IMPLEMENTATION OF ITIL SERVICE LIFECYCLE IN SMALL AND MEDIUM-SIZED ENTERPRISES OF POLISH ICT SECTOR

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The aim of the article is to present implementation of ITIL Service Lifecycle in SMEs of ICT sector in Poland. Modern IT firms turn their attention toward business-oriented service provisioning. ITSM frameworks, such as ITIL enable this shift of IT firms. This article presents unique knowledge on ITIL Service Lifecycle processes adoption in SMEs with particular emphasis on deployment in different ICT sector. Article presents result of own study on 345 SMEs of ICT sector in Poland.

Keywords: ITIL, Service Lifecycle, ITSM, SMEs, service-oriented approach

1. Introduction

The world turns from product to service economy and therefore the growth of IT services users is rapid. Products become more connected with services. Following this trend, Information and Communication Technologies (ICT) sector both in mature economies and transition ones is shaped by instant growth [1]. Enterprises of ICT sector not only focus on research and development of IT products and services but their attention turns toward management of IT services within organization. IT Service Management (ITSM) becomes crucial to adopt the business-oriented service approach. Modern IT organizations seek not only to enhance technology-focused solutions but to deliver value to its customers. Understanding customer satisfaction and value creation grows in importance within IT companies

each year [2]. IT organizations in modern economies have already turned their attention toward creating and sustaining business value to their customers by adopting ITSM framework as they found it to be a source of competitive advantage.

Polish service sector constitutes 63% of the Gross Domestic Product (GDP) but still it is not comparable to other EU countries such as Germany (68,9%), France (78,8%), Sweden (72,1%) etc. [3]. Main branches of the services sector are trade, maintenance and building. Polish ICT sector constitutes only 5% of the whole service sector [3]. This may change as economy turns from products to services and organizations are widely using Internet and IT technologies in order to stay competitive. Large companies constitute 0,2% of the Polish market, while a significant number of enterprises belong to the small and medium-sized (SME) sector [4]. ITSM frameworks deliver a way to achieve improvement in high quality IT service, cost efficiency and customer satisfaction.

Business market offers few ITSM frameworks, such as: Information Technology Infrastructure Library (ITIL), ISO/IEC 20000, CMMI, CobiT, MoF. According to Computer Economics [5] the most popular ITSM frameworks is ITIL. Without a doubt, ITIL is the most convenient ITSM framework to be adopted within an IT organization structure. Its adoption does not need to be holistic from the beginning, ITIL gives much freedom in adjusting processes to ITSM maturity. ITIL framework was published within five books that are addressed to each Service Lifecycle phase: Service Design, Service Strategy, Service Transition, Service Operation and Continual Service Improvement.

This article is aimed at presentation of implementation of ITIL Service Lifecycle in Polish SMEs of ICT sector. The article consists of three parts. The first part explains the role and organization of processes within ITIL Service Lifecycle. Second part describes the methodology of primary research and achieved results. Conclusions are presented in the third part of the article.

2. ITIL Service Lifecycle

Service Lifecycle is a basis for IT Services Management in organization. According to ITIL version 3 [11] Service Lifecycle consists of five phases: Service Strategy (SS), Service Design (SD), Service Transition (ST), Service Operation (SO) and Continual Service Improvement (CSI). Service Lifecycle organizes and explains interconnections between all components of the IT services, as well as points to the area of changes in the whole system and in its individual parts. Management of IT services is achieved by functions and processes across Service Lifecycle.

Service Strategy focuses on customer needs identification and analysis in order to create a vision of action and its implementation [6]. Processes included in

the SS phase are: Service Portfolio Management, Financial Management, Demand Management and Business Relationship Management. These processes all together are responsible for assessment of both current and potential market space.

Service Design describes how the design of new and changed operating services deploys new services to the client [7]. SD consists of the following processes: Service Catalogue Management, Service Level Management (SLM), Capacity Management, Availability Management, IT Service Continuity Management, Information Security Management and Supplier Management. Among all these process, only SLM seems to be crucial in enhancing adequate service quality.

 Service Transitions objective is to ensure smooth (new or changed) service transition into production environment. This means, to deploy enhancing processes that are well organized and focused on risk minimalization in further service provision. Service Transition phase consists of the following processes: Knowledge Management, Change Management, Asset and Configuration Management, Release and Deployment Management, Transition Planning and Support, Service Validation and Testing and Change Evaluation.

Service Operation coordinates and deploys processes and actions aimed at management and delivering negotiated service level to users and clients. Incident Management, Problem Management, Event Management, Request fulfillment, Access Management, Operations Management, Service Desk, Application management, Technical Management and IT Operations are components of Service Operation phase.
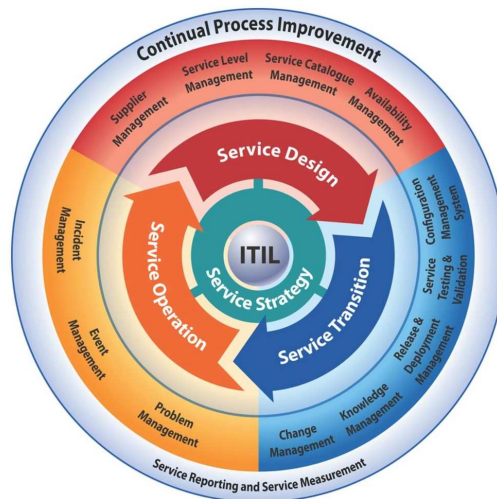

Figure 1. ITIL Service Lifecycle.
Source: [13]

Continual Service Improvement (CSI) assess and increase quality of services as well as service supplier ITSM maturity and maturity of processes. This phase's objective is to deliver guidance on improvements of processes, their efficiency and effectiveness, improvement of all Service Lifecycle phases and measurement of processes and services in consistency with Deming's PDCA model.

Adoption of ITIL in particular countries

Adoption of ITIL framework have been an object of previous studies in scientific literature. Australian scientists turned their attention toward ITSM maturity, ITSM awareness and ITIL adoption among Australian firms [8]. Study conducted by Zając and Soja [9] showed little ITSM awareness among enterprises in transition economies in contrast to the developed economies. According to the authors Polish enterprises show limited knowledge of ITSM framework and poor adoption of its processes, that is a result of adoption of technology-focused approach. Winniford et al. [10] turn their attention toward broad understanding of ITSM frameworks and the lack of visible distinction between ITSM, ITIL and even fundamental processes such as Service Level Management. The authors underline lack of clarity and confusing such terms as "ITSM", "ITIL", "SLM". Therefore, this study focuses on ITIL implementation, which is the most recognizable ITSM framework, to present holistic approach toward ITSM framework adoption.

On the basis of the secondary data analysis, ITIL adoption in chosen countries is presented. To enrich the study, ITIL implementation in particular European countries as well as in United States and Australia is presented. The literature review does not indicate deployment of particular processes among ITIL framework and no studies address the ITIL Service Lifecycle phases implementation. Previous scientific research scope were: ITSM awareness, familiarity of ITIL and level of adoption of ITIL. According to the gathered secondary data: around 76% of enterprises have adopted ITIL in Australia [8], 63% in the United Kingdom and 45% in the United States [5]. Scope of ITSM adoption among transition economies enterprises was a subject of examination of Zając and Soja [9]. According to presented results both Polish, Slovak and Czech enterprises characterize low ITSM maturity. The analyzed studies do not reflect differentiation of enterprises by size of enterprises. Due to this fact, no previous studies focus their attention on ITIL implementation among SMEs.

Table 1. ITIL adoption in particular countries

Country	Percentage of Enterprises		
	ITSM awareness	ITIL familiar	ITIL Adoption
US	24% (large enterprises) 17% (small enterprises)	-	45%
Australia	-	-	~ 76%
UK	-	70%	63%
Germany	-	68%	-
Austria	63%	69%	9%
Switzerland	67%	78%	21%
Poland	-	~ 32%	-
Czech	-	~ 32%	-
Slovakia	17%	13%	0%

Source: own preparation on the basis of [8, 9, 11, 12, 13]

3. Methodology and Results

The objective of this study is to identify the level of adoption of ITIL Service Lifecycle processes within small and medium-sized enterprises of the ICT sector in Poland. The method of the primary research was a simple standardized interview supported by Computer Assisted Telephone Interview (CATI) and Computer Assisted Personal Interview (CAPI). Target population is small and medium-sized enterprises of the ICT sector in Poland. Microenterprises are excluded from the research due to their low organizational maturity. The sampling method used within the study is stratified sampling.

The commonly used definition is the European Union definition of SME, according to which SME is the category of small and medium-sized enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro and/or an annual balance sheet total not exceeding 43 million euro [14]. Definition of the ICT sector is developed by NACE Rev. 2, consistent with PKD 2007 and includes: manufacturing companies, where goods produced by them allow electronic data processing and communication; companies that deal with services, which allow electronic data processing and communication. On the basis of Statistical Classification of Economic Activities in the European Community Nace Rev. 2 target population is: division 26 – ICT manufacturing in-

dustries, division 61 – Telecommunications, Division 62 – Computer Programming, consultancy and related activities, division 63 – Data processing, hosting and related activities, web portals.

Table 2. Respondents' characteristic

Nace Rev. 2 division number	Division Name	Small enterprises	Medium enterprises	Summary
26	Manufacture of computer, electronic and optical products	58	16	74
61	Telecommunications	47	6	53
62	Computer programming, consultancy and related activities	151	23	174
63	Information service activities	38	6	44
	Summary	294	51	345

345 interviews have been gathered by primary research. The study is a representative one. More than 2500 SMEs of ICT sector were requested to complete the questionnaire. Questionnaires were addressed to executives of IT firms, but any person holding any position in the organization could fill the questionnaire. Questionnaire consisted of questions regarding respondent's characteristics, such as the size of the company, its ICT sector and the respondents position within the organization as well as ITIL Service Lifecycle processes deployment. To measure the level of the processes deployment a five point scale of measurement was used: 1 – no plans of adoption; 2 – starting to implement initiative; 3 - partially implemented initiative; 4- largely implemented initiative and 5 – fully implemented initiative. The respondents were asked to rank their adoption advancement of each ITIL Service Lifecycle processes. Adoption of particular processes is estimated as a sum of the third, fourth and fifth level of process adoption.

Obtained results indicate strong polarization (Inter-Quartile Range (IQR) equals or exceeds 3) of the process adoption among polled enterprises. Only the Continual Service Improvement process (Median (Mdn) Mdn = 4) and Information Security Management process (Mdn = 3) medians point to the implementation of the processes, but high level of IQR reflect polarization of the deployment level. Therefore, SMEs of the ICT sector show lack of deployment of Service Lifecycle processes.

Table 3. Deployment of ITIL Service Lifecycle processes in SMEs
of ICT sector in Poland

no	ITIL Process	Mdn	IQR	no	ITIL Process	Mdn	IQR	no	ITIL Process	Mdn	IQR
1.	Strategy Generation	1	4	9.	Availability Management	1	3	18.	Knowledge Management	2	3
2.	Service Portfolio Management	1	3	10.	Capacity Management	1	3	19.	Service Validation and Testing	2	3
3.	Financial Management	1	3	11.	IT Service Continuity Management	1	3	20.	Change Evaluation	1	3
4.	Demand Management	1	2	12.	Information Security Management	3	4	21.	Incident Management	2	3
5.	Business Relationship Management	2	3	13.	Supplier Management	2	3	22.	Event Management	1	3
6.	Design Coordination	2	3	14.	Transition Planning and Support	1	3	23.	Problem Management	2	3
7.	Service Catalogue Management	1	3	15.	Change Management	1	3	24.	Request Fulfillment	1	3
8.	Service Level Management	1	2	16.	Service Asset and Configuration Management	1	3	25.	Access Management	2	4
				17.	Release and Deployment Management	1	3	26.	Continual Service Improvement	4	4

Service Lifecycle adoption among SMEs of the ICT sector in Poland is relatively low. Polled enterprises point to only two processes that exceed 50% of deployment. These processes are: Information Security Management (N = 58%) and Continual Service Improvement (N = 57%). None of Service Lifecycle phases

shows strong adoption of majority of its processes. The lowest deployment is observed within the SD phase.

Table 4. Adoption of Service Lifecycle in SMEs of ICT sector in Poland

Service Lifecycle	Process	Percentage of Adopters
Service Strategy	Strategy Generation	42%
	Service Portfolio Management	44%
	Financial Management	45%
	Demand Management	30%
	Business Relationship Management	46%
Service Design	Design Coordination	47%
	Service Catalog Management	43%
	Service Level Management	32%
	Availability Management	34%
	Capacity Management	36%
	IT Service Continuity Management	41%
	Information Security Management	58%
	Supplier Management	44%
Service Transition	Transition Planning and Support	33%
	Change Management	37%
	Service Asset and Configuration Management	42%
	Release and Deployment Management	40%
	Knowledge Management	46%
	Service Validation and Testing	45%
Service Operation	Change Evaluation	38%
	Incident Management	46%
	Event Management	42%
	Problem Management	43%
	Request Fulfillment	40%
	Access Management	49%
CSI	Continual Service Improvement	57%

To understand the Service Lifecycle application, gathered data should be presented according to the specificity of the ICT sector. According to the presented data the deployment of Service Lifecycle phases by SMEs significantly differs among divisions of the Polish ICT sector. The highest percentage of deployed pro-

cesses is observed within the Programming division, and the lowest deployment within the ICT Production and Other IT services. Average SS processes deployment in the Programming division [Mdn = 0.526] exceeds 50%. Only Demand Management shows a lower level of adoption (N = 43%). Polled SMEs of Other IT Services division point to the lowest level of SS processes deployment, including Business Relationship Management (only 26% of respondents). 54% of the small and medium-sized companies of the Telecommunication sector indicate adoption of Service Portfolio and half of them applied Financial Management of provided services (N = 50%). However, a lack of strategic thinking is observed in this sector, as the Service Generation process is relatively low (N = 28%). Demand Management as well as Business Relationship Management does not exceed 35% of deployment among SMEs of the Telecommunication sector.
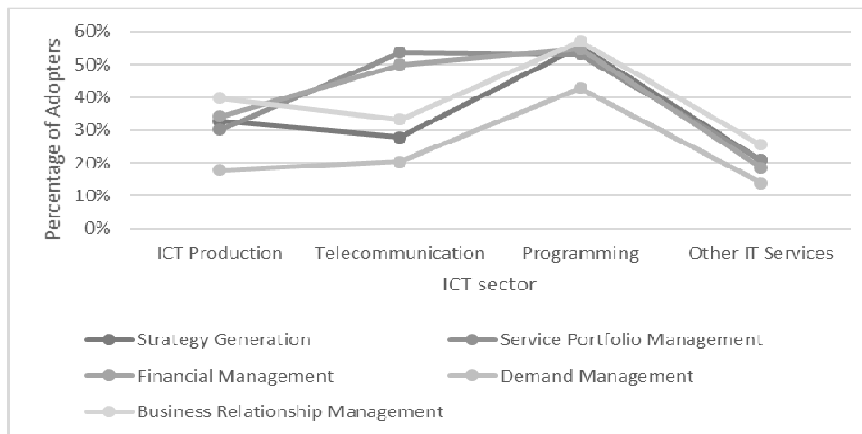

Figure 2. Adoption of Service Strategy in SMEs of ICT sector in Poland

Adoption of Service Design processes presents a variety of solutions. As well as in the SS phase, SD processes are most widely adopted in the Programming sector. Within programming SMEs Information Security Management adoption is declared by 66% of the polled firms, 63% of the Telecommunication sector, 49% of the ICT Production sector and only 23% of the Other IT Services sector. Half of the SMEs of the Telecommunication sector point to the deployment of Service Catalogue Management and also a high percentage point to the deployment of Service Portfolio Management (N = 54%). Both in the Programming and the Telecommunication sectors, the deployment of Service Level Management is below expectations and does not exceed 50%.
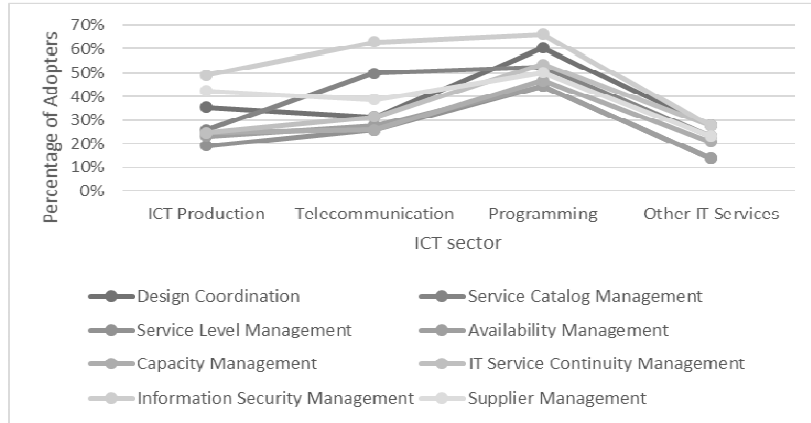
Figure 3. Adoption of Service Design in SMEs of ICT sector in Poland

The adoption of Service Transition Processes adheres to the overall tendency observed within the study, that most advanced enterprises exist in the Programming sector. Therefore deployment of particular processes of Service Transition phase is roughly equal or exceeds half of the polled enterprises. Service Validation and testing is adopted by 60% of SMEs in the Programming sector. 40% of SMEs of the ICT Production put focus on Knowledge Management, while only 33% SMEs of the Telecommunication sector deploy this process.
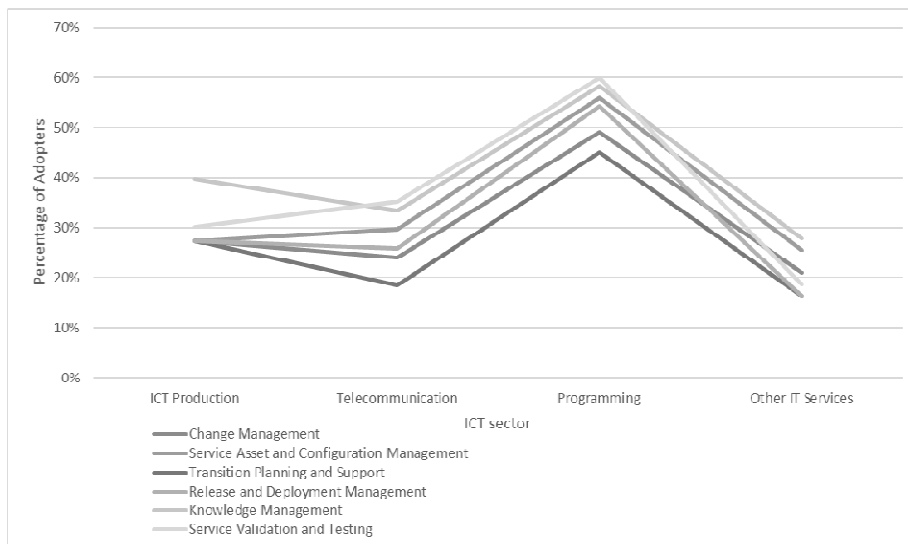

Figure 4. Adoption of Service Transition in SMEs of ICT sector in Poland

Among the processes of Service Operation phase the highest percentage of adoption characterizes Access Management in the programming Sector. Other processes of Service Operation exceed 50% of the polled respondents.
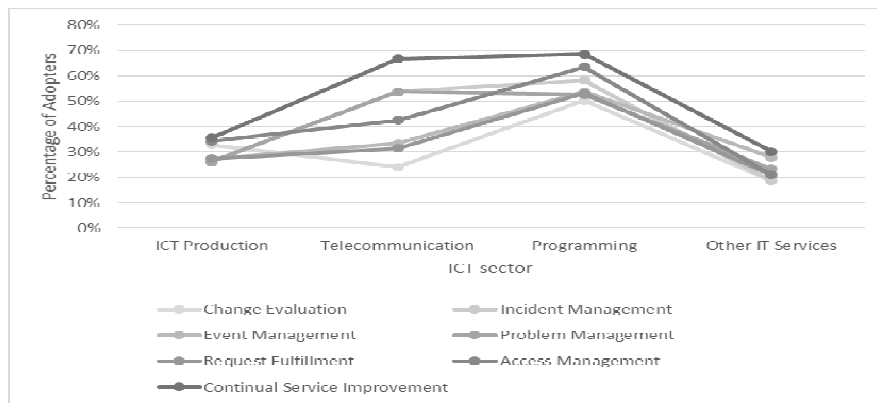

Figure 5. Adoption of Service Operation and CSI in SMEs of ICT sector in Poland

4. Conclusion

This paper was aimed at investigating the ITIL v. 3 Service Lifecycle adoption among SMEs in Poland. Within this study two general conclusions should be made. Firstly – Investigation of ITIL adoption is not an appropriate way of investigating ITSM adoption phenomena on Polish ICT market. ITIL deployment and particular processes of service management deployment are two separate market phenomena, and should not be unified. This study supports the results obtained by Winniford et al. about ubiquitous confusion of the terminology of ITSM adoption. Secondly - gathering data on ITSM frameworks adoption in the ICT sector should be differentiated across ICT sectors. There are strong differences in adoption of Service Lifecycle among SMEs of the Programming sector and other ICT branches. Therefore, Polish SMEs of the Programming sector are shaped by the business-oriented approach not followed by ITSM framework adoption.

Developing a Service Strategy and its management across Service Lifecycle with particular emphasis on Financial and Demand Management is an area to improve for most SMEs of the Programming sector. The Telecommunication sector shows a technology-focused approach to IT services provision. Particular emphasis should be put on the Service Design and Service Transition phases. The low adoption of Demand Management, Supplier Management, Portfolio Management and Capacity Management is an interesting object for further scientific research. Generally low adoption of each of the Service Lifecycle processes runs across both ICT Production and Other IT services branches. Reasons for that and the arising prob-

lems as well as the level of ITSM awareness are potential objects of investigation in this field.

The gathered results shed light on ITSM deployment within SMEs of the ICT sector in Poland. This results show strong ITSM readiness and awareness among SMEs of the Programming sector in Poland, with more than half of them, deploying Service Lifecycle processes.

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