
A Longitudinal Analysis of IT Outsourcing in Large Polish Organizations

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Abstract:

Purpose: The purpose of the research was to determine the dynamics of the development of information technology outsourcing (ITO) in large organizations in Poland. The development of onshoring and offshoring was examined, the types and forms of services most commonly outsourced, the recipients of services within the organization, multi-sourcing, contract duration, method of payment, the impact of the Covid-19 pandemic on ITO, and the organization's plans for ITO.

Design/Methodology/Approach: Longitudinal methods (extracting over time, mapping, visualization) were used. A diagnostic survey was used to collect data on ITO, the research tool was a survey questionnaire. Data was collected using the CATI (Computer Added Telephone Interview) method in the periods January-February 2016 and January-February 2021. Each time, 200 large organizations in Poland participated in the research. The research problem concerned the dynamics of ITO development in Poland. The research questions included the determination of the dynamics of ITO development assessed from the client's side, the types and forms of services that are developing most dynamically, changes in the features of outsourcing contracts, the exchange of enterprises regarding ITO and the impact of the pandemic on ITO activities.

Findings: The use of IT outsourcing in large organizations in Poland is growing, the rate of development dynamics by a big percent, especially in relation to offshoring. Outsourcing of more complex and business-critical activities and the use of cloud services are growing. Specialization and multi-sourcing are on the rise. Outsourcing contracts tend to be signed for a short period of time or the duration of the contract depends on the specifics of the project. However, there is a tendency to extend cooperation in outsourcing. The most common form of payment for services is a fixed price, although there is a trend towards other forms of payment. The COVID-19 pandemic had a weak but rather positive effect on the use of outsourcing. Companies plan to maintain the current relationship between internal and external services or expand ITO. These trends are expected to continue.

Practical Implications: ITO suppliers may be advised to specialize their services and offer a wider range. Customers – prudent supplier selection and multi-sourcing.

Originality/Value: The trends in the development of IT outsourcing in large organizations in Poland and changes occurring in outsourcing contacts were determined.

Keywords: IT outsourcing, longitudinal analysis, large organizations, Poland.

JEL codes: M10, M15.

Paper Type: Research paper.

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1. Introduction

Information technology outsourcing (ITO) has long been used, so much so that it has ceased to be a simple means of cutting costs or improving efficiency. Nowadays, it has become an important strategy for organizations that requires the integration of disparate and sometimes contradictory concepts. It is used to simultaneously reduce costs (Han and Mithas, 2013), increase productivity (Salimath *et al.*, 2008; Thouin *et al.*, 2009) and focus on core competencies (Quinn, 1999).

ITO is also a subject of research due to the wide range of issues. Cross-sectional studies (Lacity *et al.*, 2009; 2010; 2017) have identified many areas of empirical research and outlined issues that require further study. Cross-sectional studies of ITO in Poland and research gaps are presented in the monograph by the present author (Slonieć, 2018). *“Longitudinal data analysis consists of the statistical tools and methods used to analyze data collected on the same group of individuals on multiple occasions over time”* (Das, 2014). Since the longitudinal analysis presented in that article concerned the state of IT outsourcing development in large organizations in Poland, it was impossible to study the same companies. In both cases the (large) research sample was 200 large organizations, therefore, in the view of this author, it is possible to determine the dynamics of ITO development.

The IT industry is developing dynamically in Poland. Annual growth rate of companies in the IT/ICT industry is 10% and the value of IT/ICT services exports is 5.6 billion euros (Rutkowski, 2019). The IT outsourcing market is also experiencing rapid growth, with new companies providing IT outsourcing services and the existing ones expanding their offer. The most important reasons for choosing an ITO provider from Poland include highly skilled developers (ranked third in the world), an insignificant culture gap and good knowledge of English, small time difference (short wait-times for responses), high security standards and a relatively low price of services (Małysiak, 2018).

Based on official data on the development of the IT/ICT industry and IT outsourcing (ICT sector analysis 2020), it has been assumed that the use of ITO in large organizations in Poland will increase. It has also been implicitly assumed that the quality of ITO services, the professionalism of supplier companies and the scope of ITO services will increase. To address these assumptions, a longitudinal study of IT outsourcing over a five-year period (2016 and 2021) was conducted in large organizations in Poland. The research was to identify the dynamics of ITO growth, to understand the nature of the dynamics and to search for mechanisms of change.

2. Materials and Methods

Longitudinal research in management science involves the repeated study of the same subjects at specific intervals using the same methods and tools. Research is time-based and serves to understand the mechanisms of change and the factors that

influence behaviour. The priority of the research is to observe the change in the state of the variables studied (Stańczyk-Hugiet, 2014). These are also called prospective studies. The methodology of transverse testing is addressed in a publication by Hedeker and Gibbson (2006), while longitudinal studies in medicine are considered by Garrett and Ravichandran (2008). According to the classification (Miller and Friesen, 1982), the studies presented are multivariate, long range, replicable (repeatable) studies. The method used in this study is not often applied to ITO because it is a difficult and expensive study to conduct.

Much more often researchers use the case study method (Vivek *et al.*, 2008; Amiruddin *et al.*, 2013, Svejvig, 2011) or a quantitative method where the research tool is a survey questionnaire (Ali and Green, 2012; Bahl and Wali, 2013; Yu, 2014). With the last method, it is then possible to build ITO models. The identified longitudinal studies in the IT domain have addressed new product development and innovation (Ciravenga and Maielli, 2011), the causes and risks of ITO (Gonzalez *et al.*, 2016), outsourcing recruitment activities (Laumer *et al.*, 2012) and the learning curve in outsourcing using a large Australian company as an example (Fisher *et al.*, 2008).

In the present research, IT outsourcing was studied from a cross-sectional perspective in order to determine the size of the phenomenon, its characteristics and the relationship between the quantities studied. Each study was quantitative in nature. The research method was a diagnostic survey and the research tool for data collection was a survey questionnaire. The questionnaire included semi-open content questions and a metric. Each study involved 200 large organizations, the vast majority of which were enterprises that used IT outsourcing in their operations. The selection of the research sample was purposive and random. The survey sample represented 14.3% of the population of large companies using ITO in 2016, and 19.4% in 2021.

The research was conducted using the CATI (Computer Added Telephone Interview) method in the periods January-February 2016 and January-February 2021. The choice of large organizations as ITO research subjects was based on the fact that these organizations most often and to the greatest extent externalize IT activities (Lee *et al.*, 2004). They are also relatively stable entities, are the earliest adopters of ITO and use different types and forms of outsourcing. On the basis of research of large organizations, the intent was to draw conclusions concerning the dynamics of ITO development in Poland.

Research problem: How is IT outsourcing developing in Poland?

Research questions:

- What is the dynamics of ITO development in Poland, as evaluated from the perspective of the customer?
- What types and forms of services are growing most rapidly?
- How are outsourcing contracts changing?

- What are companies' intentions for ITO and how are they changing?
- How has the pandemic affected companies' ITO activities?

Table 1 shows the industry structure of companies and organizations participating in the 2016 and 2021 surveys. In the structure of organizations participating in the 2021 survey, the share of administrations and organizations and industrial enterprises increased significantly compared to the 2016 survey.

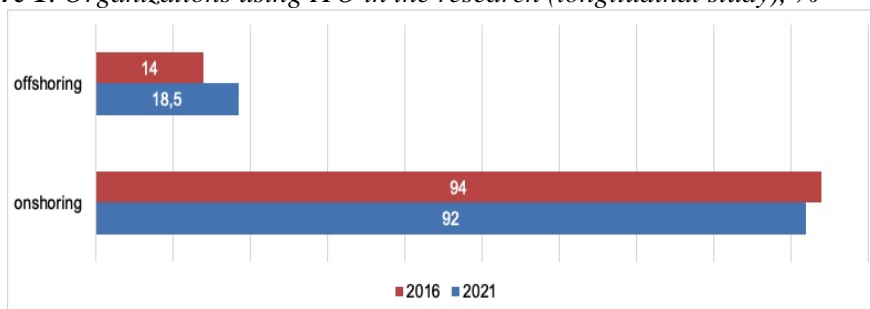
Table 1. Structure of branches organizations' participating in the research, %

No	Branches	2016	2021
1	Industry	23,8	45,0
2	Trade	23,8	14,4
3	Services	15,6	12,4
4	Logistics/transport	17,3	4,3
5	Science/research/education	16,0	11,0
6	Administration/organizations/agencies	3,5	12,9

Source: Own creation.

Figure 1 presents the percentage share of client organizations and supplier organizations in IT outsourcing divided into onshoring and offshoring (*onshoring* is understood as conduct of ITO activities inside the country, *offshoring* is understood as conduct of activities outside the country). Shares do not add up to 100% because some organizations used both onshoring and offshoring. In 2021, compared to 2016, the share of organizations using onshoring has increased and in those using offshoring has decreased. The reason for this is the intensive development of the ITO services industry in recent years, the specialization of services and the consequent increase in the supply of suppliers. Foreign providers often offer specialized types of ITO services that may not yet be available domestically.

Figure 1. Organizations using ITO in the research (longitudinal study), %



Source: Own creation.

IT outsourcing in large organizations in Poland is developing, and its dynamics is several percent.

3. Results

Leuppi (1993) distinguished four phases in the development of outsourcing of IT functions. Due to the development of technology, a fifth phase can be added to the classification presented. Then five phases are distinguished in the development of outsourcing of IT functions. The activities studied were classified into different phases of ITO development.

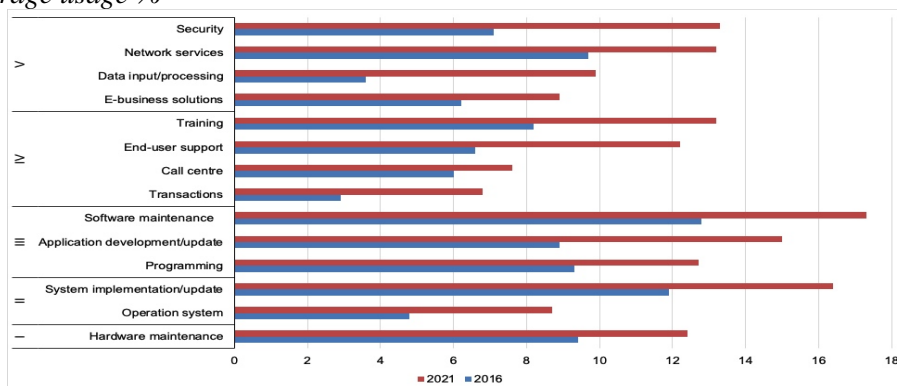
Table 2. Degree of development of IT functions outsourcing

Phase	Functions	Eligible actions
I	Ownership and operation of equipment	Equipment maintenance
II	Operation, maintenance of the operating system	Operating system System implementation/upgrade
III	Deployment, operation, maintenance of standard software and standard applications	Software maintenance Programming Creating/updating applications
IV	System integration, communication, special application development, training	End-user support Transactions Call center Training
V	Security, data and network services	Safety Input/processing of data Network services E-business solutions

Source: Own creation on the basis Leuppi, (1993).

The IT market in Poland is undergoing intensive development, both in terms of technology and services. Poland is a significant recipient of ITO and has become a significant provider of information technology services not only for companies in this country but also for those in other countries. This is reflected in the study results shown in Figure 2.

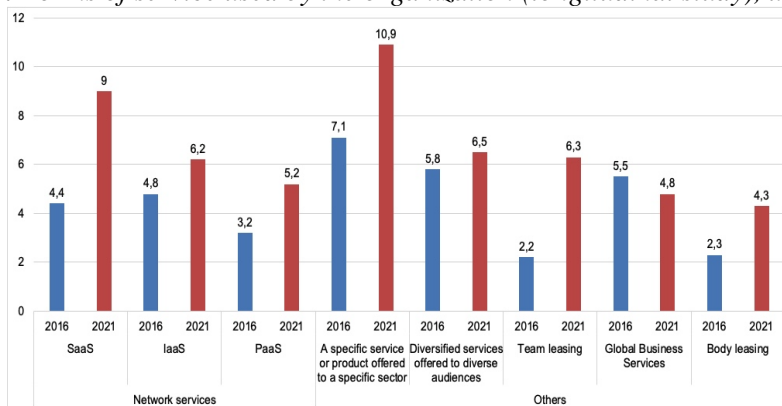
Figure 2. Use of the types of ITO services by outsourcing rate (longitudinal study), average usage %



Source: Own creation.

The first conclusion to be drawn from the data presented in Figure 2 is that utilization of all IT outsourcing activities has increased over the past five years, with 2016 utilization averaging 7.7% and 2021 utilization averaging 12.0%. The second is that ITO activities belonging to the first three initial phases of ITO development, where tasks are less complex, are the most intensively used – an average of 9.5% in 2016 and 10.6% in 2021. The use of activities included in phases IV and V has also increased, but their use is at a slightly lower level, averaging 6.3% in 2016 and 13.8% in 2021. The third conclusion relates to the highest increases in ITO use, and these were: Data input/processing – almost 3-fold increase, Transactions – almost 2.5-fold increase, Security – almost 2-fold increase. These activities belong to the higher phases of ITO development – IV and V. Thus, the greatest increase in the level of ITO use is in the more complex activities that belong to the higher phases of ITO development. The dynamics of ITO development demonstrate the transition of ITO from a focus on simpler activities to more complex activities of greater importance to businesses.

Figure 3. Forms of service used by the organization (longitudinal study), usage %



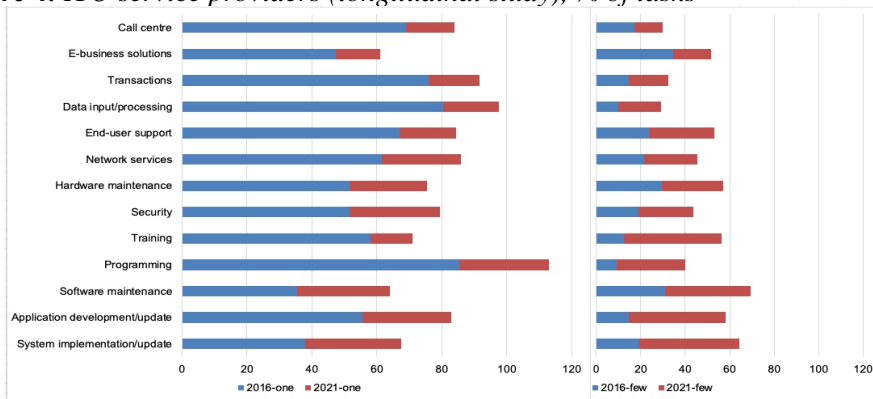
Source: Own creation.

Figure 3 shows the percentage of IT service forms used by the surveyed organizations in 2016 and 2021. *A specific service or product dedicated to a specific sector* (7.1%) was the most frequently used in 2016, and there has been no change here – in 2021 this is also the form most used (10.9%) – an increase of over 50%. The largest increases were in the form of *Team leasing* – almost a 3-fold increase, and *Body leasing*. *Team leasing* is used especially when the company implementing a specialized project does not have IT specialists with appropriate qualifications. A team of external experts will then enable the project to be implemented as intended.

In large Polish companies there is an intensive growth in the use of this form of outsourcing in connection with the implementation of many specialist projects. *Body leasing* enables the use of an expert who can join the team implementing the project or can act independently. Both forms allow for short-term task-based support. The

use of cloud services also increased (almost 1.4 times growth), especially PaaS (over 1.6 times growth) and SaaS (over 100% growth). The growth of the Internet has enabled the use of applications running on cloud infrastructure provided by the service provider via a web browser or application client. The supplier ensures the continuity of application operation. PaaS, on the other hand, allows to use a virtual work environment. An upward trend of all services provided in the cloud is visible. Most often a *specific service or product dedicated to a specific sector* is used – this demonstrates the progressive specialization of ITO services.

Figure 4. ITO service providers (longitudinal study), % of tasks



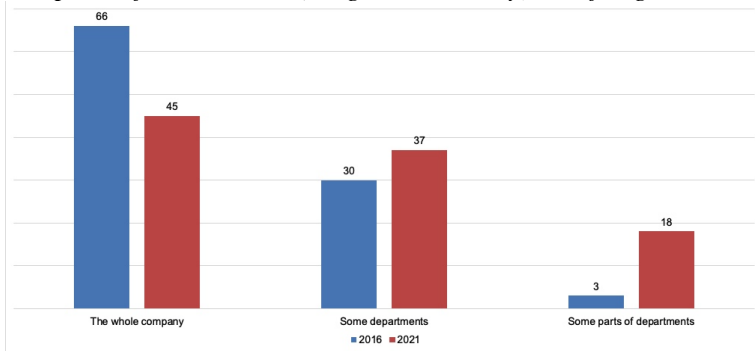
Source: Own creation.

Figure 4 shows the percentage of IT services provided by a single or multiple providers, this is also a longitudinal study. Overwhelmingly, IT services in 2016 tended to be delivered by a single vendor, and now in 2021 they are delivered by multiple vendors (multi-sourcing). By using multiple vendors, companies can negotiate better terms of service with vendors with specific skills in selected areas of IT. This allows the customer to get the best service on the market at the best price.

However, the customer may then find it difficult to coordinate the activities of multiple suppliers and to delineate the responsibilities of each, especially when the outsourced activities are interdependent. The increase in multi-sourcing demonstrates the specialization of ITO services, growing supply, but also an increase in the quality of ITO services in Poland. The professionalism of ITO suppliers is also increasing.

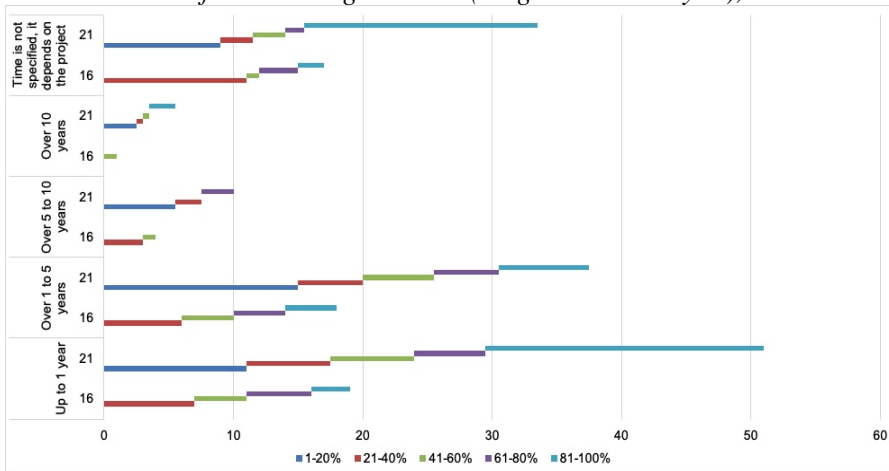
Figure 5 shows the recipients of outsourced IT activities. In 2016 this was more often the entire organization (66%), while in 2021 it is more often selected departments (37%) or parts of departments (18%). There has been a six-fold increase in ITO use in selected parts of departments. This demonstrates the strong increase in the specialization of outsourced IT functions and activities. If there is a demand for specialized ITO services, there must also be an increase in the supply of specialized services.

Figure 5. Recipient of IT activities (longitudinal study), % of organizations



Source: Own creation.

Figure 6. Duration of outsourcing contract (longitudinal analysis), %

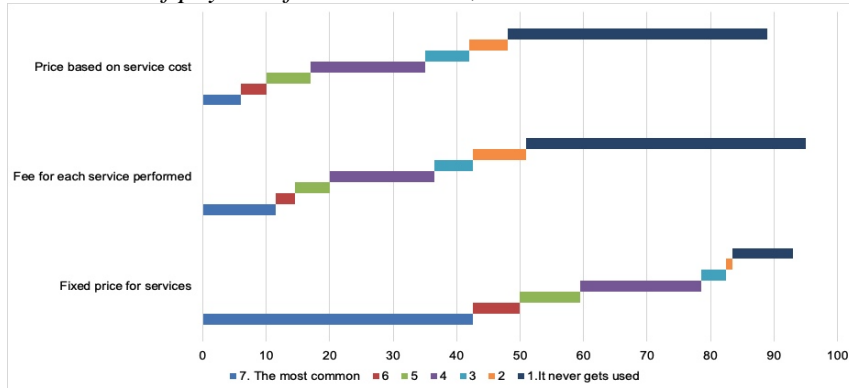


Source: Own creation.

Figure 6 shows the duration of the outsourcing contracts in 2016 and 2021. In 2016, an ITO contract was most often signed for one year or the duration was not specified and depended on the specifics of the project. In 2021, it is still most often the case that a contract is valid for one year or it depends on the project, but the number of contracts signed for a longer period of time, especially five years, has increased. The literature is divided on whether a short-term or long-term contract is preferable.

Short-term contracts do not bind the customer to the supplier for a long period and if the customer is dissatisfied, they can switch suppliers (Cullen *et al.*, 2001). Long-term contracts, on the other hand, support relationship stability and mutual learning between partners (Lee *et al.*, 2004). An increase in the duration of an outsourcing contract indicates an increase in the customer's trust in the supplier and a greater maturity and professionalism of suppliers. A long-term outsourcing contract then takes the form of consistent cooperation with a proven supplier.

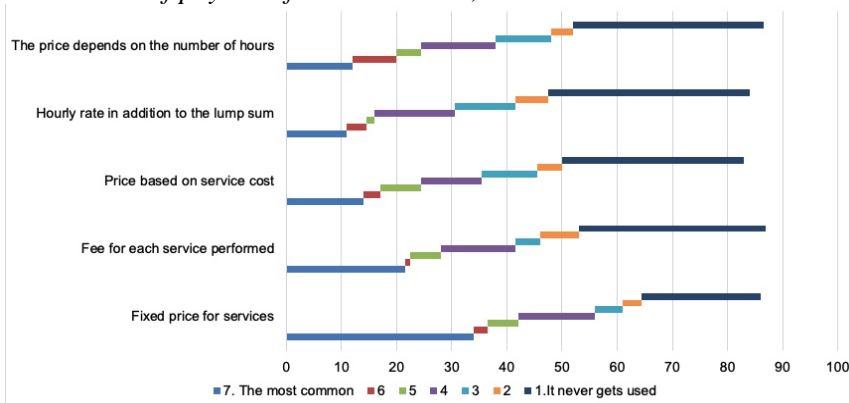
Figure 7. Method of payment for ITO in 2016, %



Source: Own creation.

Figures 7 and 8 show the preferred method of payment for outsourcing services in 2016 and 2021 respectively. In 2016, a fixed price for services was the most common, with 83.5% of organizations indicating they use this form, and 42.5% of organizations indicating that this form of fee is most commonly used. Pricing based on the cost of the service was used by 48% of organizations, while a fee per service provided was used by 51%.

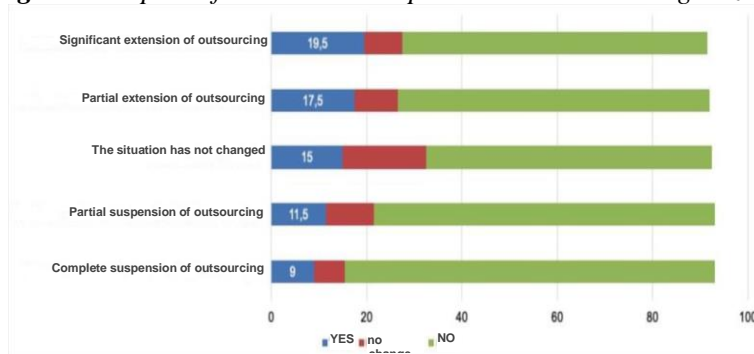
Figure 8. Method of payment for ITO in 2021, %



Source: Own creation.

In 2021, as in 2016, the most common method of payment was a fixed price for services – 64.5% of organizations used this. This method was indicated as the most common by 34% of organizations. Other methods of payment were equally common and were used by around 50% of organizations. This method of payment was used when ITO customer demand was predictable and was also indicated as the most commonly used (Gonzalez *et al.*, 2007). Other forms of payment have now emerged: an hourly rate in addition to a flat rate and a price based on the number of hours. Both forms are also used.

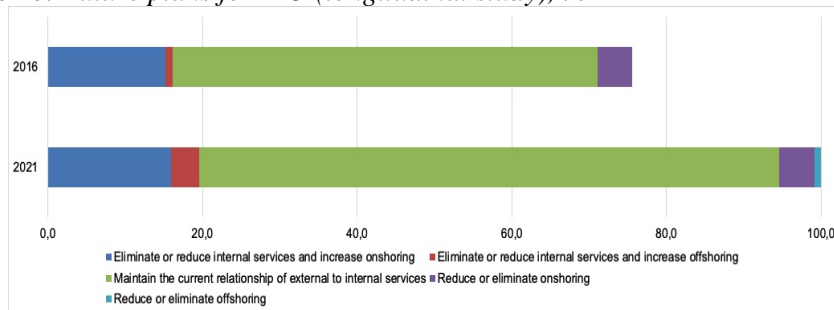
Figure 9. Impact of the COVID-19 pandemic on ITO in organizations in 2021, %



Source: Own creation.

Figure 9 shows the impact of the COVID-19 pandemic on IT outsourcing tasks in organizations in 2021. For the most part, the pandemic did not affect the range of activities carried out. When considering the impact of the pandemic, it can be seen that it tended to expand the range of activities carried out (19.5% – significant expansion, 17.5% – partial expansion) rather than reduce them (9% – complete suspension, 11.5% – partial suspension).

Figure 10. Future plans for ITO (longitudinal study), %



Source: Own creation.

Figure 10 shows the future plans for IT outsourcing in 2016 and 2021. Most companies were satisfied with the current level of external and internal services and did not intend to change it, in 2016 – 54.9% of companies, in 2021 – 75.0%. This attitude towards the future of ITO is very conservative. In 2016, nearly 16.2% of organizations intended to drop or reduce internal services and expand ITO (onshoring or offshoring), and by 2021, this was 19.5%. In 2016, 4.4% of companies intended to drop or reduce ITO, and in 2021 the percentage of such organizations was 5.4%. This demonstrates the constantly growing interest in IT outsourcing in large organizations in Poland. This is due to the increasing supply of ITO services, the increase in the quality, professionalism of providers and affordable prices of services.

4. Discussion and Conclusions

Longitudinal research permits inferences based on more solid foundations, which allows for a better understanding of the realities of organizational functioning (Stańczyk-Hugiet, 2014). The limitations of the present research are mainly due to its very nature, namely social dynamics, causal relationships, measurement error, the manner in the research was conducted and the change in the structure of the research sample (Rajulton, 2001). All these limitations apply to the research presented. Social dynamics does indeed occur as organizations form and dissolve and this is a completely natural process. Causal relationships both between organizations, in this case ITO suppliers and customers, and occurring within the organizations studied are dynamic, sometimes not easy to ascertain and measure. The possibility of measurement error always exists in research work. The way the research is conducted can also affect the results of the study. In the case of the presented research, the method of conducting the research was similar (purposive, random sample, CATI method), so it can be assumed that this factor had little influence on the research results.

The structure of the research sample for the two studies was slightly different, with the first study having significantly more logistics companies and the second study having more industrial companies and organizations, administrations and agencies. This factor may have also influenced the results of the study. The presented research is unique in Poland, carried out on a relatively large research sample and therefore, in the opinion of the author, it is possible on this basis to determine the dynamics of the development of IT outsourcing, what the characteristics of ITO are and how they are changing. However, the need for continued ITO research to determine the dynamics and changes in process characteristics should be emphasized.

The aim of the article is to present selected results of the research on the dynamics of IT outsourcing development in large organizations in Poland. The study was conducted using longitudinal research methods. First, longitudinal research is presented against other methods of analysis, especially in relation to IT outsourcing. Then the current state of research on IT outsourcing in Poland and worldwide is presented synthetically. The research part compares the status of selected aspects and features of IT outsourcing in large organizations in Poland in an interval of five years (2016 and 2021). The main trends of ITO development in large organizations in Poland are indicated. The key findings are as follows:

- The use of IT outsourcing in large organizations in Poland is increasing, especially offshoring. The growth rate is several percent. Particularly intensive growth concerns activities that are more complex and of greater importance for businesses (phases IV and V of ITO development: System integration, communication, the development of special applications, training and security, data and network services). Based on the visible trends, it can be predicted that growth will continue.

- The use of all forms of ITO services has increased. The only services whose usage has declined are Global Business Services. The use of outsourcing for the whole company is decreasing and increasing for selected departments or parts of departments. This trend of specialization of services is confirmed. An upward trend can be seen especially in the use of cloud services and specialized services (a specific service or product dedicated to a specific sector).
- There has been a shift from using a single ITO provider to multi-sourcing, that is, using multiple providers. This allows customers to enjoy the best services in the market at the best price. However, it can create problems in coordinating concurrent activities. Multi-sourcing also manifests itself in specialization, i.e. the recipient of ITO services is more often a selected department or its part than the entire enterprise. It can be predicted that specialization in ITO and multi-sourcing will continue.
- With regard to project duration, preference was and is given to short duration projects of up to one year or contracts where the duration depends on the specifics of the project. At the same time, an increase in the percentage of long-term projects to five or even more than ten years can be observed. This is then a long-term cooperation with a proven ITO supplier (possible after quite a long period of mutually beneficial cooperation). It can be predicted that the trend will continue.
- Fixed price for services was and is the most common method of payment for outsourcing services. There is now a trend towards the use of other methods of payment as well and it seems that this trend will continue.
- The COVID-19 pandemic had a weak impact on the use of enterprise IT outsourcing. We can speak of the expansion of IT outsourcing rather than its reduction in scope during the pandemic. A continuation of this trend can be predicted.
- In the future, a significant proportion of large Polish companies plan rather to maintain the current relationship between internal and external services (in 2016. – 54% and in 2021 – 75%) or expanding ITO coverage. It seems that this development trend will continue.

In summary, IT outsourcing, as assessed by the customers of the services, is developing dynamically. Indirectly, we can conclude that supply is also developing dynamically. A trend towards specialization, multi-sourcing, growing demand for cloud-based services can be seen. As far as outsourcing contracts are concerned, short contract terms are still preferred, or the term depends on the specific service, although there is a tendency to extend cooperation. The preferred method of payment is a fixed price for services, although other methods of payment are developing. The pandemic weakly affected the market for ITO services, and its impact was rather positive. Large Polish enterprises plan to maintain the present ratio of IT services provided internally and externally, but the tendency to expand outsourcing is visible. The presented conclusions may also provide guidance to

outsourcing service provider companies about the directions of the development of IT outsourcing, which will be in increasing demand.

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