DOI:10.17951/h.2024.58.3.163-180

ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA

VOL. LVIII, 3 SECTIO H 2024

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# *The Usable Quality of Information as an Element of the Humanization of Work in the Development of Modern Organizations*

**Keywords:** usability of information; operator; information technologies devices; sustainable development of enterprises; humanization of work

**JEL:** J24; J28; O14

**How to quote this paper:** Sławińska, M., Wróbel, K., & Walkowiak, D. (2024). The Usable Quality of Information as an Element of the Humanization of Work in the Development of Modern Organizations. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*, *58*(3, special issue), 163–180.

**Abstract**

**Theoretical background:** In the article, the authors discuss research on aspects of the human-centric approach to the process of implementing IT devices due to the specificity of human resources. The authors emphasize the importance of the dynamic development of modern information technologies (IT), which is of fundamental importance for the sustainable development of enterprises. The authors indicate the possibility of integrating various company resources, and above all, the phenomenon of creating an environment for the increase in the importance of human resources in the process of business digitization. A special place in this process is occupied by IT, which activate the employee through various forms. The authors present research that captures the above aspect in terms of the systemic assessment of the usability of interaction and communication processes. The scope of the work concerns communication with the use of IT devices used in the implementation of the goal-oriented tasks. The authors identified factors contributing to the development of job humanization through the flexible improvement of IT devices in a task-related context.
**Purpose of the article:** The aim of this article is to present the findings of a study on the impact of usability on the development of the phenomenon of job humanization among positional employees involved in the manufacturing process. Additionally, it discusses the results of in-depth research seeking to answer the question: Do multifunctional information devices, not dedicated to the profile of professional activities, hinder the employee's work? If not, what are the consequences for job humanization?
**Research methods:** The objective of the study was achieved through the use of structured interview methodology. Subsequently, in-depth research was conducted.
**Main findings:** The results obtained indicate a relationship between the usability of information technology devices and the frequency of their use in the workplace. The outcomes of relational interviews highlight the significant importance of sophisticated, multifunctional information tools that enhance employee engagement and their interest in implementing forms of job humanization, such as job enrichment and enlargement, autonomous groups, and flexible work methods. The main conclusion drawn from the research is that high usability quality of information technology devices forms the basis for the organizational improvement process. This occurs bottom-up, through the personal engagement of employees and their openness to multifunctional, intuitive information tools. For organizations, these are favorable conditions for implementing various forms of organizational humanization. However, a question arises about the limits of this phenomenon due to the limited psychophysical capabilities of humans. This topic will be further developed in the subsequent planned research.

## Introduction

The dynamic development of modern IT is of fundamental importance for the sustainable development of enterprises. They enable the integration of various company resources and, above all, create an environment for the increase in the importance of human resources. In this process, IT occupy a special place due to the fact that they activate the employee through various forms. Charismatic managers use these technical resources to improve work processes based on the skills and knowledge of employees. However, this requires a methodical, human-centric approach to the process of implementing IT devices due to the specific nature of human resources related to limited psychophysical capabilities of a human being. In this article, the authors present research that captures the above aspect in terms of the systemic assessment of the usable quality of interaction processes with the simultaneous aspect of ergonomic diagnosis of the IT devices used.

The aim of this article is to present the findings of a study on the impact of usability on the development of the phenomenon of job humanization among posi-

tional employees involved in the manufacturing process. Additionally, it discusses the results of in-depth research seeking to answer the question: Do multifunctional information devices, not dedicated to the profile of professional activities, hinder the employee's work? If not, what are the consequences for job humanization?

Researchers have been analyzing and implementing job humanization factors for many decades. This is a complex process but can contribute significantly to an increase in employee satisfaction and to the improvement of organizational efficiency. Referring to extensive research presented in the publication on humanizing work in the digital age (Guest, 2022), the authors emphasize the importance of the interaction between social and technical systems, which researchers have been writing about since the 1930s. Pioneers in applying workplace interventions to ensure a balance between technical and social aspects include Eric Trist and David Guest, who developed empirical evidence indicating an increase in company productivity and employee well-being (Trist, 1981; Guest, 2022).

The approach that places humans at the center of attention currently acts as a preventive measure against a technocratic future, as discussed by engaged employees from the realms of science and social policy (Cotta & Breque, 2021; Kiss, 2022). This also pertains to new digital technologies (Bednar & Welch, 2020; Dhondt et al., 2021).

The authors, through literature studies, have identified a research gap in the area of interdisciplinary implementation of the concept of sustainable organizational development. They see the need to identify factors for the development of job humanization through the flexible improvement of IT devices. They have developed a research model presented in Figure 1. The system: operator-information technologies-organizational context, opens wide possibilities for improving the working conditions of the individual employee and positive effects for the employer.

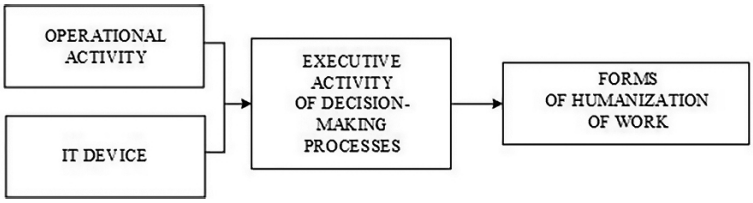



**Figure 1.** Research model

Source: Authors' own study.

To identify significant relationships within the system of operator-information technologies-organizational context, the following research questions were formulated:

RQ1: Does the higher usability of available IT devices influence the individual differentiation of work tools among positional employees?

RQ2: Do IT devices help to avoid errors in work?

RQ3: Does the multifunctionality of IT devices hinder work?

## Literature review

### IT in the transmission and processing of information

Systems transferring information play an important role in modern business organizations. Examples of such solutions include *inter alia*: office software, information boards, engineering software, applications dedicated to occupational safety management. The rapid development of information technology results in a dynamic increase in the scope of functions and an increase in technological parameters. This may not be directly translated into the high quality of these devices and the feeling of human satisfaction from working with them. Well-designed IT should enable shortening the time until completion of a task, reduce the number of errors, and also cause a feeling of higher satisfaction in order to motivate to action.

IT adequate to the method of work of a specific employee should be characterized by high usability, which is defined in the international standard ISO 9241-11 as the resultant of three components (Sikorski, 2010, p. 8): 1) effectiveness; 2) efficiency; 3) satisfaction.

When speaking about the usefulness of IT devices whose task is to provide information to employees, the reference is made to the way of carrying out the operational tasks. It should be emphasized that it is inextricably linked to ergonomic requirements. In this approach to the problem, the following measures can be adopted as a measure of the usable quality of IT devices used by an employee in the work process: 1) speed of the executed task; 2) success rate; 3) the level of subjective satisfaction.

The starting point in assessing the usability of IT used in the organization's business activities is to describe and understand system relationships in the context of the use of a given device. The authors understand business activity in a similar way to what Bitkowska and Kolterman provide in their work (as a multi-faceted approach to business process management, which is characterized by the use of knowledge, tools, techniques and system concepts to improve the effects of process control (Bitkowska & Kolterman, 2021, p. 243). When referring to the ergonomic approach to designing the working conditions, the general model of man-work-environment should be adopted as appropriate for this purpose. Modelling the relationships that occur between the elements of the work system allows you to diagnose the main sources of inadequate usable properties of IT.

The man-work-environment model presents a systemic approach to the relationships that occur when the user performs a purposeful task in a given situational context with means of an IT device. This requires the simultaneous adaptation of the device functions to the task, to human skills, to the ergonomic characteristics of the environment and the operational characteristics of the given system. Matching the functions of the device to the requirements of this task is associated with supporting the decision-making processes. Adjusting the functions of the device to the requirements of this task and human skills simultaneously extends the system requirements with the

competence capabilities of the user. The system composed of the discussed elements: man, work, environment is characterized by a new, systemic property that differs from the properties of its individual elements. The properties of this system are affected by the relationships that are mapped in the interactions between these elements (Sławińska, 2019, pp. 73–77).

When considering the usability aspect of various forms of information transfer, factors affecting the processes of information processing in humans should be taken into account. In the process of receiving information, the level of signal visibility, image recognition and its interpretation are essential. The so-called human information (Wieczorek, 2005, p. 113) throughput becomes an important factor, i.e. his ability to react to various types of stimuli, as well as conditions of reduced reactivity.

Various forms of information transfer, such as image, sound, graphics, animation, video, stimulate with a set of stimuli, thanks to which the effect of increasing the threshold of sensitivity is obtained in relation to the stimulus that is regularly repeated or acts continuously for a period of time. IT provides special solutions in this area, supporting people in reducing the number of their errors and facilitating the recognition of images and interpreting the noticed information. They noticeably positively affect the effectiveness of executive activities because they create the so-called the image of the goal of action, which strengthens the premises for a creative strategy (Dyduch, 2013, p. 180), and will refer to cognitive processes.

## IT technologies of Industry 4.0 in terms of ergonomics

Industry 4.0 (I4.0) is a concept of managing and organizing production processes, which has been developed for a decade on the basis of many paradigms, the main goals of which are (Frank et al., 2019): 1) ensuring vertical integration; 2) creating a virtual environment of the organization (for simulation, improvement and training purposes); 3) full automation and robotization of the production process; 4) traceability consisting in tracking and controlling each product in real time and monitoring the status of all elements and resources of the organization (including human resources); 5) flexibility of production chains, oriented on the possibility of manufacturing any product from the organization's assortment on any available technological line; 6) power management aimed at optimizing the costs incurred.

As a result of the implementation of the main goals, the 4.0 Industry has capabilities of qualitative improvements on the operational level, as it is based on proven solutions arising from the Industry 3.0 and implements many new (innovative or inventive) solutions. In this context, the I4.0 solutions have the capabilities of ergonomic interventions (EI) (as long as their selection increases the quality of human-machine-environment interaction) (Wróbel et al., 2020).

Interventions in terms of ergonomics in I4.0 are nothing more than a response to the paradigms of the I4.0 concept (paradigms present, among others: Panetto et al., 2019;

Pacholski & Kałkowska, 2019; Tan et al., 2019), and their implementation enables, e.g. releasing the creative potential of employees, improving the ergonomics of CMO interactions through the selection of PT elements and their characteristics, building competitive advantages, and professional activation of people having resource deficits.

It can be noted that the vast majority of paradigms is directly related to work ergonomics in Industry 4.0. In addition, most of the paradigms concern the issues of obtaining and processing information and decision-making. This leads to a specific focus on the decision loop in I4.0 and the role of a human being as its integral part. Industry 4.0 manufacturing paradigm, apart from the technological revolution requires also a shift from the traditional education to an advanced set of methods for developing skills and building digital competences, summarized in the term "Education 4.0" (Mourtzis, 2018). By distributing once centralized decision-making through an ecosystem of smart factory objects, enterprises will be able to increase their productivity, responsiveness and quality levels. However, for continued effective management, humans must adapt to production systems whose behavior is defined by the interactions that take place between these smart objects and the overall automation layers and automatic control functions. These interactions can occur in different ways across many levels of abstraction and complexity, and across many timescales. As a result, it is extremely hard for humans to preserve reliable mental models and this raises the risk of the out-of-the-loop condition (Carpanzano et al., 2018). For this purpose created a human-centered automation framework for improved workers' well-being, safety and psychological health. Particularly, the dynamic real time interactions among closed loop control functions and human workers are addressed so as to properly include humans in the feedback (Carpanzano et al., 2018).

Operator 4.0 is a relatively new term. Documented the evolution of operators' tasks as follows (Gazzaneo et al., 2020):

1. The *Operator 1.0* generation is defined as humans conducting "manual and dexterous work with some support from mechanical tools and manually operated machine tools",
2. The *Operator 2.0* generation represents a human entity who performs "assisted work" with the support of computer tools, ranking from CAx tools to NC operating systems (e.g. CNC machine tools), as well as enterprise information systems,
3. The *Operator 3.0* generation embodies a human entity involved in "cooperative work" with robots and other machines and computer tools, also known as human-robot collaboration,
4. The *Operator 4.0* generation represents the "operator of the future", a smart and skilled operator who performs "work aided" by machines if and as needed.

Efficiency of product development in accordance with the CE strategy and paradigms of I4.0 requires efficient and effective information management at all its stages. Efficient and effective management of the production system also depends on quick decision-making at all stages of production and various levels of management. Different levels of enterprise management need different types of information (Burduk, 2013).

Important skill for the future engineers is to be able to distinguish the information related to the current task that can actually give value and support decision making. And based on this information, the selection of the appropriate software systems that will provide integration capabilities and process the data captured, towards improving the production processes (Mourtzis, 2018).

Such a big innovation as Industry 4.0 needs also big changes in the workplace organization and in the workforce job satisfaction and organizational commitment (Nardo et al., 2020). It is interesting to note that the activities deemed difficult to evolve in the cyber level are the very ones that humans per form naturally, and those, that are inherent in the cyber world, are the ones needing the most attention if we connect the human into the new "Internet-of-People-and-Things". Unlike CPS, CHS has the ability to feedback information at each level, as human workers have an inherent intelligence that can be naturally leveraged for self-adaptive, corrective, and preventative actions (Nardo et al., 2020).

The level of implementation of the Industry 4.0 concept is dependent of the companies' size, as suggested by Kagermann and Wahlster (2022) and Schuh et al. (2020). This is aligned with the general innovation literature, which affirms that large companies are more prone to invest in process and product innovation, since it requires high investments in technological infrastructure, something not viable for small companies. Moreover, these findings showed that advanced adopters are leading all the technologies and not some specific, which may indicate that the growing maturity in Industry 4.0 technologies implies in aggregating technological solutions as a "Lego" instead of substituting one to another. This is represented in framework (Figure 2) as the progressive adding of technologies in the growing maturity of Industry 4.0 (Carpanzano et al., 2018).

The degree of implementation of the 4.0 concept is directly related to the implemented IT, because IT devices are the front-end of IT systems.

An exemplary implementation of advanced IT systems in I4.0 is the HMI application for process control in the mineral (cement) industry. The upper part of Figure 3 shows a standard supervision control screen with tags and alarm monitoring. The application for the process engineer (control system operator) is designed in the standard software according to HMI design principles (Zolotová et al., 2020). The application contains symbols and objects representing real-time operation. The bottom part depicts the same application, albeit redesigned by following New principles in the UI (User Interface) and UX (User Experience) based on the standards like "flat information-based infrastructure for dynamically composable services and applications". When implementing HMI, emphasis should be made on the following recommendations for ergonomically designed HMI application (Figure 3) (Zolotová et al., 2020):

– to help the operator to focus on information and not on the graphical details,

– to select the right level of information to facilitate the orientation in a system while still explaining everything accurately,

– to enable easy understanding of the data by introducing a good logical structure,
– to simplify symbols and objects, their colors and sounds for clear understanding.

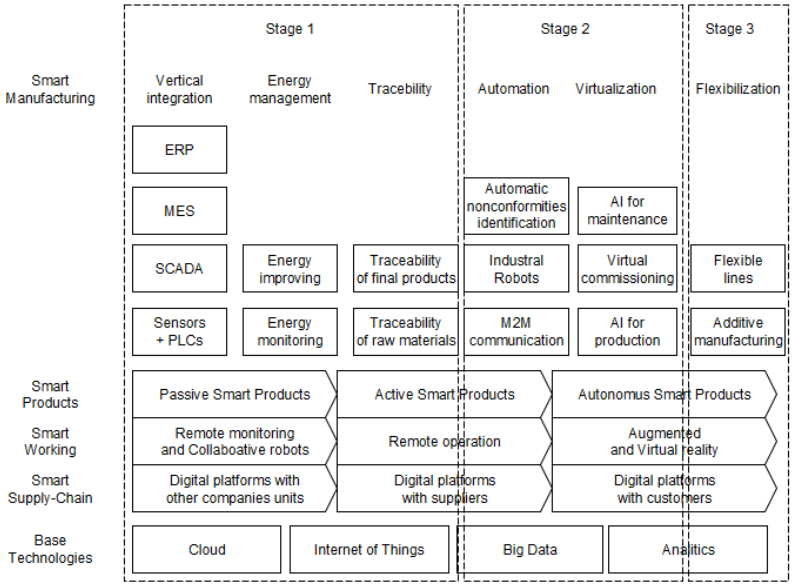



**Figure 2.** Framework summarizing the findings of the adoption patterns of Industry 4.0

Source: Based on (Frank et al., 2019).

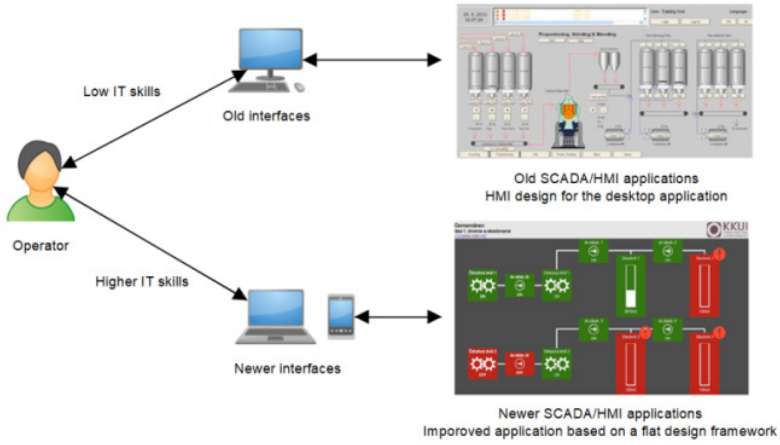



**Figure 3.** An example of an improved application based on a flat design framework: a) top drawing – application before configuration; b) bottom drawing – application after configuration

Source: Based on (Zolotová et al., 2020).

The Flat design requires higher IT skills from operators because an application can run on the smartphones or tablet devices. Therefore, they need to have additional (or higher) skills to also work with those mobile devices (Zolotová et al., 2020).

**Research methods**

Evaluation of the operational quality of IT devices requires a comprehensive approach to technical and organizational conditions as well as human and social factors. The operator and the technical device are treated as one subsystem that is focused on achieving a business goal. The elements of this subsystem are the properties of the material elements of the material arrangement (Tarnowski, 2004, p. 16), such as technical data, indicators, operating standards and their observance, for example. The properties that characterize the operator are e.g.: sensory abilities, motor skills, stress tolerance, level of training, motivation. The properties that characterize the organization of work include, among others: standardization of loads, parameters of the material working environment, parameters of the technological route, etc. (Sławińska, 2012, pp. 38–41). In view of the above, when planning to evaluate the usability of IT devices, three main steps should be implemented: 1) describe the context of using the device; 2) define the employee's and organizational requirements; 3) evaluate the device according to the developed criteria.

In order to evaluate the usability of IT devices used by an employee, the authors of the article adopted the following research assumptions:

– the context of use refers to the location of the workplace in terms of the process, analogous to the one adopted in the Material Requirements Planning (MRP) system, thanks to which information on entities participating in a given process will be available,

– the employee's and organizational requirements are included in the characteristics of professional activities that result from the scope of the working method, which is understood as a professional activity plus the means of work applicable in its performance,

– the evaluation of the IT device is carried out using a questionnaire sheet that contains criteria developed on the basis of the ISO 9241-11 standard guidelines developed in a scientific publication by Hankiewicz (2013).

The research process was aimed at determining the importance of the usable quality of IT on the functioning of employees in a modern organization (Figure 4).

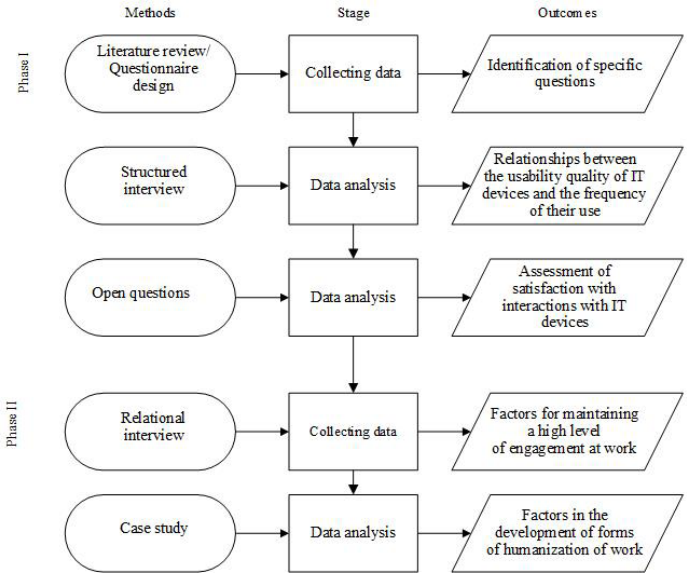



**Figure 4.** Research process diagram

Source: Authors' own study.

## Results

### Presentation and discussion of research results

The authors concluded that the most effective research method is an interview using questionnaires. The chosen method made it possible to carry out the research in a short time, reach all employees and maintain anonymity. The research was conducted using a Google electronic survey. The research tool was created by the authors taking into account the assumptions given in the chapter: **Evaluation of the usability of IT devices in business**.

The survey consists of questions identifying: 1) the context of IT use; 2) characteristics of professional activities; 3) features that relate to the usability characteristics of the information. Questionnaire consisted of the following questions:

1. What IT device is the source of information transfer during work?
2. How much time do you spend working with this IT device?
3. How quickly can you get the information you need to get the job done with this device?
4. Does an IT device help you not to make mistakes at work?
5. Does the IT device provide you with the right information to perform professional activities in an interesting way?
6. What tasks dominate your work?

The research was carried out in the production department for the following technological areas: winders, calenders, rolling mills, joining machines and others that occur in tire production. The research sample included 59 employees (operators) who were selected for the research sample due to the nature of the operator's work. The operators' tasks include calibrating machines, ongoing control of production parameters, providing production materials, feeding production materials to the machine. At work, operators use control panels, which consist of a screen and controls. In addition, monitors with production plans are available at the workstations. Electric assist trucks, telephones, computers, scanners and manipulators are used for work. In order to analyze the obtained results, the Google Form software was used, enabling continuous access to the respondents' answers. Test results were automatically visualized and exported to an Excel spreadsheet. The functions available in Microsoft Excel were used to create the charts. The research was conducted with respect for the respondents' privacy.

The obtained data indicate numerous uses of various IT devices in the performance of professional tasks (Figure 5, left). It is interesting that most of these devices are multifunctional means of work (Figure 5, right; Figure 6, left, right). Laptop is used in 39% of work processes, in the workplace it is used all the time or almost all the time, it received very high interaction usability ratings. The PC is used in 36% of work processes, in the workplace it is used almost all the time or more than 50% of the working time, it received a very high rating of interaction usability. A smartphone that is used in a variety of ways (Figure 5, right) in 29% of work processes received a very high evaluation of interaction usability. Other devices that have been used to a lesser extent are as follows:

1) operator's panel – in 10 professional executive activities, in 1 engineering, in 1 analytical, 1) used all the time or almost all the time, 2) very high interaction usability ratings,

2) tablet – in 4 professional executive activities, in 1 managerial, in 1 organizational, 1) used almost all the time or more than 50% of working time, 2) very high interaction usability ratings,

3) TV – in 6 executive professional activities, 1) used less than 50% of working time, 2) very high interaction usability ratings,

4) telephone on the machine – in 2 professional executive activities, 1) used less than 50% of working time, 2) average usability rating of the interaction,

5) IT panel – in 1 executive professional activity, 1) used more than 50% of working time, 2) high interaction usability ratings.

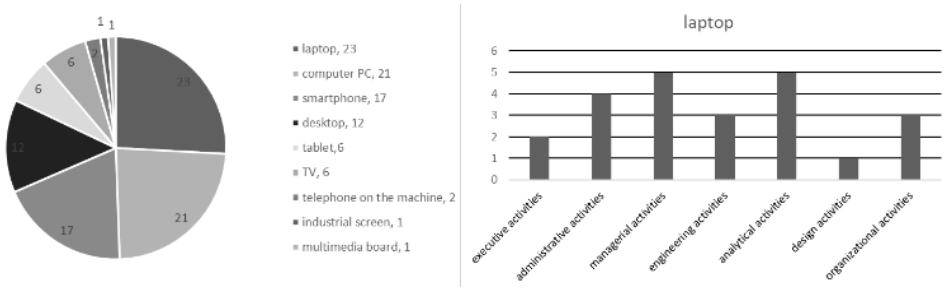



**Figure 5.** Left: The number of work processes in which a given information device is used; Right: The nature and number of professional activities in which the laptop is used in the work process

Source: Authors' own study.

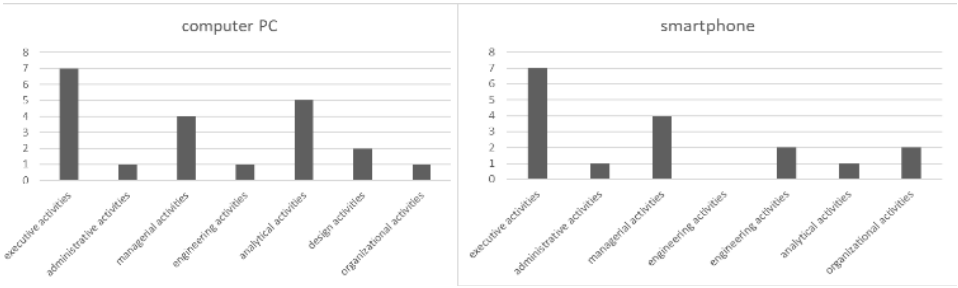



**Figure 6.** Left: The nature and number of professional activities in which a PC is used in the work process; Right: The nature and number of professional activities in which the smartphone is used in the work process

Source: Authors' own study.

It is worth noting that the selection of the device for work is mostly decided by the employee with his direct supervisor on the basis of arrangements. A manager in contemporary organizations, as Kiełtyka (2016, p. 9) writes, often in a sense of personal responsibility, shows prognostic abilities by making decisions ahead of current practices.

## In-depth research

In the responses of the respondents, in the "other" item, comments on details related to the context of IT use were obtained. Respondents' answers concern the following factors:

– mobility of the device used,
– innovativeness of the available functions of a specific device,
– news of the application used as a messenger.

Analyzing the results of the research and guided by the opinion of the respondents, the authors undertook the next stage of the research process towards identifying the following issues: How do IT affect the functioning of an employee in the context of his professional duties?

For this purpose, an individual in-depth interview was selected as the most effective way to identify the phenomenon of interest. The semi-unstructured form of the interview was adopted as the most appropriate to obtain a large variety of answers, the possibility of immediate reaction to the information heard, observing the task context and minimizing the impact of other participants of the study on the respondent.

The research was carried out in the administration department in a group of 3 employees. Their duties include tasks related to the nature of employment, which are detailed in the lines: "Organizational requirements" using the IT devices listed in the line: "Employees requirements in terms of IT use". The task context was shown by posting a photo of the workplace.

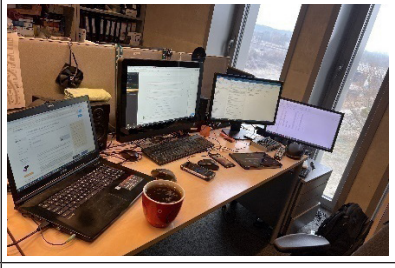
The employees interviewed performed the tasks without the participation of other employees. The respondents included the following employees: an independent accountant (Table 1), an IT system administrator (Table 2) and a sales engineer (Table 3). The surveyed employees participate interactively in business processes via various IT devices. The existing work subsystem can be characterized by a large scope of business process automation. Such a subsystem is characterized by digital transformation, suitable for Industry 4.0.

**Table 1.** A table documenting the information obtained for the work process of an independent accountant

| Data sheet in the research process for an in-depth interview | |
|---|---|
| Context of using | independent accountant |
| Employee requirements in terms of IT use | 1. Applications and Products in Data (SAP) system<br>2. Microsoft Excel spreadsheet software |
| Organizational requirements | professional activities:<br>1. verifies and enters invoices into books on an ongoing basis,<br>2. performs assignment and accounting of documents,<br>3. conducts accounting and calculation of provisions, accruals, etc.,<br>4. keeps records of accountants and reconciles them with general ledger accounts |
| Situational context |  <br>1. remote work<br>2. flexible working day due to different time zones of co-workers<br>3. IT devices: PC computer, laptop 1, laptop 2, smartphone, headphones, mouse, printer<br>4. high evaluation of the usable quality of the IT equipment used |
| New skills acquired in the process of self-education | 1. development of good practice standards in the form of case studies<br>2. preparing and conducting training courses for newly hired employees |

Source: Authors' own study.

**Table 2.** A table documenting the information obtained for the IT system administrator's work process

| Data sheet in the research process for an in-depth interview | |
|---|---|
| Context of using | IT systems administrator |
| Employee requirements in terms of IT use | – MS Office package with Teams and Outlook<br>– remote desktop management software – mRemoteNG<br>– VPN-connection application – FortiClient<br>– application for the management of applications with vPro systems – Mesh Commander<br>– enterprise resource planning management system (ERP) – Enova<br>– application management software – Zammad (local server; operated via www)<br>– presentation management software Toucan Nest and HiLight<br>– application for generating presentations BrightSign – BrightAuthor<br>– messenger Discord |
| Organizational requirements | professional activities:<br>– identify and solve problems related to the IT system<br>– installs the software<br>– monitors the IT system<br>– trains employees in the functioning and operation of the system and installed software<br>– coordinates the work of less experienced employees<br>– conducts constant supervision over the functioning of systems supporting company management<br>– participates in the planning, implementation and evaluation of system implementations and development<br>– solves reported problems<br>– connects servers to the electrical and network infrastructure<br>– performs server maintenance<br>– is responsible for maintaining the network infrastructure,<br>– implements dedicated solutions,<br>– is responsible for implementing security systems<br>– maintains current documentation of implemented solutions<br>– draws up procedures for actions on systems<br>– follows trends and technological innovations to improve the environment |
| Situational context |  – stationary and remote work<br>– flexible working day due to various problem situations<br>– IT devices: PC computer 1, PC computer 2, laptop 1, tablet, smartphone, headphones, mice, printer<br>– high evaluation of the usable quality of the IT equipment used |
| New skills acquired in the process of self-education | – supervises the efficient circulation of documents, assists in the preparation of reports for the management staff<br>– preparation of the balance sheet and preparation of profit and loss accounts at the end of the month<br>– creates, publishes and manages presentations<br>– creates and publishes your own marketing content<br>– participation in the preparation of financial statements |

Source: Authors' own study.

In the research, the respondents' task was to assess the importance of the devices used and their functionality for the personal development of knowledge and skills during the last year of work.

**Table 3.** A table documenting the information obtained for the sales engineer's work process

| Data sheet in the research process for an in-depth interview | | |
|---|---|---|
| Context of using | sales engineer | |
| Employee requirements in terms of IT use | – Microsoft Teams<br>– Microsoft Outlook<br>– Microsoft Excel<br>– Safari browser<br>– Google Maps | |
| Organizational requirements | professional activities:<br>– provides professional assistance in choosing the right products or solutions<br>– provides information on the technical parameters of the offer<br>– modifies and adapts products to customer needs<br>– conducting market research in terms of finding new customers<br>– maintains contacts with existing customers<br>– actively participates in the process of negotiating the terms of commercial contracts<br>– prepares valuations and cost calculations<br>– fulfilling customer orders<br>– deals with information about irregularities coming to the company<br>– participates and conducts technical training<br>– participates in fairs, exhibitions and industry shows<br>– establishes new business contacts<br>– negotiates terms of sale<br>– supervises the implementation of concluded contracts<br>– manages customer cards | |
| Situational context |  | – remote work<br>– flexible working day due to the nature of the work<br>– IT devices: laptop, tablet, smartphone, headphones, speakerphone, smartwatch<br>– high evaluation of the usable quality of the IT equipment used |
| New skills acquired in the process of self-education | – participates in the promotion of the company,<br>– carries out periodic analyses of sales effectiveness,<br>– prepares turnover statements in the applicable settlement periods | |

Source: Authors' own study.

The functions available in the Microsoft Office program were used to create the forms of presenting the research results. The research was conducted with respect for the respondents' privacy.

## Conclusions

The conclusion was that high-utility devices noticeably increase employees' creative capabilities. In addition, IT devices support flexible management of information flow, which improves the logic of communication processes. IT influences

the working conditions, which are characterized by the synthesis of information in the communication system, which affects team building and creates conditions for wide participation in various tasks. The effect of the above is to stimulate continuous development and self-education, which is indicated by the information contained in Tables 1, 2 and 3 in the lines: "New skills acquired in the process of self-education". During the last year of work, the independent accountant undertook further tasks, which include: developing good practice standards in the form of case studies, preparing and conducting training for new employees. The IT systems administrator additionally: supervises the efficient circulation of documents, helps in the preparation of reports for the management, preparation of the balance sheet and profit and loss account at the end of the month, creates, publishes and manages presentations, participates in the preparation of financial statements. Sales Engineer: participates in the promotion of the company, conducts periodic analyzes of sales effectiveness and prepares turnover statements in the applicable settlement periods.

The assessments of employees are similar and indicate a large impact of IT devices on the dynamic development of knowledge and skills. In the summary, it was indicated that this is important for expanding the scope of professional activity and improving the efficiency of work and its attractiveness. The opinions of these people were unanimous as to the great satisfaction coming from the richer and richer IT work environment.

Modern technical devices that transmit information in the form of text, sound, graphics, animation or video are characterized by high and very high usable quality, as indicated by the presented research results. In addition, they are characterized by continuous development of functionality, which means that employees experience stimuli that stimulate their imagination, and thus create conditions for the development of additional skills. This presents an incentive to acquire new competences. As a result of the above, the human capital and the potential of the organization, as well as the quality of business processes are growing successively along with the development of IT.

The noticeable business benefits of the use of high-quality IT include: improving the management of decision-making processes, enabling the simultaneous delivery of information to the management of the organization at various levels, increasing the efficiency of using the resources, and improving customer service. IT in sustainable development create added value for building a competitive advantage based on knowledge (Ulewicz & Blaskova, 2018, pp. 363–374).

In the study, the usefulness of information quality criteria for evaluating information technology devices was verified. The obtained results allowed for responses to the posed research questions. Within this research, the significance of the properties of a systematic approach in the model of human-information technology device-task context interaction was highlighted. The research findings confirm the phenomenon of the beneficial impact of information technology on streamlining work and motivating employees towards self-education. IT clearly changes the face of contemporary enterprises and directs them towards digital transformation, which sets new directions

for research. A question is raised regarding the factors that limit the expansion of information technology devices due to the psychophysical capabilities of the employee.

Based on the results of the study, it was concluded that high usable quality of information technology is one of the elements of humanization of work. Because the process of implementing information technology equipment is often spontaneous and initiated by the position employee. This introduces the risk of excessive diversity, too wide enrichment of the work method, lack of harmony of tasks in the team or their duplication, non-directional development of the employee's competence, which is not based on the goals of the organization. In the context, there is another aspect of ergonomics of the unplanned prior work process and the problem of the task load of the employee, or more precisely, the limited psychophysical capabilities of a person. This topic will be further developed in subsequent planned studies.

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