimizing workflow rather than time frames.

- a. Visualization: Work processes are visualized on a Kanban board. The dashboard usually consists of columns such as “To Do,” “Doing,” and “Completed.”
- b. Workflow: Kanban keeps things moving from one column to another and tries to optimize that flow.
- c. WIP (Work in Progress) Limits: Limits the number of jobs that can be done simultaneously in the process. This enhances focus and reduces bottlenecks.
- d. Continuous Improvement (Kaizen): In Kanban, processes are continuously analyzed and improved.

Kanban is generally used in jobs requiring continuous flow, especially in production and operational processes. For example, a software team can use Kanban for error tracking and maintenance processes [41].

So, what are their differences?

There is a distinct difference in the workflow, for example;

Scrum: Creates 1–4 week paces. With these tempos, the product target is moved towards. Before the sprint begins, it should be decided from the Product Backlog which work will be completed in this sprint. Changes that affect the sprint goal are not allowed. However, business priorities and the Product Backlog can be constantly changed between sprints.

Kanban: Focuses on a constant workflow. Work typically moves through the “To Do,” “In Progress,” and “Completed” columns. The workflow flows continuously and can be adjusted based on the team's workload. Jobs can be added and removed indefinitely.

In the context of roles;

Scrum: There are three roles. The Product Owner determines the product vision and priorities. Developers improve the product. The Scrum Master removes impediments and leads the process.

Kanban: There is no designated role. The team often assigns roles internally based on its needs and the requirements of the project. Product Owner and Kanban Master roles can be adapted according to the needs of the team and the characteristics of the project.

On the other hand; Scrum: Daily Scrum, Sprint Planning, Sprint Review and Sprint Retrospective events are held regularly.

Kanban: Does not mandate activities. The team plans its own activities according to its own needs.

Scrum: Work is done in fixed time periods (Sprints) and changes that will affect the sprint target are not allowed. Each sprint aims to deliver finished and testable product segments.

Kanban: It has a resilient structure. The workflow flows continuously and priorities can be flexibly set. Work items can be added or removed immediately.

Scrum: Business priorities are determined in the sprint planning meeting. In this meeting, the product owner and the development team determine which tasks to select for the sprint. The Work Item is prioritized based on customer needs, technical difficulty and business value. Business priorities are set by the product owner. The product owner represents customer needs and is the final decision maker in determining business priorities in the product backlog.

Kanban: Work priorities can be continuously adjusted and changed. Scaling and planning is typically done based on the state of the workflow.

And finally; Scrum: Metrics such as Velocity (the size of work completed in each sprint), Sprint Goals Achievement, Team Progress are important. Process-oriented metrics such as Kanban: WIP, Throughput, Lead Time are more important.

These differences make both methods preferable in different situations suitable for different business requirements, scales and team dynamics. [26] Which method will be chosen may vary depending on the characteristics of the project, the needs of the team and the requirements of the process. Regarding which one to choose and where; While Scrum focuses on short-term deliveries with a certain structure, Kanban is a more flexible and continuous improvement-based approach. Which method will be used should be determined according to the characteristics of the project, the dynamics of the team and the nature of the job. Today, these two methodologies are used in both software development and operational processes for process optimization and increasing productivity.

To explain more specifically;

Some projects have distinct start and end dates, while others have constantly changing requirements. Scrum is more suitable for projects with constantly changing requirements. Kanban is more suitable for projects with clear start and finish dates.

Some projects are straightforward and easy to understand. Others are complex and versatile. Scrum is better suited for complex and multi-faceted projects. Kanban is better suited for projects that are simple and easy to understand. And also in scrum, the recommended team capacity is between 3 and 9 people. There is no limit on the number of people in Kanban.

Scrum Example: Software Development Projects

Scrum is one of the most frequently used agile methods in software development teams. For example, ETiya's development teams use Scrum when working on new product features. At the end of each sprint, team engineers complete a particular product or function and present it to users. This approach provides the opportunity to receive constant feedback during the product development process and change direction according to customer requirements when necessary.

Kanban Example: IT Support and Operational Processes

Kanban is especially effective in operational processes. For example, some of Microsoft's support teams use Kanban to manage IT services and solve problems. Thanks to Kanban boards, Microsoft visualizes user demands and optimizes the workflow by quickly understanding which demands are priority [2]. This ensures a workflow supported by a process of continuous improvement and minimizes workload imbalances.

Other topics that we need to briefly mention in the Agile methodologies section are; Extreme Programming is an Agile methodology used to provide flexibility, rapid feedback and customer focus during the software development process. XP relies on practices like frequent code merging, continuous testing, and small and frequent deliveries. For example, using XP principles, a team meets frequently during the software development process, works interactively with each other, and responds quickly to user feedback.

Lean Software Development is an Agile methodology that focuses on waste and aims to continuously create value. This methodology focuses on minimizing waste, delivering quickly, and making continuous improvement while creating customer value.

Feature Driven Development is an Agile methodology for managing large and complex projects. FDD takes a functional features-based approach and breaks the development process into feature-driven iterations. For example, a software company might use FDD principles to develop different features of an e-commerce platform separately and deliver those features in iterations. [6]

And lastly, the Crystal methodology. This method is an Agile methodology with different variations depending on the size and scale of the project. It provides flexibility depending on the project's criticality, size and the team's competence level. For example, a small team can manage the project process using the Crystal methodology, also known as Crystal Clear, while for a larger and more complex project, the Crystal Orange methodology may be preferred.[7]

4. WHAT IS AGILE SERVICE MANAGEMENT? REVIEW WITH ACADEMIC BACKGROUND AND CURRENT EXAMPLES

Agile Service Management is an approach aiming to manage and optimize service management processes with agile methodologies. While traditional IT service management (ITSM) practices generally include rigid, formalized processes, agile service management adopts agile principles to add flexibility and speed to these processes. Agile manifesto and Scrum are frameworks at the core of agile service management and aim to quickly adapt to changing customer requirements. [21] If we have passed the introduction, let's make a definition. Agile service management is a blend of agile principles and service management processes. This approach ensures that services are delivered faster, more efficiently and with a focus on customer needs. Managing services with agile methodologies, which can be compatible with traditional frameworks such as ITIL, allows companies to constantly improve their processes by receiving rapid feedback. The academic background of agile service management has a theoretical framework based on agile development processes. This framework is underpinned by the following key concepts.[8]

Agile Principles: We have detailed this in the previous section, but; The agile manifesto forms the basis of agile service management. In this manifesto, individuals and interactions are deemed more important than processes and tools. The agile approach is based on customer satisfaction, continuous feedback, and flexibility [5]. Agile service management applies these principles of agility to service processes.

Continuous improvement, which is one of the most important components of agile methodologies, is also a critical element in agile service management. Improving services in small, manageable steps enables businesses to respond more quickly and efficiently to customer demands [22].

Academically, the relationship between agile service management and DevOps is an important element in the integration of agility into IT service management. [17]. DevOps means the integration of development and operations and provides faster delivery times with

agile service management. DevOps culture promotes the application of agile approaches in service management processes [42].

Another academic concept in the context of agile service management that we have mentioned in detail are agile practices such as Scrum and Kanban. These frameworks divide service management processes into sections and enable feedback to be obtained at each step. The sprint structure of Scrum and the continuous flow logic of Kanban provide a more flexible and efficient structure in service management processes [30].

Agile service management is the application of agile methodologies to IT service management processes and enables businesses to deliver faster, flexible and customer-focused services. Agile principles, combined with practices such as Scrum and Kanban, ensure that service management is more effective and adaptable.

Let's give a strong example in line with the section we mentioned. By integrating ITIL-based service management processes with agile approaches, ING Bank has made its service delivery processes more flexible. ING ensures continuous improvement in IT services by combining Scrum and DevOps applications in service management. For example, ING's agile teams are able to respond quickly to customers' demands and launch new services in a short time. This approach enables ING to quickly offer innovative services in the competitive banking industry [43].

We try to touch upon similar points in each chapter in order to avoid repeating the same concepts frequently throughout the text. Since we have tried to explain the concepts where appropriate, it is now time to explain the Service Catalog issue. What does service service catalog mean? what is it for?

Playing an important role in service management processes, service catalogs provide a structured list of services offered by an organization. Traditional IT service management (ITSM) applications treat service catalogs as a fixed, defined set of services. However, with the acceleration of digital transformation and the constantly changing customer demands, it has become inevitable for service catalogs to become flexible and adaptable.[19] Agile Service Catalog, which comes into play at this point, is defined as a catalog structure that is

compatible with agile methodologies, constantly evolving and able to quickly respond to customer needs.

If we need to create a more precise definition; Agile service catalog is a service delivery system that is created and continuously updated based on agile service management principles. This catalog is built on the principles of flexibility, continuous improvement and customer orientation. [24] One of the key features of the agile service catalog is its ability to quickly adapt to fast-changing business needs and customer demands. Services are not fixed, they are in constant change and are adapted quickly when necessary.

Amazon Web Services is a noteworthy example of agile management of service catalogs. While AWS dynamically delivers its cloud-based services to its customers, it constantly updates these services and adds new services. AWS's service catalog has an agile structure and provides flexible service delivery to customers. In addition, it constantly improves its services in line with customer feedback and thus keeps customer satisfaction at the highest level [44].

Agile service catalog is a structure that provides great flexibility in service delivery with the combination of agile methodologies and service management processes. It is emphasized in the academic literature that the integration of agile approaches into service management processes and the constant updating of service catalogs offer significant advantages to businesses in terms of customer focus and speed. As can be seen from the current example, large businesses adopt this model and offer their services to their customers faster and more efficiently.

4.1 USE OF TOOLS IN AGILE SERVICE MANAGEMENT

Agile service management is a management approach based on the basic principles of agile methodologies, such as responding to rapidly changing business needs, prioritizing customer satisfaction and constantly improving services. [12] Agile processes are often used to increase efficiency in service delivery, especially when there is a need to keep up with digital transformation and rapid market changes. In this context, the use of tools (programs) plays a critical role in increasing the feasibility of agile service management. Programs used in

agile management processes are software and platforms developed to more effectively manage, monitor and improve services. [13]

Tools used in agile service management are designed to increase team collaboration, monitor services more effectively and optimize business processes. These tools make the service management framework more flexible and customer-focused.

Jira is a project management tool developed by Atlassian and used widely in software development processes. Jira is designed for teams that adopt agile methods, and has functions that specifically support agile methodologies such as Scrum and Kanban. The use of Jira in agile service management offers great flexibility in tracking and organizing work. Jira helps teams optimize service delivery processes with features such as task assignments, sprint management, and progress tracking [28].

Many software development companies and IT departments use Jira for their service management processes. For example, Spotify uses Jira to constantly improve its music streaming service, increasing collaboration across teams. Thanks to this tool, Spotify ensures continuous improvement in its services by quickly collecting customer feedback [34].

ServiceNow is a platform developed specifically for ITSM and supports agile service management processes. ServiceNow is used to monitor and optimize service management processes, such as change management, incident management and problem management. At the same time, it provides a suitable infrastructure for agile teams to manage service catalogs and quickly process change requests .

Deloitte, the world's largest international company providing accounting, auditing, tax and management consultancy services with 312,000 employees working in 700 offices in more than 150 countries, manages the IT services it offers to its customers more flexibly and quickly by using ServiceNow. Thanks to the flexibility provided by ServiceNow, it can respond quickly to customer demands and make service improvements in a shorter time [42].

Trello is another popular tool for agile management processes. Trello is especially successful in visual task management and creating workflows. It is used to organize the work of agile

teams, keep track of tasks, and monitor progress in processes. Thanks to its flexible and user-friendly interface, Trello has found widespread use in agile service management [28].

Companies that offer social media management tools such as Buffer use Trello in their service management processes to ensure coordination between teams. Buffer optimizes business processes by collecting customer feedback through Trello to continuously improve social media management services.

On the other hand, GitLab is a tool widely used in software development processes and suitable for agile service management principles. GitLab has features to support project management, code reviews and continuous integration processes. It enables agile teams to collaborate quickly and efficiently and offers flexibility in the process of developing services [30].

NASA uses GitLab in some software development projects. GitLab enables software development teams to work more effectively in NASA's service management processes, helping to complete projects more quickly.

Programs used in agile service management processes increase cooperation and communication among teams. For example, tools such as Jira and Trello allow teams to better organize their workloads and tasks and improve communication. These tools, on the other hand, ensure transparency at every stage of service management processes. For example, tools like Jira and GitLab clearly show what stage the services are in, who is working on which task, and how far along the process is.

Programs used in agile service management also ensure rapid processing of change requests. Tools such as ServiceNow allow change requests to be managed quickly and services updated flexibly.

And ultimately, agile service management programs provide an effective platform to quickly collect customer feedback and use it in service improvements. For example, trello and jira provide a convenient environment to collect and analyze customer feedback. In this part, we talked about the advantages of using programs in agile service management.

The programs used in agile service management are of great importance in making service delivery processes more flexible, efficient and customer-oriented. Tools such as Jira, ServiceNow, Trello and GitLab support the basic principles of agile service management and allow teams to work more effectively. These tools offer significant advantages in collaboration, process transparency and rapid change management, contributing to the success of agile service management.



5. CONCLUSION

What is essentially planned in this study is to examine the impact of ITIL principles on customer analysis and emphasize the importance of customer-oriented strategies in information technology service management. ITIL's structured service management framework stands out as a critical tool for better understanding customer needs and increasing service quality. [3] Effective customer analysis enables organizations not only to optimize existing services but also to establish deeper and sustainable relationships with customers. According to the findings of the research, ITIL's five main life cycles (service strategy, service design, service transition, service operation and continuous service improvement) provide a holistic approach to improve customer satisfaction and service quality. Especially Continual Service Improvement and Service Strategy processes play an important role in shaping services according to customer needs. These processes enable regular collection and analysis of customer feedback, revealing opportunities for continuous improvement in service delivery. The data obtained in the study shows that ITIL principles improve customer analysis processes and enable the adoption of a customer-focused service approach. In this context, it has been observed that customer satisfaction, quality of services and efficiency of business processes increase in enterprises where ITIL is implemented. [4] Additionally, it has been demonstrated that service design and development based on customer analysis contributes to the creation of more effective service strategies. This approach, which analyzes customers' needs and expectations in depth, also helps organizations gain a competitive advantage.

Moreover, by examining the effects of choosing Agile Process Management instead of Waterfall on customer analysis, based on current examples, the thesis has revealed the contributions of flexible and fast-responsive processes on customer orientation. Analysis and research have shown that Agile process management offers a more successful approach to meeting customer expectations and adapting to changing needs. This approach makes customer analysis a more dynamic and continuous process, contributing to the achievement of value-oriented results in project management.

The step-by-step, rigid and change-free structure of the Waterfall model necessitates the definition of customer expectations at the beginning of the project. However, this model makes it difficult to adapt to new customer needs and market conditions that arise in the later stages of projects and may have negative effects on customer satisfaction. The findings obtained in this study revealed that the Agile method is much more successful in overcoming these difficulties and provides a more convenient basis for customer-oriented approaches. Agile methods, especially approaches such as Scrum and Kanban, offer the possibility of continuous improvement based on customer feedback. Thanks to these methods, frequent and regular communication is provided with customers in projects, needs can be analyzed dynamically and changes can be made quickly during the process. The iterative and incremental structure makes it easier to integrate customer feedback into the project cycle and ensures faster response to customer expectations. Research findings show that this process increases customer satisfaction and customer demands are met more effectively thanks to the collaboration-focused approach. One of the biggest advantages that agile process management provides to customer analysis is the ability to instantly include customer needs in the project. While analysis and development stages are strictly separated in the traditional Waterfall approach, in Agile analysis and development processes are intertwined and the project route is constantly updated thanks to customer feedback. This ensures that the product is better shaped according to the wishes and needs of customers and that customer satisfaction with the final product is high. In the future, wider adoption of Agile methods will contribute to the strengthening of customer-oriented business models and increase the competitive advantage of organizations.

As a result, the effect of ITIL principles on customer analysis plays a role in improving both efficiency and customer satisfaction in service management. ITIL's customer-oriented structure helps businesses provide more flexible, proactive and value-creating services, while strengthening their capacity to respond quickly to customer needs. In the future, the integration of ITIL and similar structured management frameworks into customer analysis processes will continue to strengthen the positions of organizations in the market.

Agile process management creates a customer-oriented way of working based on customer analysis and determines the direction of the process by taking into account customer

feedback at every stage of the project. This flexible structure enables faster and more accurate response to customer expectations, increases customer satisfaction and contributes significantly to the success of projects. For this reason, Agile process management stands out as a more sustainable and effective project management approach for organizations, thanks to its sensitivity to customer analysis and feedback, especially in variable and dynamic market conditions.

This is a qualitative research rather than an experimental, quantitative study. The monopolization of the global market and the stereotyping of customers actually constitute the main question of this study. As noticed in the study, we are talking about a process that becomes fluid according to the demand of the customer. Since the service is offered to the market through advertising, customers now demand the advertisement. In other words, the reasons for the uniformization of marketing, especially factors such as globalization, digitalization and the proliferation of social media, have contributed to the transformation of marketing into a more homogeneous structure.

ITIL (IT Infrastructure Library), as a widely accepted framework in information technology service management, has enabled organizations to increase service quality, while also leading to the standardization and uniformization of processes. [1] The best practices and processes identified by ITIL have caused many businesses to implement service management strategies in a similar way. This has contributed to the standardization of service management processes in general and the adoption of similar approaches. However, this uniformity also includes the flexibility to adapt ITIL to each organization's own specific needs and goals. That is, while ITIL practices provide a certain level of standardization, they also allow for customization to suit the unique requirements of organizations.

However, it is also true that it is possible to prevent the uniformity brought by the ITIL framework. For this, organizations must customize the best practices determined by ITIL according to their own needs. For example, adopting a DevOps culture allows for more flexible implementation of ITIL processes in many organizations. DevOps aims to speed up software development processes and respond to customer feedback faster by collaborating between development and operations teams. This approach offers a more dynamic and

customer-focused approach to the rigid processes of ITIL, allowing organizations to develop solutions tailored to their needs. In this way, while benefiting from the benefits provided by ITIL, uniformization is prevented.



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