



POSSIBLE SMART CITY SOLUTIONS IN THE FIGHT AGAINST BLACK ECONOMY

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ABSTRACT

According to international statistics, Hungary has a high ratio of black economy. On December 31th of 2017, the number of registered corporations reached 1.7 million, of which 395 910 were registered in Budapest [1]. There is a clear need for such measures and developments that are aimed to track corporations at the e-government level, and such infocommunicational equipment and services that essentially promote the arrangement of data. Black employment is one of the most easily identified territories of the hidden economy. Employers must register the working hours, and they are also responsible for the factual, real and entire content of the registry. A number of entry systems are available which – besides ensuring electronic protection – are also suitable for registering the working hours. These systems, however, have both advantages and disadvantages, and different types of abuses have become widespread. The purpose of the study is to provide an overview of these systems based on their ability to reduce black employment and the limitations of their applicability from the point of data protection, with particular attention to the introduction of the General Data Protection Regulation of the European Union from 25 May 2018 in all member states. Employers manage data through their legitimate interest on web and telephone usage, control of emails, or even GPS-based location information. Likewise, legitimate interest is also the basis of the introduction of workplace monitoring systems. To reduce the size of the black economy, the use of an electronic system would be the most suitable tool – which would transfer the information extracted from the system to an immediate tax authority – based on the patterns of online cash registers or online billing programs. This, on the one hand, could provide the basis for the necessary identification and work documentation, but on the other hand, it raises the risk of excessive data handling, which is illegal.

KEY WORDS

hidden economy, black employment, access control systems, security solutions, e-government

CLASSIFICATION

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INTRODUCTION

As a result of accelerating urbanization, our cities have to face new challenges. Smart city theories are searching for solutions to the challenges of the present age, using the tools of the present age, primarily through the use of infocommunication technologies. The key objective of a smart city is to improve the efficiency and effectiveness of city operations. In addition, improving the quality of life of the citizens and raising the standard of living are significant aspects as well, in a way that remains respectful towards natural resources. The main rating indicators used by city rating agencies are primarily technology, economy, governance and politics, as well as human, social and environmental issues. In Europe, Hungary is unfortunately among the last countries on the list next to Romania and Bulgaria. In many respects, the economic factor is one of the most important part of the smart city system. The performance of the economy plays a key role both in measuring effectiveness and in financing technological innovations. Smart economy is based on productivity, the adoption of new and developing industries. Its fundamental goal is to ensure a skilled workforce and to create the highest extent of flexibility in the labour market. Governance and the political segment are also important factors in the smart city initiative. The aim is to create an administrative sphere that can, through the use of infocommunication technology, create a cooperative, transparent office system. Widening the sphere of services and improving their accessibility and integrity greatly promote the development of society integration. An important goal is to reduce bureaucracy and increase the role of responsibility. The role of the e-administration system should also be emphasized in this field. Extending a number of services, such as a unified register, the development of healthcare and the reduction of administrative burdens substantially increase the quality of life of smart city citizens, while these innovative solutions at hand improve the standard of living [2].

The hidden economy is a very complex economic phenomenon. It can be detrimental to the real, so-called “white economy”. Hidden economies require increasing attention due to their internal dynamics, and their operation requires coordinated responses both at national and international levels. Based on the results of his international comparisons, F. Schneider – one of the most prestigious researchers of the “shadow economy” – quantified the presumed ranking of the hidden economy of countries in the world. According to the survey, in the developing countries, the size of the hidden economy (expressed as a percentage of the official GDP) was 19,8 %, in Eastern and Central Asia (transition countries) 38,1 %, while in the OECD countries 18,7 %. In the specific rankings, Hungary is ranked 44th, while in the 21 transition countries it is ranked 3rd with a 25,8 % of the GDP order of magnitude [3]. These activities make it impossible to determine the real economic performance of economic operators, which leads to a deterioration in the tax morale, and as a natural result, the budget receives less revenue. Its ethical effects cannot be neglected either, as they act against the basic rules of free market economy and also against free competition. Revenues from hidden economic activities can upset the balance between the economy, politics and even the armed organizations, which may lead to the destabilization of a country or a whole region [4]. Combating the hidden economy and its scale is an important political objective for all countries. Corruption is similar everywhere in the world, in all political-economic systems, to a lesser or greater extent [5], but the present study is not intended to examine this problem.

CONSEQUENCES

The ratio of black economy in Hungary is high compared to international practice. One of the well-identified areas of the hidden economy is black employment. An important step in the tax behaviour of companies is the decision to declare and pay labour-related taxes and

contributions. Due to tax evasion and tax avoidance, the validity of the companies' income data can be questioned at several points. Both the actual number of the formally employed and declared staff and the wages actually paid to them are questionable. In both cases, actual labour costs are different from those calculated formally and statistically based on tax declarations. The validity of the headcount data can be questioned at two points. One typical practice in the hidden economy is the employment of undeclared workforce and the handing over of the payment in cash, without any documentations. In this case, both the company, and the black employee commit tax evasion. It may also be a case of tax evasion, when employee person acts permanently as a subcontractor, with its own company or enterprise [6]. Within the framework of black employment, the most commonly used methods include the employment of undeclared employees, the pretence of a legal relationship or a simulated business contract, and the employment at a minimum wage. Each method significantly reduces the budget payment obligations. For this reason, there is a need for a number of steps to be taken in this area.

When Hungary joined the European Union, a new, uniform labour database was introduced (EMMA), which obliges all employers to register their employees. The EU and OECD guidelines are regularly reviewed and considered in Hungary [4]. These policy approaches can take the form of tax measures, direct, fiscal measures, work regulations, and other applied interventions or government measures. Government measures include the enforcement of laws and the identification of violators. The classic way of reducing the hidden economy is to increase the severity of punishment. This solution seems fairly obvious and is widely used. Fines and other applicable measures in case of the employment of undeclared employees are specified in the Act on Taxes.

The taxpayer must be subject to a default penalty of up to HUF 1 million when employing or if employed as an undeclared employee. In addition to imposing default fines, the tax authority may close the premises of the taxable activity for 12 opening days if the taxpayer is employing an undeclared employee. In case of a repeated violation the closure period is 30, and in every additional cases 60 days of opening. The room is sealed with a tax authority stamp, clearly indicating the termination period and the fact that the business was closed by the tax authorities. In the event of blocking the closure, the tax authorities may use the police to cooperate, according to the provisions of Sections 170-174 of the Art Act [7]. This visible action obviously causes not only financial damage to the taxpayer, but also a significant loss of prestige, which can lead to further material damages. In addition, according to Section 82 of the Ávr, the National Taxation and Customs Authority (NAV) continuously publishes the name, registered seat and tax number of those taxpayers on its website who have not fulfilled their obligation to report the establishment of an employment relationship [8].

DECLARATION OF EMPLOYEES, WORKING HOURS REGISTER

According to Section 16 of the Art, the employer must report the employee to the tax authority before the beginning of the employment, if he establishes a new insurance relationship, i.e.: at the beginning of the insurance, at the latest on the first day of the insurance relationship before the start of the employment [7]. The proper keeping of the working time records is the duty of the employer and therefore it is responsible for keeping the records factual, true and complete. The records kept by the employer must comply with the requirements of completeness, verifiability, updating and credibility, while it also has to be found at the place of work. Under Section 134 of the Labour Code, the employer must record normal and extraordinary working hours, duration of standby and leave. The register must also be able to keep the normal and extraordinary working hours and the start and end times of the standby up to date [9].

The access control systems represent one of the key areas of security electronics. Their primary purpose is that entering and residing in a given area can only take place by authorized persons. Access to different parts or areas within the objects can be separately restricted. Thus, the access control system basically regulates, but the owner and operator of the object have the possibility to use other services of the system, such as the work time register already mentioned. First, the access control system has three main functions. Identification of the entry entitlement and identification of the persons entering the passage control. Of course, the archiving and storage of events are a key function of the system as well as logging. The basic elements of the access control systems are access points installed at the entrances of the objects, premises and areas that are connected to a computer centre via the local communication network at online systems. This centre should be able to make complex choices regarding the number of persons, the eligibility of persons in the given audited space, the existence of the rights related to the tasks to be performed (the qualification of certain persons as above) requires a joint assessment of the signals from the sensors reporting the functionality of the technical equipment to ensure the operation of the facility [10].

Electronic work time recording systems are also suitable for reducing black employment, however these methods have disadvantages as well (Table 1). For these systems, it is very important that the logging data cannot be retrofitted so that they can provide stable, retrospective, analytical records for payroll and contribution disclosure. The knowledge-based identification methods are best known for password-based authentication. The disadvantage of this method may be that employees can easily pass on passwords to each other, so this can give rise to abuse, as it cannot be identified whether the password was given by the employee who really owns it or by someone else. In this method, no physical presence is required from the employee; a single person can enter several codes, while the others are not actually present. Data is electronically logged when the employee is identified. It is also important to pay attention to the correct password selection so that the password cannot easily be guessed. In addition, it is also important to have adequate data protection, that is, the correct storage of the sample patterns used for comparison, so that unauthorized persons cannot access it. It is advisable to increase the protection by changing passwords from time to time.

In the case of possession-based identification, the use is generally simple, and there are rather cheap and relatively expensive solutions as well. It is safer than password-based authentication, because the card needs to be passed in order to register for someone else, but it still does not provide protection against pre-planned fraud, as the card previously delivered can be validated by someone else than the actual cardholder, since it is the card that is identified and not the specific person. Thus, if an unauthorized person gains possession, unauthorized access is possible.

However, biometric identification is becoming a key element today, whether it means fingerprint reading, vein-network scan, retinal scan or face recognition. It has a wide range of uses, which can be found everywhere from access, through the registration of working hours to the unlocking of mobile phones. Biometric features are unique to every person, and such identification is very reliable, efficient, and convenient. The risk of abuse is much smaller in size than in the case of cards (stolen or borrowed cards are a known problem). Combining multiple identification methods (two- or three-level identification) further reduces abuses. In contrast to knowledge and possession-based identification, here it is the person him- or herself who is identified. Each biometric system is based on biometric patterns or templates that are collected in advance and then used for comparison later. There are two basic ways to handle biometric patterns. The first is to store the samples in a database or in the reader memory. The second uses ID cards to store unique patterns. Naturally, this method may have disadvantages as well. These systems are fairly expensive. For this reason, they have not been

Table 1. Advantages and disadvantages of working hour register systems.

REGISTER	CHARACTERISTICS
Paper based attendance sheet	it is very easy to falsify, fill in afterwards
	lacks any automatism or "intelligence"
	its accuracy is largely influenced by human neglect
	the time of entry is not logged, so it can be filled in at any time
Working hours recording by a dispatcher or a gatekeeper	human interaction is still high, but the person making the entry is different
	friendships, hostilities can be enforced in the system
	the time of entry is not logged either
Electronic working time recording systems	
Knowledge-based identification	the employee can identify him or herself with a code or password
	codes and passwords can easily be passed on to each other
	it cannot be made sure that the employee be there in person
	no physical presence is required from the employee
	one person can use more codes while the others are not present
	it is electronically logged
Possession-based identification	a proxy card or some other device is possessed by the employee
	it is safer than knowledge-based, because the card needs to be handed over
	it still lacks protection against pre-planned fraud
	here too, it is the card that is identified, and not the real person
Feature-based identification	such as biometrics, where, for example, the fingerprint can be used for identification
	the safest system, the employee has to be present here
	a suitable biometric system should be chosen for the right place
	high price
Modern mobile solutions	it is a mobile application and registration is carried out through these
	modern, emerging solutions
	they are not too widespread, very little experience is available
	through the phone it is easy to handle the start of working time and holidays
	can be optimal for non-stationary workers (GPS)

widely used to record working time or to facilitate payroll, but there may be a number of areas or industries where they need to be introduced because of high security requirements which demand the biometric entry of the employees, and where the differentiation between employees and non-employees may only be made this way. Nevertheless, this conclusion must be based on an individual examination in each case [11].

LIMITATIONS OF THE APPLICABILITY OF THE ACCESS SYSTEMS – DATA PROTECTION

The employer is entitled to monitor the work of the employees and their fulfilment of other labour law obligations as a result of the employment relationship. This right is also ensured

by the Labour Code. However, this monitoring is limited by the personal data rights of the worker concerned, which includes the right to protect their personal data. Until recently, the field of data protection had been defined in Hungary by state regulations. It is worthwhile for the employer to consult the provisions of the Act on informational self-determination and freedom of information when implementing a registration system [12]. However, this framework-based directive has been replaced by a regulation of the European Union that is uniformly applicable in all countries in order to create a single internal market. The General Data Protection Regulation of the European Union (Regulation No 2016/679 or GDPR) [13] has already been in force for two years but it has only been applicable in all Member States from 25th May, 2018. These rules are accompanied by unprecedented penalties. The difficulty is further enhanced by the fact that under the new rules the SME sector will not be exempt in any area. Personal data may only be dealt with for a specific purpose, for the exercise of rights and for the fulfilment of obligations. At all stages of data management, the purpose of data management must be appropriate and the recording and handling of data must be fair and legitimate. In addition, only those personal data that are essential for achieving the purpose of data management can be handled to achieve this goal. Personal data can only be handled to the extent and for the duration required to achieve the goal. For example, the use of biometric technology in different countries is regulated differently. It is therefore important to know the local regulations prior to making biometric technology decisions. At the same time, it is necessary to observe the purpose-bound data handling principle, to consider the obligation of data-minimalisation, and in case of several identical data management methods, to choose a method that least restricts the rights of the affected persons or that does not include employer data management. Because of these requirements, for the purpose of payroll and working hours control, the use of biometric data is not the most suitable solution.

The basic rule of data protection is that the employee must always be informed of all circumstances. Under Section 10 (2) of the Labour Code, the employer is obliged to inform the employee of the handling of his/her personal data. In addition, the employer may disclose any facts, data, and opinion about the employee to a third party only in cases specified by law or with the employee's consent. One exception is the forwarding of personal data towards a data processor. For the purpose of fulfilling the obligations arising from the employment relationship, the employer may transfer the employee's personal data to the data processor, for example, to the accountant, by indicating the purpose of the data supply, as defined by law. However, the employee must be informed in advance; therefore the transfer of data should be included in the policy. The employer may also monitor the employee in his/her employment relationship. If the employer exercises the right of monitoring, he or she must previously inform the employee of the application of the technical means for monitoring. The legitimate interest of the employer is the main legal basis for data processing at work. This is an important facilitator for the employer, which includes for example the checking of web-use, phone calls or e-mails, or even GPS-based positioning. Similarly, this lawful interest provides basis for the use of workplace surveillance systems, which must meet various other conditions.

CONCLUSIONS

In conclusion, besides being able to reduce black employment, a good system must meet the following requirements: it must ensure that the person is fully identifiable, the beginning and the end of working time is logged; and neither the employee nor the employer could modify the data and the automatism of evaluation of reports and offenses. There are various methods available for time recording, each having their advantages and disadvantages, and different degrees of misuse. To reduce the size of the black economy, the use of an electronic system would be the most suitable tool – which would transfer the information extracted from the system to an immediate tax authority – based on the patterns of online cash registers or online

billing programs. However, this raises a number of issues, including the cost requirements of different systems, the extent of which may not necessarily be passed on to all business sizes. Also, it must not be forgotten that various legal questions and data protection issues may arise. Before the introduction of a system – from a data protection perspective - a so-called ‘interest-weighting’ test should be carried out, in which the legitimate interests of the employer must be examined, the interests of the workers concerned must be identified, consideration must be given to the individuals’ rights and interests, a necessity-proportionality test must be performed and the result of these must be brought to the attention of the data subjects. Otherwise excessive data handling might occur, which is illegal. Considering the observation of the principles of Article 5 of the GDPR, personal data must be handled only to such extent that is actually required to ensure the rights and obligations originating from the labour relationship. Certain data management operations, even with the employee’s consent, may raise concerns. For example, an examination of work by an electronic system, or the use of photo IDs at work (access card, email photo ID, etc.).

Despite the fact that the tax policy remains the most obvious means to enforce tax payments, or the policy of deterrence, which implies that greater fines and penalties result in better enforcement, it can have an opposite effect on the side of taxpayers. The enforcement efforts can increase tax compliance, but extreme punishments can be counterproductive as they might result in lower tax payments and in a loss of confidence in state institutions [14]. The government and public administration can reduce the tax rate and the intensity of regulation, but it also has to strive to achieve socially optimistic rates of taxation and regulation. Therefore, it can be stated that there is an optimal degree of hidden economy in every economy, where it is not worth increasing or further reducing the fiscal expenditures on tax audits.

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