

## Functioning of e-administration exemplified by the Silesian Province – research results

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### Abstract

The article presents functioning of e-administration in the Silesian Province. Respondents from different towns in the Silesian Province evaluated the following issues: benefits of using an e-office, the medium used for communication with an e-office, the level of customer satisfaction with e-administration functioning. The research results were analysed by exploratory factor analysis. The main advantages of using e-administration which were quoted by the surveyed include: the promptness of settling matters and the lack of queues. Three hidden factors related to the benefits of using an e-office were defined by means of exploratory factor analysis: accessibility, communication and costs, as well as safety. On the basis of the conducted investigations it can be stated that in the process of introducing e-administration it is necessary to be exercise caution and constantly control the level of these services quality.

### Quality of services in administration

In subject literature the notion of a service is most frequently understood as all the symptoms of human economic activity, which are non-material and at the same time are characterised by interactivity between the subject providing the service and the client [1]. Characteristics of services include [2]:

- non-material character (a service is an activity or a process);
- simultaneousness of production, distribution and consumption of a service, frequently accompanied by the client's active participation in service provision;
- variety;
- transitory nature and no possibility of having production "to be stored";
- impossibility of acquiring service property rights;
- in the process of service provision there is no ownership transfer;
- the result of a service is the result of synergy of the above system elements, which can be tied up to each other.

The above described services provide a possibility to determine four elements by means of which the quality of management in self-government administration offices can be evaluated.

These elements include [3]:

- A – bureaucratic elements including: processes, administrative proceedings, legal standards and procedures;
- B – material elements such as: buildings, rooms, cars, material infrastructure;
- C – predisposition elements which include the following: individual features, attitude to work etc.;
- D – competence elements such as: knowledge, skills, licences.

Taking into consideration all the above mentioned elements it can be stated that the quality of a service provided by public administration consists of technical quality (this is the result of a service provided by organisations, e.g.: issuing a decision by the town mayor) and functional quality, by means of which a particular process is assessed [4, 5].

In the case of provision of services in public administration it is very important to define technical quality and functional quality in a clear-cut way. When determining these two kinds of quality one must bear in mind the legal standards in force [3, 4].

The simultaneousness of service production and consumption accompanied by active participation of the consumer in the process makes the result of service provision very difficult to predict. After all, it is not only qualifications, skills and experience of the service provider, but also the expectations, knowledge and interest in the service provision process on the part of the consumer that may determine the final result of e.g. an educational service [6].

Variety is closely related to the previous feature and results from many conditions influencing the provision of services. For the final shape of a service depends on both the service provider and the client, as well as on the material conditions of service provision and the environment. As the majority of services are characterised by direct contact between the provider and the client, the behaviour of the former may determine the reception of the service. People providing services are not robots, they have better and worse days, their attitude to clients may be determined by the atmosphere in their workplace, their superior's attitude, problems in personal life etc. On the other hand, the customer in the process of service provision is not only a "witness" and a passive participant of this process, but frequently he may or simply must actively participate in it, e.g. during a psychotherapy or a foreign language course.

Also external factors can greatly affect the perception of a service, e.g. unfavourable weather – rain and cold may have a significant influence on how the holidaymakers resting at the seaside in summer assess the service provided by the hotel staff, while turbulences during a flight may influence the evaluation of the airline's work etc. The problem for a service provider is how many of these negative external factors can be eliminated or reduced and which of them can be controlled.

Summing up the previous considerations, it can be stated that the nature of the services sphere to a large extent makes it different from the sphere of material goods production.

Therefore, a service is not a product in relation to which it can talk about a particular production specification. The very process of measuring and monitoring, as well as the evaluation of such "production" is difficult. Frequently, there is no time "buffer" which would enable checking whether

a given service corresponds to a relevant standard. The slogan "do it right the first time" in relation to a service acquires a special meaning, because the client buying the service is a witness and frequently a co-participant of the service process, in which he immediately notices any mistakes and shortcomings.

As a result, while a material product can be recalled, scrapped or repaired, a bad service follows the client. The simultaneousness of service provision and consumption triggers interaction between the provider of a service and its buyer. Therefore, in the service provision activity a priority must be given to leadership, motivation, consultations and the proper use of work resources. Technology, important as it might be, plays merely a supporting role in the development and management of human resources [7] (Fig. 1).

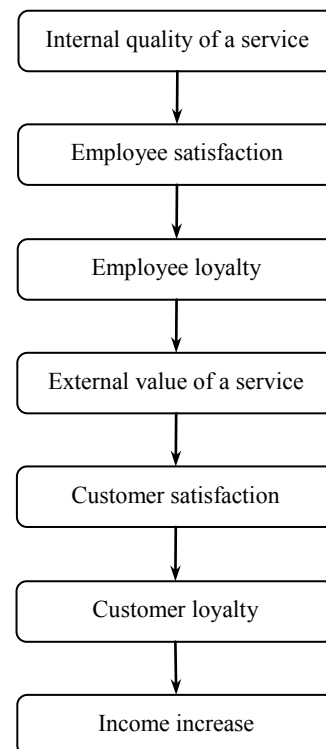


Fig. 1. A chain of benefits in services

Therefore, given the entire complexity and variety of elements making up the sphere of services, it is necessary to exercise caution when mechanically transferring the tools and methods of quality evaluation applied in the material production sphere into the sphere of services.

The above statement does not mean that any attempts to define basic criteria of quality evaluation in relation to services should be abandoned. Determination of these criteria is important, as year by year it can observe among service providers an increased competition over the client, resources and

funds. In this competition the top priority is given to quality, which in many cases is an element determining the choice and evaluation of the service provider. Putting things in a simple way, the quality of a service is nothing but making an effort to meet the client's requirements by subjects engaged in the service provision activity. More specifically, the quality of a service can be defined as the degree to which all inherent properties of a service meet the client's requirements [8]. This definition implies that only the client may decide whether and to what extent the service corresponds to his/her expectations and satisfies his/her needs. He is then a "judge" evaluating the service quality not only at the moment of purchasing, but also in the process of using the service. In other words, the client's assessment is the final measure of a service quality. Certainly, this does not mean that the service provider is excluded from the quality assessment procedure.

### Presentation of research

The investigations of the results which have been presented in this article were carried out in June 2011 for a sample of 89 people living in Silesian Province towns.

The respondents evaluated the following issues:

- advantages of using an e-office:
  - ZC1 – Prompt settlement of matters;
  - ZC2 – Possibility of settling a matter without leaving home;
  - ZC3 – 24-h accessibility;
  - ZC4 – Easier access to services for the disabled;
  - ZC5 – Safety;
  - ZC6 – No queues;
  - ZC7 – Improved communication with the office;
  - ZC8 – Reduction of costs for using the office;
- medium used for communication with an e-office:
  - ZD1 – personal visit in an office;
  - ZD2 – e-mail;
  - ZD3 – internet communicators;
  - ZD4 – telephone;
  - ZD5 – letters;
  - ZD6 – e-administration system;
- evaluation of customer satisfaction with the functioning of e-administration in offices subjected to research:
  - ZE1 – Municipal office provides an e-service promptly;
  - ZE2 – The e-administration website is transparent and clear;

- ZE3 – The service is provided in a safe way;
- ZE4 – On Municipal Office's websites it is easy to find a link to an e-office;
- ZE5 – Support in the use of an e-office is comprehensible;
- ZE6 – The e-office website is user-friendly;
- ZE7 – Services are provided by an e-office on time;
- ZE8 – Matters are settled in an e-office practically on the first attempt;
- ZE9 – The e-office website is adjusted to the needs of disabled persons;
- ZE10 – Employees readily provide information concerning the use of an e-office;
- ZE11 – Employees immediately provide information related to the problems of the e-office functioning;
- ZE12 – Employees promptly reply to e-mails;
- ZE13 – Employees are eager to help clients;
- ZE14 – The e-office keeps the client informed of the course of his matter settlement;
- ZE15 – Employees address clients having problems with the e-office functioning in a polite and friendly manner;
- ZE16 – Employees help a client in the case of a mistake related to an e-office is made;
- ZE17 – There are no problems with logging on the website;
- ZE18 – The e-office website is accessible from various search engines;
- ZE19 – The e-office website offers big fonts for the needs of the disabled;
- ZE20 – The website offers optional voice communication for persons having problems with their eye-sight.

### Advantages of using e-administration

A very important element of e-administration functioning evaluation is to define in what way respondents perceive the benefits of its use. In order to do that, 8 variables (ZC1–ZC8) have been examined – each of them has been assessed on a 1–7 scale.

The conducted research indicates that the surveyed clients believe that an e-office has a lot of advantages (Fig. 2). All the examined benefits of using e-offices (compared to traditional administration) have been evaluated very highly by respondents (more than 5.5 on a 7-degree scale). In the opinion of respondents the major advantages are the promptness of settling a matter in an e-office (6.47 evaluation) and the lack of queues (6.26).

Currently, due to fast pace of life and long working hours, not everybody has time to settle

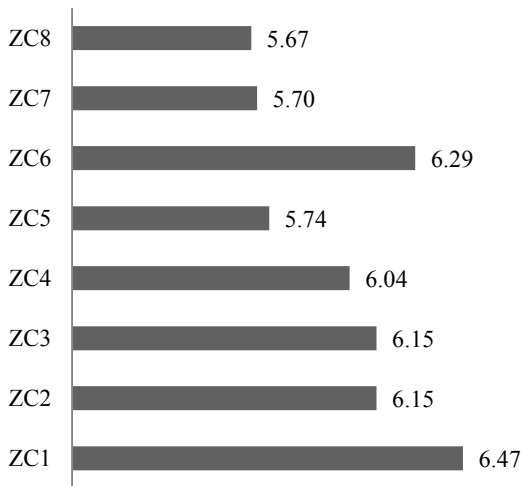


Fig. 2. Benefits of using an e-office

matters in an office, especially that offices are not always open at the time convenient for respondents. E-administration is a chance for considerable acceleration of documents circulation and avoidance of traditional queues. It provides a possibility of settling urgent matters during 24 hours a day, at the place and time convenient for the client. The research results imply that programmes of e-administration implementation are very important and may considerably shorten the time which a given person must devote to contacts with a particular office. This greatly influences the quality of services and contributes to enhanced customer satisfaction.

The conducted exploratory factor analysis of the benefits of using an e-office allowed identifying 3 hidden factors (the exploratory factor analysis results have been given in table 1 and in figure 3).

Table 1. Hidden factors related to the benefits of using an e-office

	Factor 1	Factor 2	Factor 3
ZC1	<b>0.68</b>	0.10	0.35
ZC2	<b>0.71</b>	0.45	-0.14
ZC3	<b>0.78</b>	-0.13	-0.02
ZC4	0.21	<b>0.74</b>	0.09
ZC5	0.02	<b>0.90</b>	0.02
ZC6	<b>0.58</b>	0.18	-0.14
ZC7	-0.01	-0.05	<b>0.91</b>
ZC8	-0.00	0.46	<b>0.65</b>

Factor 1 – accessibility – the factor accounts for 24% of variability and includes variables related to the promptness of settling matters (ZC1), the possibility to settle a matter without leaving home (ZC2), the lack of queues (ZC6) and availability of services for 24 hours a day (ZC3).

Another factor (second) is the one referred to as communication and costs (accounts for 23% of

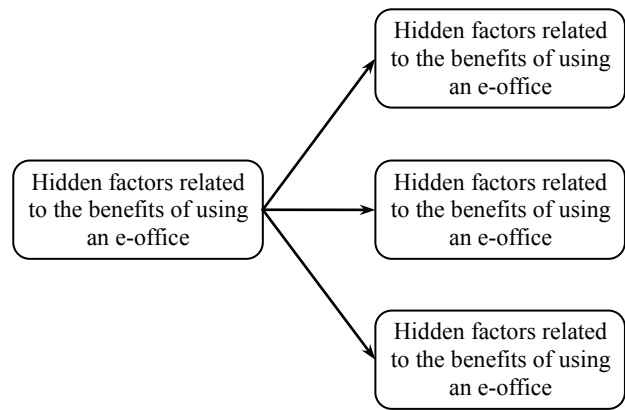


Fig. 3. A diagram of identified hidden factors related to the benefits of using an e-office

variability) – it comprises two variables – ZC7, concerning communication with an office, and variable ZC8, related to the costs of using an e-office, i.e. the costs of this communication, as the respondents assume that cost reduction is one of the advantages of using an e-office.

The last factor – factor 3, which accounts for 14% of variability, has been called safety – it includes two variables, one related strictly to the problems of safety itself (ZC5) and the other one – related to the office accessibility for the disabled (ZC4).

Investigations into the influence of sex on the perception of e-communication advantages (a non-parametric U Mann-Whitney’s test has been applied) have shown that statistically significant differences (the level of significance  $\alpha=0.05$ ) are present in one case – the lack of queues. The fact that the use of IT tools and the development of e-administration will reduce the necessity to stand in lines is perceived by men (6.4) as a more important issue compared to women.

On the other hand, very big differences are observed in the case of variable related to preferred communication with an office – two possibilities have been assumed – people preferring traditional personal communication with an office and adherents of e-communication. In this case statistically significant differences reaching the previously quoted level of significance occur in four variables ZC1-ZC4. Naturally, the benefits of using e-administration are much more appreciated by persons who prefer this form of communication. In the case of the above listed variables their evaluation of particular benefits’ importance looks as follows:

- promptness of settling matters – 6.66;
- possibility to settle a matter without leaving home – 6.47;
- 24-h accessibility – 6.30;
- easier access to services for the disabled– 6.18.

The importance of these benefits is perceived much worse by people preferring traditional communication. In this case the values are as follows:

- promptness of settling matters – 5.72;
- possibility of settling a matter without leaving home – 4.89;
- 24-h accessibility – 5.55;
- easier access to services for the disabled – 5.50.

**Preferred methods of communication with an office**

On the basis of the conducted research it can determine what communication media are used by the surveyed in contacts with an office (Fig. 4). This is necessary to specify a starting point – i.e. define the current status of communication. The level of use of a particular communication method has been determined on a 7-degree scale, where 1 means that a particular manner is used very seldom, while 7 – very often. Currently, despite the development of e-administration and electronic communication means, the majority of the surveyed most frequently resort to the most traditional way of communicating with an office, i.e. a personal visit in an office (5.38). The second most frequently used method is telephone communication (4.54).

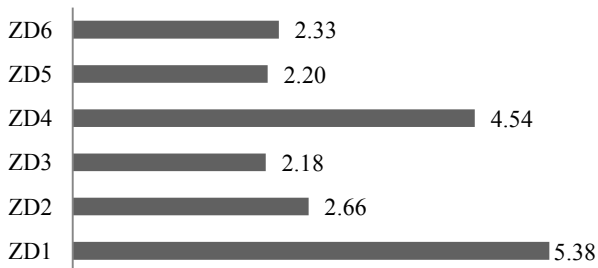


Fig. 4. Methods of respondents' communication with an office

Electronic means of communication with an office based on the Internet are applied much more seldom. The frequency of using an e-administration system has been evaluated as 2.33. The use of e-mail communication (2.66) and internet communicators reach a low level. Nowadays, also traditional mail is very rarely used by respondents as a channel of communication with an office (2.2).

Similarly to the previous point, an analysis of statistical significance between the examined variables and the sex of respondents and their attitude to e-administration has been conducted by means of U Mann-Whitney's test. An identical level of statistical significance  $\alpha = 0.05$  has been applied. No statistically significant differences have been observed in the case of the sex of respondents, whereas differences have been noted in the respondents' attitude to e-communication. They concern

variable ZD2 – the use of e-mails. Again, the results are understandable – persons preferring electronic communication much more frequently choose to use e-mails (2.89) compared to people preferring traditional communication (1.79).

**Quality of e-administration services – evaluation**

In the last stage of research the level of customer satisfaction with services provided by e-administration was assessed (Fig. 5). All the examined variables were evaluated on a 1-7 scale, where 1 stands for very low, and 7 – for very high satisfaction of a respondent with the fulfilment of a particular variable. On the basis of the conducted investigations it has been found that respondent satisfaction reaches the highest level in the case of adjusting the office's website to the needs of the disabled (5.2). Other highly evaluated variables include:

- kind and friendly attitude to clients having problems with e-office functioning (4.96);
- helping a client if he/she has completed e-forms in a wrong way (4.94);
- functioning of the e-office website under different search engines (4.91).

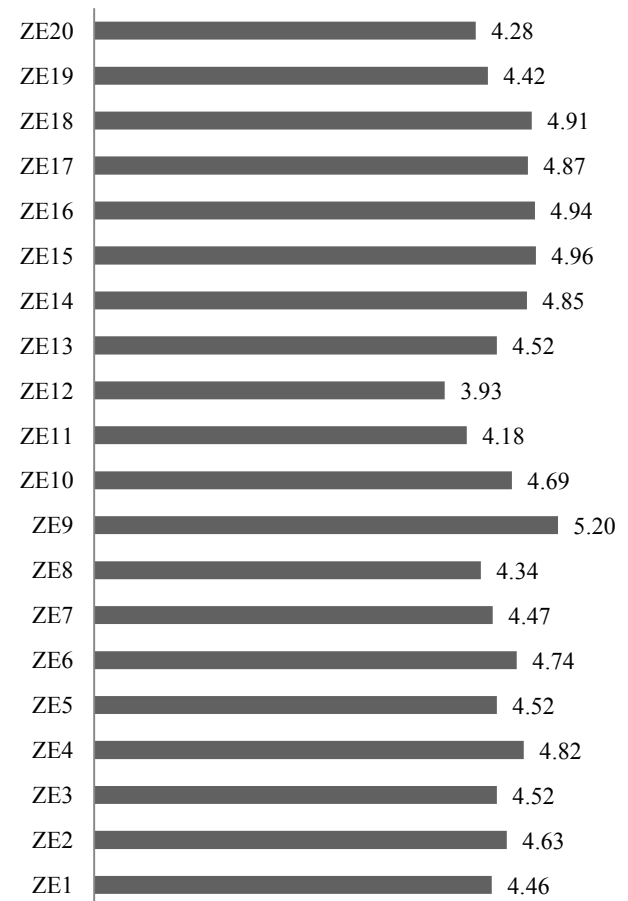


Fig. 5. The level of client satisfaction with e-administration

The lowest evaluated variable is the promptness of responding to e-mails by e-office employees (3.93). In this case a large group of respondents notice that e-office employees do not reply immediately to e-mails and expect much greater promptness from this means of communication. The fact that the promptness of response to various problems of clients is the worst perceived factor in e-offices is proved by the fact that another worst evaluated variable is the one related to providing immediate information in the event when the client has problems with e-office functioning (4.18).

1. The research carried out by means of U Mann-Whitney's test, the level of statistical significance reaching  $\alpha = 0.05$ , allows stating that statistically significant differences between the level of service quality and the preferred type of communication occur in the case of six variables ZE4, ZE7, ZE9, ZE12, ZE15, ZE17. In the case of the examined variables (the results in particular groups have been given in table 3 – only variables for which statistically significant differences have been observed are contained in the table) it can observe a phenomenon of considerably worse evaluation of the quality of services by people preferring the electronic form of communication with an office.
2. This phenomenon has two causes depending on the variables. In the case of promptness of services, as well as kindness and friendliness of service, persons preferring electronic communication certainly prefer it just because they are not satisfied with the above listed issues. Therefore, they believe that e-administration can eliminate these problems – for example within the scope of promptness of services. It is noteworthy that the same people, as mentioned before, much more frequently evaluate the promptness of settling matters as an advantage of an e-office.
3. Differences observed in the remaining variables – the problems of the website and its legibility, as well as adjustment to the needs of the disabled, promptness of responding to e-mails or problems with logging on the website – can be explained in another way. In this situation people who prefer traditional communication evaluate the above quoted variables in a better way, because they seldom use new channels of information and have had no opportunity to observe any problems in this area. Being less experienced within the use of e-administration, they are less critical if something does not work – in such a case they simply go to an office and

settle the matter in a traditional way. On the other hand, persons preferring to use an e-office are more critical, as they have more experience and want this form to be their basic way of communication with an office. If something does not work in this case (e.g. there are problems with logging), they become frustrated and hence evaluate the performance of the office much worse.

Table 2. The level of client satisfaction with e-administration depending on the preferred form of communication with an office

	Preferred traditional form	Preferred electronic form – e-administration
ZE4	5.50	4.64
ZE7	5.39	4.23
ZE9	5.94	5.01
ZE12	4.44	3.80
ZE15	5.56	4.80
ZE17	5.65	4.64

## Conclusions

1. The main advantages of using e-administration quoted by respondents include the promptness of settling matters (6.47) and the lack of queues (6.29).
2. The exploratory factor analysis allowed identifying three hidden factors related to the benefits of using an e-office: accessibility, communication and costs, as well as safety.
3. Persons preferring electronic communication evaluate the importance of many e-administration benefits on a much higher level.
4. Despite the development of e-administration, the respondents still prefer to settle matters by visiting an office (5.38), many people appreciate also the possibility of settling matters on the phone (4.45), whereas strictly electronic forms continue to be treated merely as a supplementary, not a basic way of communication.
5. The conducted research also shows that it is necessary to exercise caution when introducing e-administration – low quality e-services cannot be offered, as people preferring this form of communication become the most critical in the event when something fails to work. This way it is easy to discourage the group which remains the main adherent of implementing e-administration. For this reason the implementation process should be well-thought-out and the IT system must be tested, so that its proper functioning can be ensured.

## References

1. VANLOOY R., VAN DIERDONCK P.: Gemmel, Service Management. An Integrated Approach, Financial Times, Pitman Publishing, 1998.
2. GRONROOS C.: Service Management and Marketing. John Wiley & Sons, Ltd., 2000.
3. WAWAK T.: Jakość zarządzania w administracji samorządowej. W pracy zbiorowej pod redakcją T.Sikory: Koncepcje zarządzania jakością. Doświadczenia i perspektywy. Kraków 2008.
4. TSEKOURAS K., PAPATHANASSOPOULOS F., KOUNETAS K., PAPPOUS G.: Does the adoption of new technology boost productive efficiency in the public sector? The case of ICUs system. International Journal of Production Economics, vol. 128, iss. 1, 2010, 427–433.
5. DOWTY R.A., WALLACE W.A.: Implications of organizational culture for supply chain disruption and restoration. International Journal of Production Economics, 1, 2010, 57–65.
6. BUGDOL M.: Zarządzanie jakością w administracji publicznej. Wydawnictwo Diffin, Warszawa 2008.
7. FLEJTERSKI S., PANASIUK A., PERENC J., ROSA G.: Współczesna ekonomia usług. PWN, Warszawa 2008.
8. TAN K.H., RAE R.H.: Uncovering the links between regulation and performance measurement. International Journal of Production Economics, vol. 122, iss. 1, 2010, 449–457.

## Others

9. VARGO S.L LUSCH R.F.: Evolving to a New Dominant Logic for Marketing. Journal of Marketing, vol. 68, no. 1, 2004, 1–17.
10. GILBERT G.R., PARHIZGARI A.M.: Organizational Effectiveness Indicators to Support Service Quality. Managing Service Quality, 2000.