PERCEPTIONS ON THE INTEGRATION OF AGILE PRINCIPLES IN IT SERVICE MANAGEMENT PROCESSES. STUDY FROM ROMANIA

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Abstract

This research paper aims to provide insights into the impact generated by the introduction of Agile methodologies in Romanian industrial environments which used to work exclusively with Waterfall methodologies for the delivery of IT products and services. Through this study, the authors aim to uncover perceptions provided by knowledge workers working in the area of IT Service Management who have experienced first-hand this transition in ways of working from Waterfall to Agile, followed by suggestions on how to improve the process of integrating new elements in future transition activities. In order to achieve this aim, a qualitative research exercise has been performed, by conducting interviews with experienced knowledge workers who carry out IT Service Management activities. The results of the research present both breakthrough and setback points with this activity. Breakthrough points focus on the perception of knowledge workers having higher levels of autonomy and ownership of daily activities and dependency on ITIL/ISO process alignment for achieving auditing requirements. Setback points include the need for guidelines availability to ensure better integration between Waterfall and Agile elements, design of metrics to reflect Agile elements integration, and optimisation of tools usage to avoid redundant activities. Following this research, the authors recommend development of more focused research in the area of ITSM activities, as this is an untapped source of improvement for organisations. These findings help contribute to a better understanding of the evolution of IT Service Management processes and builds a basis for further research on change initiatives of IT processes.

Keywords: Agile methodologies, IT service management, knowledge work, Romania, Waterfall methodologies.

1. INTRODUCTION

Given the rate at which VUCA (volatile, uncertain, complex, and ambiguous) events take place in the IT industry nowadays, keeping up with the rapid development of groundbreaking and innovative technology and IT management approaches can seem to be a daunting task (Groll, 2011, 2017; C. Ungureanu et al., 2023). Mandated with continuously finding innovative ways of generating value for their given industry, knowledge workers are constantly on the lookout for using in the most recent tools or applying the newest IT management frameworks to reach their goals. In this context, organisations and their knowledge workers find themselves in a continuous pursuit to champion the art of agility, adapting on the go, in order to keep up with the market's evolving demands.

For some knowledge workers this approach can seem to be a way to break away from the silos in which their previous generational colleagues performed their activities, while for others it can seem to be a never-ending spinning wheel of adjusting their ways of working to keep up with the current industry trends while improving what is already available. One such case is driven by the need of the current business-driven environment to maintain relevancy on the market by enhancing dynamic ways of working, commonly known in the IT world as Agile ways of working.

In the context of embracing Agile approaches, it has become critical for both researchers and practitioners to get better understanding of how Agile ways of working have been adopted, integrated, and transitioned into in the IT industry. By performing these steps, researchers can help with building the next generation of knowledge workers in academia, practitioners can apply more easily the principles to their ways of working, thus enhancing the perception on the quality of their deliverables in their assigned activities. Bearing this in mind, the best place to understand Agile perceptions is by exploring the literature available or closely related to the topic, followed by collecting information from knowledge workers on their perceived experiences with integrating Agile principles in their waterfall processes.

As a result, this research paper will aim to provide insights into the impact generated by the introduction of Agile methodologies in environments which used to work exclusively with Waterfall methodologies for the delivery of IT products and services. Through this study, the authors aim mainly to:

- uncover perceptions provided by knowledge workers working in the specialisation of IT Service Management who have experienced first-hand this transition in ways of working from Waterfall to Agile, and

- provide a series of suggestions on how to improve the process of integrating new elements in future transition activities

In order to achieve these objectives, a qualitative research exercise will be performed, by conducting interviews with experienced knowledge workers who carry out IT Service Management activities.

This research paper is structured into 6 parts as follows:

- **Part 1** – contains the general introduction and justification for the chosen topic;

- **Part 2** – contains the literature review supporting the study, presented from the viewpoint of a general overview of IT Service Management processes together with considerations on integration of Agile methodologies in IT Service Management;

- **Part 3** – describes the methodology which was used and the definition of the research objectives;

- **Part** 4 – provide the reader with a summarised view of the qualitative interview results based on defined objective and supporting question;

- **Part 5** – taps into the discussion on the interview results;

- **Part 6** – presents the research conclusions, constraints, and possible future research directions;

2. LITERATURE REVIEW

The concept of Agile has been present in the within the software development area for a couple of decades now. According to recent studies, the same cannot be said about other industries which have started discovering it only as of recent (Groll, 2017; Zasa et al., 2021). While Agile ways of working have demonstrated to be reliable in delivering great results, this was as a consequence of working in silos. IT interconnected activities such as: service management (Groll, 2011, 2017), project management (Boehm & Turner, 2005), IT governance (Alreemy et al., 2016; Gandomani et al., 2014) were out of sync from the way in which software development activities were conducted by knowledge workers, relying instead mostly on robust Waterfall approaches such as COBIT, ITIL v3, ITGI, PMBOK, PRINCE2 (Alreemy et al., 2016). As Agile ways of working captured the attention of practitioners in interconnected disciplines, a series of new Agile management frameworks and methodologies started to evolve and be put into practice, such as ITIL 4 (Agutter, 2020), PMBOK Guide – Agile Practice Guide (Project Management Institute (PMI), 2017), SCURM (Schwaber & Sutherland, 2011), Kanban (Al-Baik & Miller, 2015), COBIT 5 (Amorim et al., 2021) to name a few (Cao et al., 2009; Taromirad & Ramsin, 2008). A visual representation has been made in Figure 1.
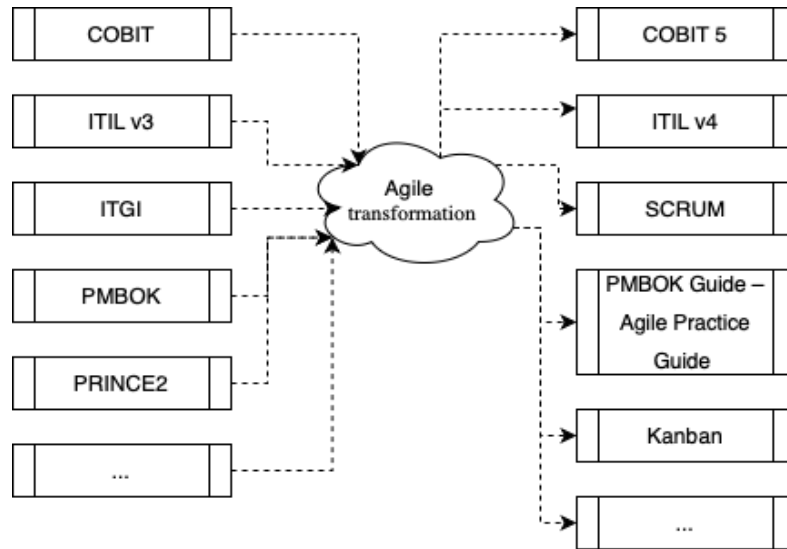
FIGURE 1. MANAGEMENT FRAMEWORKS WATERFALL TO AGILE TRANSITIONS
Source: Adapted from (Adams, 2009; Amorim et al., 2021; Lainhart et al., 2019; Van Der Haven, 2020)

2.1. Overview of IT Service Management processes

A first useful step is to present the available and relevant definitions which capture the essence of IT Service Management (ITSM) from its root discipline, namely service management. While ITSM and service management are often used interchangeably, these two terms have slightly different definitions and purposes. By comparing definitions provided by (Bordoloi et al., 2019) for service management and definitions from AXELOS (Adams, 2009), ISO standards (Van Der Haven, 2020), and ISACA (Amorim et al., 2021; Lainhart et al., 2019), for the ITSM definitions, there are a series of points identified that can be highlighted. For easier view, the definitions have been captured in Figure 2.
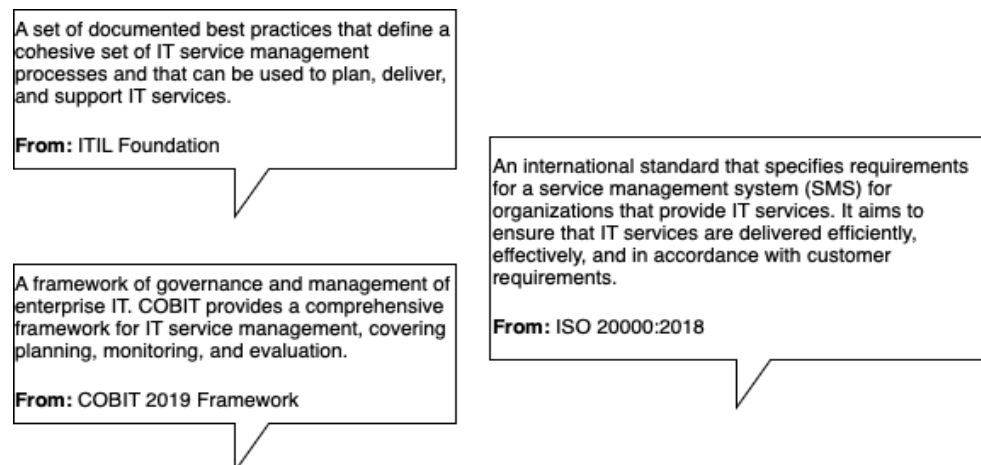

FIGURE 2. SERVICE MANAGEMENT DEFINITIONS
Source: Adapted from (Adams, 2009; Amorim et al., 2021; Lainhart et al., 2019; Van Der Haven, 2020)

When it comes to similarities, there is a distinct concern for enablement of the core service delivery activity. In this regard, both ITSM and service management definitions revolve around the delivery of services in order to address the customer's identified needs. The next second similarity that stands out is the process-oriented view. This means that both service management concepts are focused on providing services through a structured approach, making the service delivery activities standardised and easy to replicate through agnostic approaches. All definitions imply that the steps of preparation, design, implementation, and improvement initiatives take place in a service's defined lifecycle. Thirdly, all the definitions have value delivery at their core, making them customer-centric approaches. Fourth and finally, the definitions present a concern for effectiveness and efficiency, thus encouraging the setup of a governance framework and management practices around the framework to help ensure that the services which are part of an organisation's offering are delivered both effectively and efficiently, and in alignment with industrial standards and regulations. A high-level representation can be found in Figure 3.
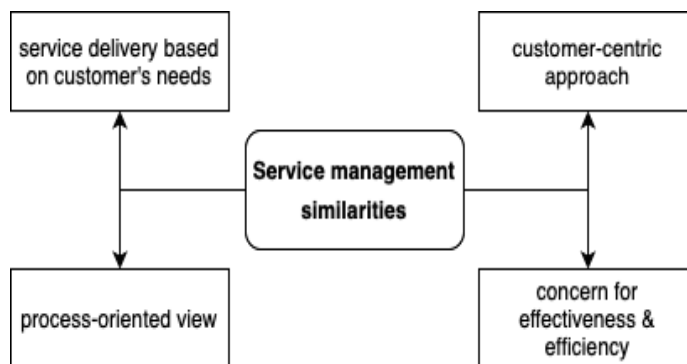

FIGURE 3. SERVICE MANAGEMENT SIMILARITIES
Source: Adapted from (Adams, 2009; Amorim et al., 2021; Lainhart et al., 2019; Van Der Haven, 2020)

When it comes to differences between, the most popular one that stands out is the technology-oriented approach of ITSM, as its main purpose is to be applied in the IT industry. Next is the focus of each ITSM management framework. As research shows, the ITIL methodology developed by AXELOS is the most popular choice as a reference model for adopting and adapting frameworks to organisation's own operational service management requirements (Abdelkebir et al., 2017; Chan & Thong, 2009; Groll, 2011, 2017; Qumer & Henderson-Sellers, 2008; Sahid et al., 2022). On the other hands, the framework provided by the ISO 20000 serves mainly as a reference for obtaining organisational certification and showing that there is compliance terms (Abdelkebir et al., 2017; Boehm & Turner, 2005; Groll, 2011, 2017; Qumer & Henderson-Sellers, 2008; Sahid et al., 2022). When it comes to the COBIT model, specialised literature shows that this is the main management framework used to drive governance models

based on control of IT services (Abdelkebir et al., 2017; Alreemy et al., 2016; Amorim et al., 2021; Qumer & Henderson-Sellers, 2008).

When it comes to approaches, there are also a series of differences. In the case of the ITIL v3 framework, attention was set on providing a structured approach with defined processes and best practices. As a result of their structure, some could be adopted as per standard definition (Abdelkebir et al., 2017; Sahid et al., 2022). In the case of the ISO 20000, the approach was based on taking a systematic approach to service management, which in turned allowed organisations to define the lower-level structures as they saw fit to meet their demand (Alreemy et al., 2016; Amorim et al., 2021; Qumer & Henderson-Sellers, 2008). The literature focused on COBIT showed that the emphasis was placed on enforcing IT governance and controls in critical industries (Amorim et al., 2021; Qumer & Henderson-Sellers, 2008). The literature research (Abdelkebir et al., 2017; Alreemy et al., 2016; Groll, 2011, 2017; Qumer & Henderson-Sellers, 2008; Sahid et al., 2022) also indicate that the Information Technology Infrastructure Library version 3 (ITIL v3) management framework stood out as the management framework which provides the highest level of interest when preparing baseline initiatives for ITSM processes adaptations, as well as the go-to reference for the collection of best practices.

Having reviewed these papers, one aspect that stood out during the literature review for ITSM models was the reduced amount of documents that were available. Given the rich history of the management framework, with ITIL developed in the 1980s, the expectation was that there would be more results available. The same point was raised as a concern by only one author back in 2017. According to (Verlaine, 2017), this situation is due to the assumption that service management and ITSM work in similar ways, whereas the above literature analysis indicates that there is much more to the two branches than it seems at first glance.

2.2. Considerations on integration of Agile methodologies in IT Service Management

The next step in the literature review addresses the findings on the way in which integration initiatives of Agile methodologies were performed in the ITSM domain. The explored literature showed that there is some interest, both from academia and from organisational practitioners, in exploring the topic of Agile elements integration in grounded ITSM processes. One such example comes from (Abdelkebir et al., 2017; Sahid et al., 2022) who consider that the main driver for the Agile transformation of ITSM comes from the demand of organizations who need to update their business and support processes to better react to a digital-driven market demand. A second examples from the same group of authors points to the organizational need to prioritize speed and adaptability to maintain market competitivity. These examples indicate that there is a need for wider alignment in the approaches to Agile transformation initiatives that are taking place in IT industry.

In addition, the works of (Abdelkebir et al., 2017; Chan & Thong, 2009; Qumer & Henderson-Sellers, 2008; Sahid et al., 2022; Simonofski et al., 2019; Verlaine, 2017) are focused on displaying uses of Agile principles to generate varied frameworks for improving IT service management processes. These frameworks support the adoption of organisational efficiencies, reducing bureaucracy, as well as fostering continuous improvements. The analysed literature shows that Agile management frameworks such as DevOps, can help organisations focus on generating fast development iterations and enhance cross-functional collaboration of ITSM knowledge workers, which in turn generated a better alignment between organisation strategy and improvement of the overall IT quality and speed of service (Groll, 2011, 2017). The next highlight comes from the works of (Sahid et al., 2022), who showcase the importance that agility elements hold for sustaining the adaptability to VUCA events while maintaining the same level of service quality to its customers. Moreover, the integration of Agile principles within the ITIL v4 management framework, has shown to benefit organisations in creating a more dynamic and efficient ITSM structure. The result translated externally to greater value delivered to customers and internally to operational excellence delivery.

An important aspect to this Agile transformation showed to be heavily influenced by initiatives to shift the organisational culture, followed by regular reinforcements (Abdelkebir et al., 2017). Thanks to the Agile elements which enable the promotion of creativity and flexibility, organisations and their knowledge workers started embracing these values through ceremonies spread across the Agile cycle, such as: daily stand-ups, sprint planning, backlog refinement, and retrospective meetings.

A similar conclusion was reached by (Amorim et al., 2021; Cao et al., 2009; Persson et al., 2022) when debating the role of stakeholders and the impact on the organisational culture. Through their own studies, they have noticed that by bringing Agile elements into Waterfall ITSM processes, there is a considering increase in the interest of the stakeholders and their willingness to commit to various topics, especially from stakeholders who hold roles of seniority in management roles. This approach was observed to also have side-effects, when it comes to moving the decision-making process from a hierarchical, top-down approach to a more decentralised model as promoted by Agile principles.

(Alahyari et al., 2017)'s research goes to emphasize that by delivering, Agile organisations gain value early and continuously, which aligns with the ITSM process' goals of maximizing value delivery to customers. The Agile delivery method's iterative process also helps prioritize tasks that bring the most value, improving the efficiency of IT services. Lean principles can be incorporated to eliminate wasteful processes within ITSM by focusing only on tasks that add value to customers or the organization.

(Amorim et al., 2021; Cao et al., 2009)'s works take a keen interest on the challenges related to organisational Agile adoptions and considers that, while Agile management frameworks have been

designed for small, dynamic projects, this approach can pose challenges in large organisations, where ITSM processes are usually present. Adoption of Agile elements has been noticed to become challenging once elements of complex architectural planning are required on short notice. The observations indicate that this kind of behaviour leads to inadequate planning, low coverage of elements of agility, all ultimately leading to complex ITSM projects, A solution which has been identified by the author is to opt for tailoring Agile practices to accommodate existing processes.

Concluding the research on the existing literature, it can be highlighted that there are a series of interconnected factors which can influence how the integration of Agile elements is performed in ITSM processes. While the phenomenon of integrating elements of agility into heavy Waterfall processes happens at a faster pace in interconnected IT domains such as (Boehm & Turner, 2005), IT governance (Alreemy et al., 2016; Gandomani et al., 2014), or user experience (Persson et al., 2022), the ITSM discipline is quickly catching-up with its peer-processes. A visual representation is captured in Figure 4.
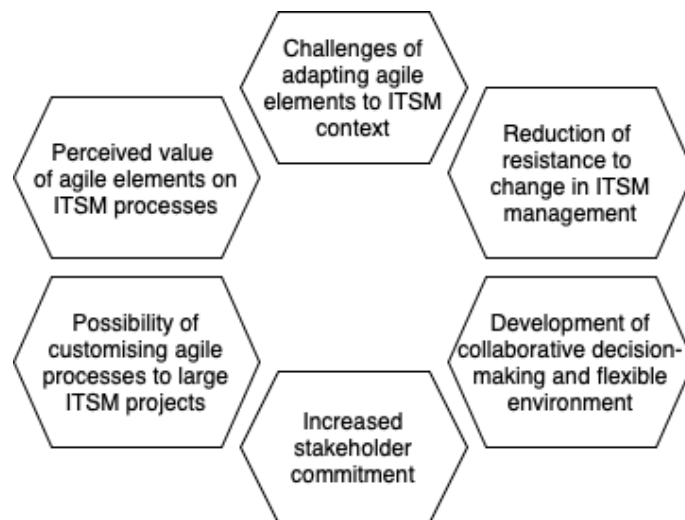

FIGURE 4. LITERATURE FINDINGS ON FACTORS OF INFLUENCE ON THE INTEGRATION OF AGILE ELEMENTS IN ITSM PROCESSES
Source: Adapted from items identified in literature works; own contribution

While the international review contains a fair number of references on the topic of Agile integration into ITSM processes, the same cannot be said about the literature based on Romanian knowledge workers. Based on the literature review findings, this research paper aims to fill-in the gap by conducting an experimental study on the perceptions of Romanian-based ITSM knowledge workers who are experiencing changes in their daily activities as a result of introduction of Agile elements. From the research performed so far, there were only two study performed in Romania which look into the topic of agile transformation, however they are focused exclusively on the software development domain (Budacu, 2017; Lica, n.d.).

As such, the following two objectives have been defined for this research:

- **O$_1$. - Identify integration experiences on integration of Agile principles in ITSM processes**
- **O$_2$. - Pinpoint proposals for improving integration of Agile principles in ITSM processes**

The results obtained from this research can be used afterwards as a point of start for conducting more in-depth research into the understanding of how Agile management frameworks are applied into specific domains such as ITSM at a national level, as well as comparison to research results conducted in other countries in similar or related industries.

3. METHODOLOGICAL APPROACH

The objectives of the paper will be reached by conducting a series of interviews with knowledge workers from Romania who have experience and / or are currently working in a role that involves applied IT service management activities. (Gillham, 2001; Hollway & Jefferson, 2000; Sayrs, 1998) consider the qualitative research interview method to be a valuable tool for exploratory studies as a result of their open-ended format which allows the interviewee to provide in-depth information into untapped sources of information or complex phenomena. Also, given the flexible format, it allows the interviewer to adapt their style of questioning to reach out for the necessary insights.

TABLE 1. MAPPING OF RESEARCH OBJECTIVES AND QUESTIONS USED IN THE INTERVIEW PROCESS FOR DATA COLLECTION PURPOSES

D$_1$. How long have you worked in a ITSM knowledge worker role using Waterfall methodologies?	
D$_2$. How long have you worked in a ITSM knowledge worker role using Agile methodologies?	
O$_1$. Identify integration experiences on integration of Agile principles in ITSM processes	Q$_1$. As an ITSM knowledge worker, what have been your experiences with integration initiatives of Agile principles in ITSM processes?
	Q$_2$. How do you believe your daily activities have been impacted by the inclusion of Agile principles in ITSM processes?
O$_2$. Pinpoint proposals for improving integration of Agile principles in ITSM processes	Q$_1$. What should be done differently in the way in which Agile principles are integrated in ITSM processes?
	Q$_2$. How can you, in your quality as an ITSM knowledge worker, contribute to the improvement of the Agile principles integration in ITSM processes?

Source: Authors' own contribution

While initially a focus group would have been preferred by the authors, thanks to the instrument's capability of generating comparative answers described by (Milena et al., 2008; Qu & Dumay, 2011), this was not possible due to the conflicting schedule of the interview participants, even with the proposed option of arranging for online interviewing of the group.

Given the exploratory nature of the research, the interviews were used to gather high-level demographic data on the participants' experience with working with Waterfall and Agile methodologies. These questions

were mapped as D_1 and D_2 in Table 1. For each of the identified objectives, two questions were addressed, with the intention of capturing the interview participants' experience and perception on the research topic. These questions are mapped as as Q_1 and Q_2 for each objective in Table 1.

4. RESULTS

The interviewees were selected following pre-checks on their familiarity with the overall service management topic in the IT industry. The selected persons have an understanding of how the processes work and have experienced projects where the organisations they worked for were involved in Waterfall to Agile transformations. To prevent any association with organisations where they conduct or have conducted their activities, all personal identifiable details have been removed, if they were provided during the interview sessions.

Each interview had a duration of about 30-60 minutes with one of the research authors. Interviews were conducted with the participants outside their working hours and their organisation's premise. While the initial intention was that only knowledge workers with senior experience attend the sessions, the opportunity appeared for knowledge workers with junior experience to be interviewed. The experience of the interviewees is based on the knowledge accumulated in medium and large organisational environments, with some of the participants holding now or in the past one or more of the following high level role definitions identified during previous theoretical research (C.-E. Ungureanu et al., 2023): non-managerial employees (NM), lower-level managers (LLM), middle-level managers (MLM), and top-level managers (TLM). Demographic data for each of the participant has been captured in Table 2 below.

TABLE 2. PARTICIPANT DEMOGRAPHIC INFORMATION

Interviewee ID	Interviewee's years of experience with		Interviewee experience in IT Service Management roles
	Waterfall methodologies	Agile methodologies	
#01	15	5	NM / LLM / MLM
#02	1	1	NM
#03	2	1	NM
#04	20	3	NM / LLM / MLM / TLM
#05	1	1	NM
#06	2	5	NM
#07	3	3	NM
#08	4	4	NM / LLM

Source: Authors' own contribution

For O_1.- Q_1. "As an ITSM knowledge worker, what have been your experiences with integration initiatives of Agile principles in ITSM processes?" the participants at the interview provided feedback which was structured into positive and negative perceptions. A summary of their feedback was captured in Table 3.

TABLE 3. SUMMARY OF ANSWERS TO O_1.- Q_1

Positive perceptions	Negative perception
• flexibility and responsiveness • successful integration • improved collaboration • faster delivery compared to Waterfall • increased adaptability • higher levels of acceptance of service by the customer	• resistance to organisational change • update of tools and processes • maintaining alignment to ITIL/ISO standards • perception of inconsistency on theory vs practice

Source: Authors' own contribution

The feedback collected from the participants shows that there is some alignment to what is present in the specialised literature, namely: when integrating Agile practices, processes tend to become more flexible and responsive to the needs of the business. In turn, this generates an increased perception of collaboration between various teams managing a service (e.g., service management teams with project management, business governance, developers, etc.). An item that was not reflected in the literature, but showed up in the interviews, is the increase in the customer's satisfaction surveys. The negative perceptions aligned with the literature included concerns related to maintaining service management certifications needed for auditing purposes. Upon more explanations, some of the participants mentioned that their main concern was that by embedding Agile elements, their processes risk being flagged for non-compliance during auditing activities such as GDPR or HIPPA. These also constitute new perceptions which were not previously captured in the specialised literature. From the interviewed participants, only those that had or currently have a LLM role were aware of this points.

For O_1.- Q_2. "How do you believe your daily activities have been impacted by the inclusion of Agile principles in ITSM processes?" the interviewers noticed an increase in the willingness of participants to provide input, display their mastery of the domain by those experienced and an increased curiosity by most NM respondents. A summary of their perceptions was captured in Table 4.

For this question, almost all respondent provided examples which highlighted their perception of how their work has improved through time as Agile elements were incorporated into Waterfall processes. Some of the examples that stood out were: increased dynamism and collaboration among teams belonging who performed different service management activities, perceived shorter service development cycles for the delivered services, the ideas of increase in levels of internal and external stakeholder involvement repeated similar to the previous questions, quicker deployment to customer which aligns to better

feedback from customers, and a higher levels of autonomy and ownership of daily activities. The last item was also present in the surveyed literature.

TABLE 4. SUMMARY OF ANSWERS TO O_1.- Q_2

Positive perceptions	Negative perception
• increased dynamism and collaboration • shorter service development cycles • increase in levels of stakeholder involvement • incremental value delivery • quicker deployment to customer • higher levels of autonomy and ownership of daily activities	• resistance to organisational change • adaptation of cultural differences • skills gap

Source: Authors' own contribution

The negative perceptions were fewer and more concentrated on social aspects rather than technical process ones. Participants in the surveys observed that stakeholders who were involved before taking introductory courses on Agile ways of working tended to have greater difficulties in understanding how delivery, project, or service teams worked which led to communication difficulties with senior management. Moving on to O_2 which aimed at providing proposals to improve Agile principles integration in ITSM processes, participants were first asked "*What should be done differently in the way in which Agile principles are integrated in ITSM processes?*" The suggestions have been consolidated in Table 5.

TABLE 5. SUMMARY OF ANSWERS TO O_2.- Q_1

Improvement suggestions for O_2.- Q_1
• Learning and development area: training on Agile management frameworks to all levels of the organisation • Learning and development area: regular refresh of Agile ways of working • Guidelines: LLM / MLM / TLM roles to provide clarity on how Agile elements should be integrated with legacy processes • Guidelines: ensure alignment between numerical measurements and monitoring of performance • Guidelines: optimisation of tools usage • Culture shift: organisational leaders to prioritise Agile principles over silo working

Source: Authors' own contribution

From the participant's answers there were 3 main categories of improvements suggested. The most common was the need for providing basic education on what Agile ways of working are at all levels of the organisation, what are their benefits, and afterwards constantly refresh the information through regular development sessions. The second category of improvements included the need for clear guidance from multiple points of view: metrics alignment, integration between Agile and Waterfall processes, and reduction of the tools used to follow the Agile transformation. The respondents all agreed that while Agile methods principles make their activities easier to perform, by adding additional tools, without

decommissioning other legacy ones, there is a risk for going back to Waterfall-only ways of working. The last category of improvements generally refers to the need of having organisational leaders' buy-in for encouraging more collaboration among teams instead of work in isolation.

For O_2.- Q_2., the question aimed to gain clarity on how each of the interviewed knowledge worker can contribute to the improvement of the Agile principles integration in ITSM processes. It is important to note that some of the NM-only participants required additional clarification to understand what is the difference between O_2.- Q_1. vs O_2.- Q_2, while LLM participants did not request at all additional clarifications. The participants' answers have been consolidated in Table 6.

TABLE 6. SUMMARY OF ANSWERS TO O_2.- Q_2

Improvement suggestions for O_2.- Q_2
• Knowledge management: encourage know-how sharing • Knowledge management: focus on knowledge exploitation • Knowledge management: incremental process improvement • Culture shift: check for Agile understanding awareness • Culture shift: embracing Agile ceremonies

Source: Authors' own contribution

For this question, the answers were grouped in two main categories: knowledge management and culture shift. While the participants acknowledge that there are multiple improvements that can be made at organisational level, they are also aware that some of these require involvement or initiative from other stakeholders which can be at one of the managerial levels LLM / MLM / TLM. As such, they acknowledge that their role in the Agile transformation lies mostly in the knowledge management area where they can actively contribute with knowledge-sharing among their ITSM peers, focus on knowledge exploitation, and support with incremental process improvements, so as to avoid what is known as "information dump" on their peers. From a cultural perspective, the interview participants considered that the Agile transformation can be perceived seamless if they are open to embracing Agile ceremonies, also referred to in the literature survey, together with regularly checking the understanding that ITSM knowledge workers have of Agile practices.

5. DISCUSSIONS

As a result of this research, a group of valuable insights were discovered in relation to how the integration of Agile principles in ITSM processes is perceived by Romanian knowledge workers. While this approach presents numerous advantages for customers and ITSM knowledge workers in the form of faster delivery to market of services, better feedback from customers, and increased perception of autonomy and

ownership of daily activities, there are also setbacks. The results of the interviews revealed that there is a perception of missing guidelines for the integration of Agile elements in Waterfall processes, there is a strong need for tool adaptations to reflect new ways of working, as well as an urgent need for alignment on the metrics that are used to keep track of activities and deliverables.

When it comes to improvement suggestions, knowledge workers in the ITSM field are more than aware of the gaps and thus can come up with proposals for improvement both at an organisational level through a higher level of involvement of LLM / MLM / TLM roles, clear guidance on applicability of Agile principles, and fostering a culture of change. At an individual level, knowledge workers perceive their own involvement in the fostering improvements by actively engaging in knowledge management activities with their peers together with contributing to a culture of collaboration.

Compared to the specialised literature, there were a couple of points that were confirmed through this survey such as: the requirement of moving from a silo way of working to a more collaborative approach (Groll, 2017; Zasa et al., 2021) and increasing stakeholder commitment to embracing Agile methods across the organisation (Abdelkebir et al., 2017; Chan & Thong, 2009; Qumer & Henderson-Sellers, 2008; Sahid et al., 2022; Simonofski et al., 2019; Verlaine, 2017). At the same time, new perceptions of higher team autonomy on daily activities was identified, together with dependency on the ITIL and ISO standards for meeting audit requirements.

6. CONCLUSIONS

The purpose of this research paper was to provide insights into the impact generated by the introduction of Agile methodologies into Romanian industrial environments which used to work exclusively with Waterfall methodologies for the delivery of IT products and services. Through this study, the authors uncovered perceptions provided by knowledge workers working in the area of IT Service Management who have experienced first-hand this transition in ways of working from Waterfall to Agile, followed by suggestions on how to improve the process of integrating new elements in future transition activities.

While the authors have done their best to provide an appropriate overview of the topic, there are a series of limitations that need to be considered for future studies. First, the availability of knowledge workers with specialised background who are available at the same time, whether in-person or online. Secondly, using more varied techniques such as quantitative research and mixed-method research to capture more details and thus obtain a broader picture of the opportunities and challenges that the ITSM area provides. The third point refers to the identification of ITSM knowledge workers who are neither in their junior or senior years, but rather in their middle (5-15 years of experience) who can fill in the gap of insights.

Another consideration of this study is that the literature review does not provide a deep-dive on how Agile and Waterfall management framework are structures, as there are already captured in appropriate guides (Project Management Institute (PMI), 2017; Schwaber & Sutherland, 2011)and the research papers references in the literature review section.

The results of the research present both breakthrough and setback points with this activity. The breakthrough points focus on the perception of knowledge workers as having higher levels of autonomy and ownership of daily activities, while at the same time identifying a dependency on ITIL/ISO process alignment for achieving auditing requirements. The setback points include the need for having guidelines availabile to ensure better integration between Waterfall and Agile elements, setting-up design of metrics to reflect Agile elements integration, and optimisation of tools usage to avoid redundant activities.

Following this research, the authors recommend the development of more focused research in the area of ITSM activities, as this is an untapped source of improvement for organisations. These findings help contribute to a better understanding of the evolution of IT Service Management processes and builds a basis for further research on change initiatives of IT processes.

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