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Electronisation of the Airline's Office

Nowadays, depending on the promotion of the principles of the knowledge-based economy in the field of air transport, the use of information technology is a vitally important activity of a modern airline manager in order to increase efficiency in decision making. The paper deals with information technologies necessary for applying the principles of knowledge economy in air transport business. Direct attention is paid to paperless offices, cloud technologies, outsourcing of information technologies and their interconnection leading to the overall harmonisation of communication between individual means, whether personal or business informatics.

Keywords: knowledge economy, cloud, paperless office, outsourcing, hybrid cloud, data mining

Introduction

In terms of strict monitoring of costs, it is necessary to verify the capability of planned systems and find innovative and successful solutions. This is also true for streamlining the workforce at the managerial level, who, through their decisions, push the airline forward into prosperity or backward into stagnation. Taking into account the principles of the knowledge economy in the field of air transport, the use of information technology is a matter of survival. An efficient manager takes care of using appropriate methods to optimise information processing and fully exploit information systems to support these methods. Our goal is to introduce basic information technologies that are, according to our research to date, necessary for deploying a full-scale computerisation of the manager's office at each level of airline management so that its decision making process is the most effective. In particular, the effectiveness of decision-making depends on the quality of provided, derived and obtained information.

Information Technologies of an Electronic Office

The development of the information society is a source of jobs and economic growth; information technologies are key to the growth of the entire economy, as they help to develop innovation in every sector of the economy. Therefore, information and knowledge are the key resources of such a company. Proper and conceptual use of personal and business informatics tools is the basis for efficient managerial work, accuracy in decision-making, and thus the prosperity of the company.

Paperless Office

A paperless office is a concept in which the use of paper documents in the office environment is significantly reduced or eliminated. Such a form is achieved by converting documents and other papers into electronic form. Most businesses are considering introducing a paperless office primarily to increase productivity and work efficiency, lower costs and faster access to information, more physical workplace space, much faster access at any time, less paper in the business itself, less temporary paper and less paper generated from the business [1]. The idea of a paperless agenda of the company, complete digitisation of documents and data mining is a trend that is still a novelty for Slovakia, but a world-wide way to streamline work and save costs.

The process of document digitisation and data mining

The success of digitisation is influenced by the client's cooperation and consists of two successive steps. In the initial phase, the document has a paper form, through the scanner and digitisation software, these documents become electronic documents. Electronic documents can go through the process of data mining and subsequent communication with the information system, respectively. They can be safely stored in an electronic cloud. The data mining process is a process of analysing data from different perspectives and summarising them for useful information. As a rule, this is about extracting useful information from large databases and electronic documents. It uses methods of statistics, mathematical modelling, artificial intelligence, OLAP (online analytical processing) and machine learning.
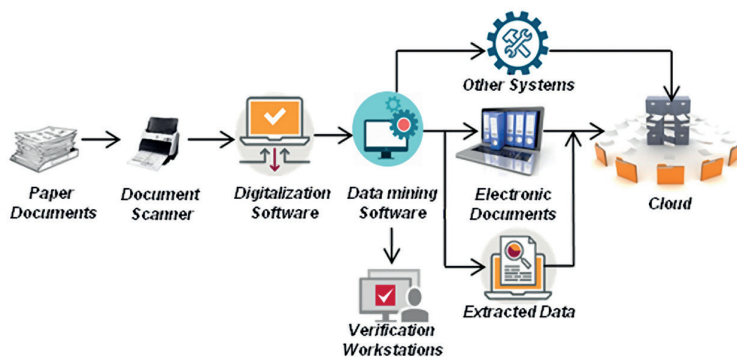

Figure 1.
Document electronisation process [6]

Electronic data processing is aimed at increasing business efficiency and productivity. Among the undeniable advantages are, in particular, fast and accurate data processing, enhanced control and structured data; elimination of possible errors caused by human factor; removing the possibility of losing documents; search speed; standardisation, optimisation and process acceleration; but in particular saving on human resources. The process of digitisation also brings problem situations. The most serious is the impossibility of extracting data, in other

words, it can only be extracted from quality source documents; setting the goal for digitising and data mining, it is generally not efficient to mine all the data and of course the necessity of absolute cooperation in the implementation and design of the digitisation process is also important. Digitising and data mining is fully functional when the shared storage – cloud – is filled with documents. Otherwise, this way of processing loses its meaning.

Due to the number of documents that may go through the process of electronisation, their paper form must be kept in the archives due to third party control. In this case, all the necessary documents are converted into an electronic form, but their paper version is archived without shredding [2]. The documents that can go through the electronisation process without paper archiving include, but are not limited to, laws, decrees, directives, records of meetings, notations, training information and others.

Cloud Computing

The principle of cloud technology is the respect of a certain minimum technology standard in the computer environment. Server virtualisation, storage and networking technology is used extensively to maximise efficiency. Applications, computer infrastructures and application platforms primarily work in a cloud computing provider's computing centre called Datacenter, which connects to a data network either worldwide via the Internet or via a local computer network. The user perceives the cloud as an application, service, or source of computing power for their applications. Depending on the different cloud computing models, these principles are applied to a greater or lesser extent. Depending on what the user needs, cloud services are tailored to their needs. Some users need to take advantage of the wide range of virtualised computing infrastructure, others need the capabilities provided by the application platform to satisfy their needs, and the third one rents a specific application and wants nothing else [3].
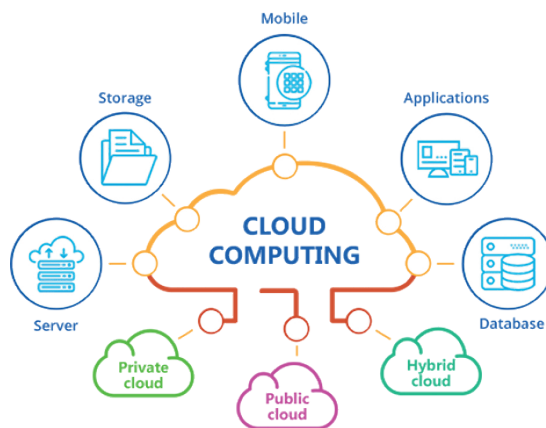

Figure 2.
Cloud computing [5]

Public Cloud Computing offers approximately the same functionality of services to a large number of its users with minimal user customisation. The provider guarantees the availability

of its services using the so-called Service Level Agreement. This cloud deployment model is mainly used by small and medium-sized businesses with a limited IT budget. *Private Cloud Computing* is available to a limited number of users or one organisation. It often adapts to the specific requirements of its users. The cloud provider is either an external company, but it can also be an IT department within its own company. The question of computer security, the level of availability and quality of services provided is precisely defined by the customer. *Hybrid Cloud Computing* is a mix of private and public cloud computing. Public and private cloud computing is interconnected by various forms, most commonly through a common application interface, abbreviated as API (application interface). They present themselves as one cloud to the user. *Community Cloud Computing* implements the ability to share information in the cloud by several organisations and/or businesses. These organisations or businesses are mostly of the same or related focus. The community cloud is usually not commercially charged, but the cost of running it is shared between the users [3].

IT Outsourcing

In principle, outsourcing is used when an airline identifies certain activities that only a specialised company can provide more effectively. Typical examples of outsourcing are IT services that are clearly geared to reducing operating costs and IT management and maintenance costs. IT outsourcing is a modern way as well as a trend in IT management [4].

Since the main activity of air carriers is the provision of air transport services, the outsourcing of this process ensures the sustained development of IT while the airline can fully pursue its core business. Airlines use outsourcing to different areas, e.g. outsourcing of reservation systems, accounting, traffic management systems, operating systems (flight operations, crew planning), fleet maintenance, office systems to help them focus on the core business to achieve efficiency and maintain competitive advantage. In terms of the extent of outsourcing, it can be selected as a complete outsourcing of the entire care area, including the provision of hardware and software equipment or use partial outsourcing as outsourcing of selected IT services, such as system integration, external server and computer network management, and so on. When selecting an outsourcing supplier, the airline is forced to obtain as much information as possible about the quality of the service provided by the company and the references. Ensuring sufficient data protection and availability is a critical factor for the choice of the airline of outsourcing provider.

Application and Implementation of Selected Solutions to the Working Environment of an Airline

Once the airline decides to introduce a paperless office, it has to take as many steps as possible. First of all, it is necessary to plan how the documents will be stored and organised. The document management system consists of computer software that allows you to perform simple tasks such as archiving, indexing, and retrieving documents for more complex tasks. Next, you need to ensure enough storage space. Sufficient disk space is recommended for hardware needs, as it will grow every year. Therefore, there is a need to provide enough

space right from the start. It is also necessary to introduce sufficient security measures. The document management system offers security features that protect against unauthorised intrusion and increase the credibility of the information system. Before introducing a paperless office, it is important that responsible airline leaders can answer critical questions: What do we want to achieve by introducing a paperless office and why do we want to achieve it? Will it be beneficial for us? What procedure will we use to achieve this? When are we able to go to work without paper and completely remove it from the offices? What resources do we need to use to achieve it? Who will secure the entire plan and make the changes [1]?

Answers to these questions will indicate in advance whether the transition to an electronic office will be beneficial or not.

If the answers are positive, the airline can responsibly start a migration process consisting of the following steps:

1. *Preparation of the electronisation plan* – sets the exact target that is expected and requires electronisation and a number of other tasks to achieve. The risks associated with creating and ensuring the process of electronisation, including proposals and measures, are analysed. Establishment of a specialised workplace to ensure document electronisation.
2. *Analysis of documents in the company* – creation of a list of documents that can undergo the process of electronisation and consequently their paper form can be shredded and vice versa, which can go through the process of electronisation but their paper form must be preserved.
3. *The document electronisation itself* – using information technology to transform paper documents into electronic form, capture important information in them and then store them in a central repository for future searches. Scanning and electronising business documents allows immediate access to very large archive material at various stages of storage that now turn into high-quality digital content. Prior to shredding the paper document, its electronic copy must be carefully checked for possible duplication and/or transfer errors.
4. *Introduction of electronisation into the airline* – direct introduction of information technology for the management, distribution and security of electronic documents, an example in the form of Microsoft SharePoint. Integrate digitised documents into the system and then make them available to all departments and areas that will be allowed access.
5. *Training the employees themselves to work with this system.*

The migration process must accurately confirm what documents will be used or loaded in the digital format, as well as how much storage will be used for documents and their indexing, and the actual cost of scanning, full quality control and possible retrieval of digitised documents [2]. For reliable storage and archiving of digitised documents, the use of Cloud Services appears to be a suitable solution for the future of law, where the provider of these services guarantees the security of storing the received data, if the airline does not have sufficient opportunities to effectively migrate to the "digital age" of document management. It can use the modern form of using the services of specialised companies through outsourcing all or only some IT services, thereby saving mainly time and cost overhead in case of complications. Portal solutions are a tool to streamline business processes. They simplify the management of

large amounts of information, documents and other materials to make them more accessible to thousands of users, or improve internal collaboration and communication. The result is a system with which you can easily manage and record everything in one place. The solution is suitable for both intranet and internet environments.

Conclusion

In today's modern aviation industry, the process of implementing an effective digital strategy is a crucial step for the company's long-term success and success itself. The role of electronic technologies is to innovate the company so that they are still competitive and prevent the disruption of already established business processes within the framework of electronisation. The main reason for introducing an electronic office using state-of-the-art information and communication technologies is to increase productivity across the organisation. Changes in paper consumption can include increased recycling efforts, less printing, or even the removal of paper documents, so that employees can do more about the job itself rather than looking for the documents in question. Great savings are made for the organisation.

By using digital content management information systems, it is possible to create a secure place to store, organise, share and access information and documents at any time and from any device. All you need is a web browser. Such systems allow users to share and disseminate their ideas and opinions, or to come up with their own problem solutions, to make decisions on the basis of facts and to better manage business processes, streamline collaboration between teams, and most importantly, simply find the information they need.

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A LÉGITÁRSASÁG HIVATALÁNAK ELEKTRONIZÁLÁSA

Napjainkban, a tudásalapú gazdaság elveinek a légi közlekedés területén történő előmozdításától függően, az információs technológia használata a modern légitársaság vezetőjének létfontosságú tevékenysége a döntéshozatal hatékonyságának növelése érdekében. A tanulmány a tudásalapú gazdaság elveinek a légi közlekedésben való alkalmazásához szükséges informatikai technológiákkal foglalkozik. Közvetlen figyelmet fordítanak a papírmentes irodákra, a Cloud technológiákra, az információs technológiák kiszervezésére és azok összekapcsolására, ami az egyéni eszközök, akár személyes, akár üzleti informatika közötti kommunikáció általános harmonizációjához vezet.

Kulcsszavak: *közgazdaság, felhő, papírmentes iroda, kiszervezés, hybrid felhő, adatbányászat*

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