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DIGITAL TRANSFORMATION OF COMMUNICATION CHANNELS FOR INTERACTION WITH STAKEHOLDERS IN THE INDUSTRY 4.0 ENVIRONMENT

ABSTRACT

The article examines communication channels for interaction with stakeholders, highlights trends in their digitalization, and explores effective methods of managing communication channels considering the peculiarities of conducting business during Industry 4.0. It provides an overview of technology transformation throughout different stages of human development and its impact on the economy and business. The concept of Industry 4.0 is discussed, along with a characterization of the changes brought by the Fourth Industrial Revolution. The concept of stakeholders is explained, their types are identified, and a general characterization is provided. The stages of interaction with stakeholders, including engagement, persuasion, service, and partnership, are described, and optimal channels with elements of digitalization for content dissemination at each stage of interaction are identified. The study explores key trends in the digitalization of marketing communication channels with stakeholders.

Keywords: communication policy, stakeholders, digital transformation, Industry 4.0, digitalization, content, communication channels

JEL Classification: M310, O310

INTRODUCTION

In the digital environment of the Fourth Industrial Revolution, companies are facing problems building communicational links with stakeholders. Traditional methods of communication do not meet the requirements of the modern technical society. Extensive usage of digital technologies significantly influenced the expectations and behaviour of the stakeholders. As a consequence, organizations are forced to modify their communicational channels for effective engagement.

Problems with communication are caused by the usage of disjointed and incoherent communication channels, which requires combining traditional channels with various digital modifications. Such combinations often lead to inconsistency and incompleteness in interaction with interested parties and decrease the level of involvement.

Rapidly evolving technological progress makes it difficult for businesses to keep pace with it. In order to stay competitive organizations should constantly implement new technologies and tools, but they rarely know how to do it correctly. On the other side, ignoring new trends in marketing communication can create a negative image of the company. Which ultimately results in a loss of trust and loyalty of stakeholders.

Digital transformation of communicational channels becomes crucial. Integration and optimization of digital platforms make it possible to create a holistic communicational system with the ability to maintain seamless interaction with stakeholders. It allows for adapting messages, creating personalized experiences and delivering value to the stakeholders at each point of contact, building more profound relationships and increasing the level of satisfaction of the stakeholders.

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LITERATURE REVIEW

Digitalization is rapidly expanding in the modern world of business interactions and directly impacting all processes in business structures and relationships with other market participants. Today, digital technologies are widely used in marketing for developing communication strategies. This has led to the development of digital elements, which have become the subject of scientific discussions and practical developments by foreign and domestic experts. Thus, the issues of modernizing the communication infrastructure of enterprises and transforming interactions with other market participants considering the challenges of Industry 4.0 are examined in the works of various Ukrainian researchers, such as H. Chmil, N. Savitska, K. Olinichenko, N. Hrazhevska, and A. Chyhirynskyi. I. Strutynska, in her work, discusses that the overall level of automation and digitalization in Ukrainian businesses remains relatively low, and appropriate software is sharply used by companies in their interactions with consumers and suppliers (Strutynska, 2018). I. Ponomarenko emphasizes that digitalization influences the characteristics of the functioning of entrepreneurial entities, which have to implement innovative technologies in their activities, including modernizing marketing communications, to maintain competitiveness (Ponomarenko, 2021). Trends in the use of social networks are highlighted in the research by T. Petryshyna, O. Nemirovska, and O. Loshenyuk (Petryshyna et al., 2022). Researchers M. Rudenko, Ye. Kyrylenko, and M. Khutorna provide examples of platforms for implementing digitalized communications in their article (Rudenko et al., 2022). The transformation of marketing tools in the context of economic digitalization is mentioned in the works of V. Atiushkin, A. Ivaniuk, S. Djura, and I. Bubinets (Bubinets, 2022). I. Romaniuk explains the increasing transition to digital communication channels due to distinctive characteristics of interactions between generations X, Y, and Z with the surrounding world, as well as the impact of the COVID-19 pandemic on accelerating digitalization (Romaniuk, 2022). Overall, studies on aspects of digitalization of marketing strategies of enterprises have been conducted by M. Corniani (Corniani, 2006), M. Bartosik-Purgat (Bartosik-Purgat, 2019), and C.K. Mishra (Mishra, 2020). The active development of digital technologies within the framework of Industry 4.0 provides the impetus for further research in this field.

AIMS AND OBJECTIVES

The aim of the work is to study the communication channels of interaction with stakeholders, highlight the trends of their digitalization, and search for effective methods of managing communication channels, taking into account the peculiarities of conducting business during Industry 4.0. The main tasks to achieve the set goal are:

- to provide a characterization of the transformation of technologies throughout different stages of human development and the specific impact on the economy and business;
- to delve into the definition of the concept of the Fourth Industrial Revolution and its inherent elements;
- to disclose the concept of stakeholders, identify their types, and provide a general description;
- to describe the stages of interaction with stakeholders;
- to select optimal channels with elements of digitalization for content dissemination at each stage of interaction;
- to investigate the main innovative trends in the digitalization of marketing communication channels with stakeholders.

METHODS

To achieve the defined goal and address the stated research tasks, the following methods were utilized: analysis, systematization, generalization, and scientific-metric analysis. These methods were employed to study and synthesize both domestic and international experiences related to the research topic.

RESULTS

The digital transformation of the economy and business is implemented gradually by governments of developed countries through the implementation of special programs. The latest of these concepts, Industry 4.0, entails the transformation and development of key technologies, including big data collection and analysis, production automation, business process robotics, artificial intelligence, and the development and application of elements of behavioural economics, both for predicting customer demand and desires and for actively shaping them. The changes based on the digitalization of technologies can be referred to as the Fourth Industrial Revolution. Let's consider the step-by-step transformation of technologies and societal development associated with them.

The First Industrial Revolution is characterized by the use of water and steam power for mechanizing production. It marked the transition from an agrarian economy to a mechanical economy.

The Second Industrial Revolution is defined by the invention and implementation of electricity in everyday life, which led to the development of industries and the emergence of factories. As a result, mass production of consumer goods became possible.

The Third Industrial Revolution is characterized by the application of information and electronic systems, gradually leading to the automation of production.

The Fourth Industrial Revolution envisions the development of a global network of production and the Internet. Artificial intelligence serves as the foundation, enabling production management systems to autonomously react, make decisions, and exchange information regarding production processes.

The core element of the Fourth Industrial Revolution is digitalization, which saturates the physical world with electronic and digital devices, means, and systems, establishing electronic communication exchange between them and effectively enabling the integrated interaction between the virtual and physical realms, creating a cyber-physical space. The main purpose of digitalization is to achieve the digital transformation of existing and create new sectors of the economy, as well as transform areas of life into more efficient and modern ones. Such progress is only possible when ideas, actions, initiatives, and programs related to digitalization are integrated into national, regional, and sectoral strategies and development programs. Digitalization is recognized as a mechanism for economic growth, as technology's ability to positively impact the efficiency, productivity, cost, and quality of economic, public, and personal activities (Order on the Approval of the Concept for the Development of the Digital Economy, 2018).

The concept of Industrial Development Industry 4.0, forming within the framework of the Fourth Industrial Revolution, primarily concerns the digitalization of industries, energy, infrastructure, transportation, logistics, and manufacturing processes in these sectors. It entails a technological evolution from embedded systems to cyber-physical systems (CPS). As for other sectors of the economy (healthcare, education, retail, banking, telecommunications, e-governance), they are not included in the concept of Industry 4.0. However, these sectors also have their own tendencies towards digitalization.

One of the most noticeable directions of digitalization for consumers is the transformation of communication channels. The communication between a company and its consumers is an area where changes and innovations are immediately noticeable to a significant portion of stakeholders.

A comprehensive description of the concept of stakeholders and stakeholder relationship management was provided by R. Freeman in the 1980s. According to him, it is important for a company to formulate a communication strategy that takes into account the characteristics of individual representatives or organizations that are somehow connected to the company: either they influence the company or the company influences them to achieve its goals (Freeman, 1984).

Stakeholders are individual persons or groups of individuals who have personal interests in the company's activities, which allows them to exert significant influence on crucial elements such as strategic decision-making and marketing efforts undertaken by organizations. To fully understand the role of stakeholders in a company, it is advisable to conduct a comprehensive stakeholder analysis that examines the complex relationships that exist between them and the enterprise.

Such an analysis helps grasp the diversity and interdependence among stakeholders and indicates the importance of these relationships in ensuring sustainable organizational growth.

For better visualization, the types of stakeholders are presented in the form of a diagram (Figure 1).

Primary stakeholders such as shareholders have significant financial interests and decision-making authority in the companies they invest in, making them an integral part of long-term strategic planning and resource allocation processes. Shareholders have a substantial impact on a company's financial performance, shaping its values, culture, and reputation. These investors expect companies to operate transparently and ethically, and therefore, going beyond financial profits to address social and environmental concerns becomes increasingly important.

Customers form the foundation of any successful organization as they utilize or purchase products or services provided by companies. Understanding their unique needs and preferences is crucial in creating attractive value propositions and implementing customer-oriented marketing initiatives. Developing long-term relationships with customers by offering personalized experiences, exceptional customer support, and attractive loyalty programs not only enhances customer loyalty but also attracts valuable recommendations from satisfied customers.

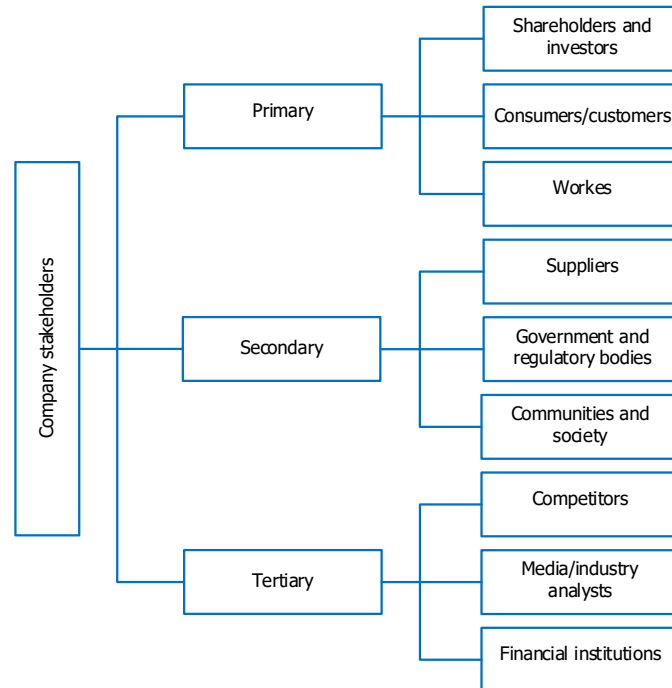


Figure 1. Types of company stakeholders. (Source: developed by the authors based on Friedman & Miles, 2006)

The employee group is also a vital stakeholder in any organization as they serve as its backbone. Their engagement, satisfaction, and commitment significantly impact productivity and service quality. By tailoring marketing strategies to their needs, goals, and well-being, an organization can create a positive work environment and contribute to its success. Investing in employee training and development programs, providing competitive compensation and benefits, as well as recognizing and rewarding high performance can boost employee morale and retention.

Among secondary stakeholders, suppliers play a crucial role in the value creation chain of a company by ensuring a smooth flow of resources and raw materials. Implementing effective marketing strategies to establish strong supplier relationships can lead to increased reliability, cost efficiency, and innovation in the supply chain. Collaborating with suppliers within sustainable development initiatives and responsible sourcing practices can also enhance the company's reputation and reduce its environmental impact.

Government institutions and regulatory bodies play a significant role in shaping business operations. Compliance with laws, regulations, and standards is of paramount importance to maintain legality and gain public trust. Interacting with these stakeholders through transparent communication and responsible marketing practices can strengthen the company's reputation and minimize legal risks. Furthermore, supporting policies and initiatives that align with the company's values and mission can amplify its social and political influence.

Citizens and society as a whole are interested in the activities of the company, especially when it comes to social and environmental impact. Participation in corporate social responsibility initiatives and sustainable practices demonstrates a commitment to social well-being, promotes a positive perception of the brand, and lays the foundation for long-term growth. Collaborating with local communities through charitable projects, supporting social initiatives, and reducing the company's carbon footprint are examples of how companies can positively impact society and cultivate a friendly image.

Among the tertiary stakeholders, it is worth highlighting competitors who exert pressure on the market and influence the company's strategic decision-making. Monitoring and analyzing competitors' behaviour allow businesses to differentiate themselves, identify market opportunities, and develop effective marketing campaigns to gain a competitive advantage. Collaboration with competitors on industry-wide initiatives and standards can also enhance the company's reputation and promote a culture of innovation and collaboration.

Media outlets and industry analysts have the ability to shape public opinion and influence market sentiments. Building positive relationships with these stakeholders through effective public relations and strategic communications can increase brand recognition, trust, and overall market positioning. Collaboration with the media and industry analysts can make a company authoritative and elevate its status as a thought leader.

Financial institutions, including banks and investors, influence a company's access to capital and financial stability. Establishing trust and maintaining good relationships with financial stakeholders are crucial for securing financing, optimizing capital structure, and implementing growth strategies. Building long-term relationships with financial institutions through transparent financial reporting, risk management, and proper corporate governance practices can enhance the company's financial reliability and reduce borrowing costs.

With the digitization of marketing communication channels, companies have the opportunity to establish effective connections with each type of stakeholder at every stage of interaction through relevant channels.

Let's consider the stages of stakeholder engagement. The engagement stage, which lays the foundation for all interactions, aims to attract stakeholders' attention to the company or specific projects or cases that the company is working on. The first step is stakeholder identification, which involves determining all individuals or groups that the project can impact. This is followed by stakeholder mapping, which helps understand the relationships between different stakeholders and identify key influencing factors. The next step is initial information sharing, involving communication with stakeholders to ensure they are aware of the company, its projects, goals, and potential impact.

Effective stakeholder engagement is crucial for the success of any business as it ensures that the interests of stakeholders are taken into account and that stakeholders have the opportunity to contribute or provide feedback. Such engagement also helps establish the foundation for ongoing collaboration and creates conditions for deepening cooperation throughout the company's project life cycle. Therefore, it is important to allocate sufficient time and resources to this stage to ensure the proper engagement of all stakeholders and consider their needs and interests. Ultimately, this leads to more successful company operations and stakeholder satisfaction.

During the stakeholder engagement stage, it is important to utilize marketing communication channels that can effectively engage stakeholders and interest them in participating in the company's activities and project implementation. Some effective channels that can be used at this stage are depicted in Figure 2 (Andrushkevych et al., 2020).

Mass email distribution and informational newsletters	▪ They will enable timely information and engagement of stakeholders through regular email updates and newsletters about the project or company news. ▪ This channel is particularly useful for maintaining relationships with stakeholders who are not involved in day-to-day activities.
Social networks	▪ A highly effective communication channel that can be used to engage stakeholders and inform them about the progress of the project and company events. ▪ By utilizing social media channels such as Facebook, Twitter, and LinkedIn to disseminate updates, photos, and videos, stakeholders can be kept informed and engaged in the project, while also providing them with opportunities for feedback and discussion.
Surveys and questionnaires in electronic format	▪ Optimizes the collection of valuable information from stakeholders, its storage, and processing, and facilitates the decision-making process. ▪ Regular use of this channel will give stakeholders the understanding that they are being listened to and valued.
Webinars and online forums	▪ They will provide an opportunity for stakeholders to participate in discussions and provide feedback from anywhere in the world.
Press releases and media work	▪ They will increase awareness about the company and its projects, allow reaching a broader audience, and inform them about everything happening in the company and its upcoming developments.

Figure 2. Marketing communication channels with stakeholders at the engagement stage. (Source: developed by the authors based on (Lyashenko & Motkalyuk, 2013), (Babko, 2021), (Petrishyna et al., 2022), (Protsyshyn, 2019))

At the persuasion stage, the goal is to convince stakeholders to support the company, a specific project, or a decision through effective communication and negotiation strategies that address their concerns, build trust, and demonstrate the

benefits or value of the proposed initiative. It is important to acknowledge and consider any thoughts and priorities that stakeholders may have in order to gain their support. One effective approach at this stage is presenting data, evidence, or arguments that confirm the advantages of the company and its projects and help stakeholders see the bigger picture. Potential risks or issues that may arise can also be discussed, and plans can be developed to address unforeseen situations or strategies to overcome them. Collaboration with stakeholders based on maximum transparency and openness of business processes is crucial to foster a sense of responsibility and accountability. Ultimately, the goal is to gain the support of stakeholders and overcome any resistance or opposition, ensuring the success of the project or company initiative while building trust and cooperation among stakeholders.

At the persuasion stage, it is important to utilize marketing communication channels that can specifically help build trust, address potential issues, and persuade stakeholders to support the proposed solution or action. Channels that can be used at this stage (Riabov & Shevkoplyas, 2020) include:

- thematic surveys and feedback collection through phone calls or targeted electronic chats with company representatives or fully automated text messaging systems – chatbots;
- webinars and live events;
- social media;
- email marketing - sending targeted emails with personalized messages and information, as the individualized approach is important at the persuasion stage;
- public relations - using PR connections to ensure media coverage, including electronic media, as promoting the proposed solution or action can help increase trust and awareness.

At the servicing stage, it is important to maintain regular communication with stakeholders and continue developing the relationships established in previous stages. Servicing involves not only informing stakeholders but also addressing their issues and ensuring the satisfaction of their needs that arise during ongoing and constant contact. Responding to the needs of stakeholders is crucial for maintaining positive relationships and managing expectations, which helps sustain stakeholder engagement and loyalty to the company and its projects. Additionally, exploring new ways to engage stakeholders, such as organizing events or other activities that facilitate ongoing dialogue and collaboration, may be necessary at this stage.

During the servicing stage, it is advisable to use the channels mentioned in the previous stages, but with some modifications to the type of content promoted through these channels. Social media allows for real-time information updates, enabling constant contact without time delays. Furthermore, advertising on social media can be made useful and can uncover new avenues for satisfying stakeholder needs.

Blogs and analytical materials are effective digitalized channels for stakeholder engagement. By regularly publishing posts about the company in blogs or analytical articles about projects or solutions, businesses can demonstrate their expertise and provide valuable information to interested parties. Additionally, blogs can help improve search engine optimization (SEO) and drive traffic to the company's website.

Mobile applications can be used as a communication channel to support stakeholder relationships. If a mobile app is specifically developed for the company and includes active projects, stakeholders can access real-time updates, participate in surveys and feedback, and even receive personalized notifications. Furthermore, mobile apps can provide valuable analytics and information about stakeholder engagement and loyalty.

The partnership represents a deeper level of engagement, where stakeholders actively participate as collaborators or co-creators. At this stage, emphasis is placed on shared decision-making, problem-solving, and planning. Stakeholders are viewed as partners, and their knowledge, experience, and perspectives are valued and integrated into project activities. The partnership can enhance project outcomes, foster innovation, and build long-term sustainable relationships with stakeholders.

During the partnership stage, it is important to maintain individual contact as stakeholders are deeply involved in the company's activities. In addition to the channels mentioned above, it is worthwhile to utilize regular face-to-face meetings, seminars, or conferences to facilitate direct communication and collaboration. Such meetings provide stakeholders with the opportunity to engage in open dialogue with the company, exchange ideas, and actively participate in decision-making processes.

To expand the scope of personal interaction, it is advisable to utilize online collaboration platforms, such as project management tools, shared planning applications, or specialized online forums, to facilitate continuous communication with

stakeholders. These platforms allow for document sharing, idea exchange, feedback provision, and collaborative work on project-related tasks within a virtual environment.

By systematizing the information presented above, it is advisable to use separate communication channels at each stage of stakeholder interaction (Figure 3). Understanding the stage at which the interaction currently stands will help select the appropriate communication channels for stakeholder engagement.

Engagement stage.

Objective: to attract stakeholders' attention to the company or specific projects or cases that the company is working on

- Mass emailing of newsletters and informational bulletins;
- Managing social media pages;
- Surveys and questionnaires in electronic format;
- Webinars and online forums;
- Press releases and media relations.

Stage of persuasion.

Objective: Build trust, address potential concerns, and persuade stakeholders to support the proposed solution or action.

- Thematic research and collecting feedback/suggestions;
- Webinars and live events;
- Social media;
- Email marketing;
- Public relations.

Servicing stage.

Objective: maintain regular communication with stakeholders and continue to develop the relationships established in previous stages.

- Organizing event activities;
- Real-time management of social media;
- Informative advertising that reveals new ways to meet stakeholder needs;
- Blogs and analytical materials;
- Mobile applications.

Partnership stage.

Objective: Maintain individual contacts as stakeholders are deeply involved in the company's activities at this stage.

- Regular face-to-face meetings;
- Seminars or conferences;
- Collaborative planning applications;
- Specialized online forums.

Figure 3. Communication channels depending on the stage of stakeholder interaction.

Rapid technological advancements enable the enhancement of marketing communications with stakeholders and the implementation of cutting-edge elements. In particular, RFID (Radio Frequency Identification) technology can be utilized in channels such as live events, themed meetings, conferences, or seminars.

RFID technology is a type of wireless communication that allows for the reading and tracking of data from electronic devices using electromagnetic waves. Comprising tags, readers, and an internal system, RFID enables the automatic collection of real-time data without direct visibility or manual scanning. RFID tags, ranging from small adhesive labels to robust encased devices, contain a microchip and an antenna that store and transmit information upon triggering by an RFID reader (Roberts, 2006).

RFID technology offers unique opportunities for businesses to enhance their marketing communications. For example, it can be used to track event attendance and engagement. By providing attendees with badges or tickets embedded with RFID tags, companies can gather data on event participation, session attendance, and booth visits. This data can help measure the success of marketing initiatives, assess customer engagement, and refine future event strategies.

For example, when organizing a themed exhibition, a company can utilize RFID technology. As stakeholders move through the exhibition, they will encounter RFID-enabled devices that offer social functionalities. By simply scanning their RFID device, stakeholders can subscribe to the company's pages on social media platforms such as Instagram or Facebook.

Additionally, they can easily download promotional materials such as brochures or product catalogues directly onto their devices (Pratik, 2022).

The increasing adoption of RFID technology in event organization and e-commerce, often with the use of Near Field Communication (NFC), has prompted numerous social media app developers to integrate RFID capabilities into their mobile applications. This integration enhances networking experiences at marketing events, allowing attendees to effortlessly interact with companies and stay connected through their official social media pages.

In other communication channels with stakeholders, such as their direct interaction with products or points of sale, RFID tags can be embedded in packaging or displays at retail locations, providing valuable data on product movement and consumer behaviour. Companies can track how often and where products are taken or interacted with, enabling them to optimize product placement and develop effective marketing strategies. This data can also be used to measure the impact of marketing campaigns or promotions.

However, RFID technology comes with certain challenges. One of them is the implementation cost, as RFID requires specialized hardware and software that can be expensive to acquire and maintain. Additionally, the use of RFID technology may raise concerns about privacy, as tracking personal data without consent can be contentious.

Another trend in the digitalization of marketing communication channels is augmented reality (AR). Augmented reality is a technology that enhances the real world by overlaying digital information onto it (Carmigniani & Furht, 2011). Using a camera and a screen, AR technology can project computer-generated images or animations onto the user's perception of the real world. This creates an interactive and immersive experience, allowing users to simultaneously see both the real and digital content. Augmented reality technology has many practical applications, such as enabling users to visualize products in their own space before making a purchase or providing real-time information in fields like healthcare and education. Augmented reality is a rapidly evolving field with limitless possibilities for innovation and creativity, already being utilized by renowned companies like IKEA in their interactions with primary stakeholders - consumers.

"IKEA Place is an augmented reality (AR) application developed by the Swedish furniture retailer IKEA. The app utilizes augmented reality technology to allow users to visualize IKEA furniture in their own space before making a purchase. Users can browse the IKEA product catalogue and select items to view in augmented reality mode. Using the camera on their smartphone or tablet, users can place virtual furniture in their own room and see how it will look and fit in real time. Users can move and rearrange the furniture to get an idea of how it will look from different angles and under different lighting conditions. IKEA Place aims to help customers make more informed furniture purchasing decisions and streamline the shopping process (IKEA, 2017).

Virtual reality elements can be used both in the company's mobile applications and during stakeholder events. Virtual tours are becoming an increasingly popular way for companies to showcase their manufacturing capabilities and operations to interested parties without the need for physical visits. By using virtual reality technology, such as virtual reality glasses, interested parties can immerse themselves in a realistic and interactive experience that simulates a real tour of production facilities (Marasco et al., 2018).

Virtual tours have many advantages for both companies and stakeholders. For companies, virtual tours can help save time and resources by eliminating the need for physical tours and travel expenses. They also allow companies to showcase their facilities and operations to a wider audience, including stakeholders who may not have been able to visit in person, such as shareholders and the media.

For stakeholders, virtual tours provide a convenient and engaging way to familiarize themselves with the company's facilities and activities without leaving home or the office. They also allow a behind-the-scenes look at the company and a deeper understanding of production processes.

Virtual tours can be tailored to the specific needs and interests of different stakeholder groups. For example, shareholders may be interested in seeing the production process and quality control measures, while the media may be more interested in the company's sustainability initiatives.

Overall, virtual tours are a powerful tool for companies to showcase their facilities and operations to stakeholders in a convenient and immersive way and are already being used by various companies internationally, such as the Louvre Museum offering virtual tours of its exhibitions (Online tours, n.d.).

Artificial intelligence (AI) has become the most prominent trend in marketing and marketing communications in recent years. AI refers to the ability of machines to learn and perform tasks that typically require human intelligence, such as understanding natural language and recognizing patterns in data (Vlačić et al., 2021). In marketing, AI is used to automate

and optimize many aspects of customer interaction, from personalized product recommendations to real-time chatbots that can respond to customer inquiries.

These tools can handle routine queries and provide customers with personalized recommendations, improving the overall customer experience and relieving pressure on human agents who can focus on more complex issues. For example, Bizbike, the largest electric bicycle provider in Belgium, faced a significant challenge as its customer base grew rapidly. With a high volume of daily customer inquiries, their customer service team was constantly responding to basic questions, which prevented them from efficiently addressing more complex customer issues (Potor, 2022).

Recognizing the need to optimize customer support processes and provide quick, satisfactory responses, Bizbike embarked on a search for an innovative solution. This search led them to implement an enhanced conversational AI chatbot from Chatlayer. AI-powered chatbots from Chatlayer use convenient templates that can be quickly deployed, taking just a few minutes to get started. However, companies can easily customize these templates according to their unique needs and preferences, providing greater flexibility and control over their chatbots.

Bizbike's decision to integrate Chatlayer's chatbot solution proved to be very successful. The company was able to take advantage of the benefits of streamlined automation, saving over 40 hours of time each month. Furthermore, the engaging conversations with the chatbot led to an improvement in the NPS (Net Promoter Score), which increased from 54 to 56. This result indicates that a significant percentage of Bizbike's customers, namely 62%, actively support the company's chatbot solution and services (Potor, 2022).

DISCUSSION

Analysis of information shows that digitization is necessary for any enterprise. The process of digitization should be well thought out and gradual, taking into account all the needs and opportunities of the business. This entails coordinating the stages of the digitization process, constant analysis, evaluation of results and prospects, prioritizing digitization, customer orientation, as well as careful assessment of threats and risks in the process.

During the conducted research, the characteristics of technology transformation throughout different stages of human development were provided, and the peculiarities of its impact on the economy and business were described. The article defines the concept of the fourth industrial revolution and its inherent elements. It elucidates the concept of stakeholders and describes the stages of interaction with them. Additionally, for each stage of interaction, the authors propose optimal channels with elements of digitization for content dissemination. The main contemporary trends in digitizing marketing communication channels with stakeholders were also investigated.

However, there are several unresolved aspects regarding the implementation of digitization in communication channels:

- difficulties in determining the exact outcome of implementation, researching possible "side effects" of enterprise digitization;
- identifying barriers to digitization for small and medium-sized businesses;
- developing a step-by-step transformation of the business model for a company implementing digitization of business processes;
- exploring risks and other opposing influences associated with each group of digital technologies;
- determining the factors influencing the impact of digital transformation on stakeholders.

In conclusion, it should be noted that the development of digital communication channels with stakeholders involves systematic work in identifying priority digital assets in the organization's information system, as well as overcoming organizational, managerial, and technological barriers.

CONCLUSIONS

Therefore, the digital transformation of communication channels in interaction with stakeholders in Industry 4.0 represents fundamental changes in the process of how companies engage with their stakeholders. This transformation is driven by technological advancements that fundamentally change the ways information is exchanged and relationships are formed.

Implementing digital communication channels leads to increased efficiency, transparency, and flexibility in interacting with each type of stakeholder: primary, secondary, and tertiary. Companies can adapt their communication strategies to better

meet stakeholders' expectations, resulting in increased satisfaction and loyalty at every stage of interaction, from engaging interested parties to partnering with them.

Furthermore, digital communication channels implemented at each stage of interaction facilitate seamless and instant communication between organizations and stakeholders, overcoming geographic boundaries and time zones. Companies can now engage with stakeholders through various platforms such as social media, mobile applications, and online communities, allowing them to provide feedback, seek information, and express concerns in a more convenient and effective manner. Through online platforms and collaborative tools, stakeholders can actively participate in the innovation process, share ideas, experiences, and feedback. Such an approach not only strengthens relationships with stakeholders but also contributes to the development of products and services that meet the needs and expectations of all interested parties.

Thanks to the rapid development of technology, new opportunities for digitizing communication channels continue to emerge, such as RFID technologies, artificial intelligence, and virtual reality. Companies should find ways to quickly and effectively implement these cutting-edge technologies and constantly work on improving their communication systems.

However, organizations need to consider the challenges and risks associated with the digital transformation of communication channels. These include issues of data confidentiality and security, information overload, and the cost of technology. Organizations should prioritize the implementation of reliable cybersecurity measures, ensure ethical data practices, and assess the feasibility of implementing innovative elements of digitization before their implementation.

ADDITIONAL INFORMATION

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ЦИФРОВА ТРАНСФОРМАЦІЯ КОМУНІКАЦІЙНИХ КАНАЛІВ ВЗАЄМОДІЇ ЗІ СТЕЙКХОЛДЕРАМИ В УМОВАХ ІНДУСТРІЇ 4.0

У статті досліджено комунікаційні канали взаємодії зі стейкхолдерами, висвітлено тенденції їх цифровізації та здійснено пошук ефективних методів управління комунікаційними каналами з урахуванням особливостей ведення бізнесу під час індустрії 4.0. Надано характеристику трансформації технологій протягом різних етапів розвитку людства та особливостей її впливу на економіку й бізнес. Розглянуто поняття індустрії 4.0 та надано характеристику змін Четвертої промислової революції. Розкрито поняття стейкхолдерів, виділено їх типи та загальну характеристику. Описано етапи взаємодії зі стейкхолдерами: залучення, переконання, обслуговування, партнерство – та підібрано оптимальні канали з елементами цифровізації для поширення контенту на кожному з етапів взаємодії. Досліджено основні новітні тенденції в цифровізації маркетингових каналів комунікації зі стейкхолдерами.

Ключові слова: комунікаційна політика, стейкхолдери, цифрова трансформація, індустрія 4.0, цифровізація, контент, канали комунікації

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