MANAGING SUBSTITUTIVE AND COMPLEMENTARY TECHNOLOGIES IN CULTURAL INSTITUTIONS: MARKET/MISSION PERSPECTIVES*

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Abstract

Digitalization and artificial intelligence are changing modern business organizations. New technologies help to analyze business environment, track customers, control work performance and improve products. The aforementioned phenomenon has received considerably little attention in current literature on culture management. Our goal is to find what types of technologies are used by cultural institutions (CIs) and for what reason. The hypothesis of the article is that CIs use various technologies and tools. Websites, leaflets and audiovisual materials of 139 CIs around the world (theaters, art galleries, opera houses, museums) were analyzed. It was found that CIs use both complementary (CT) as well as substitutive technologies (ST) for managerial and mission-oriented purposes. In our article, the matrix of technologies used by CIs is proposed. Our findings suggest that CIs adapt to changing technological environment by implementing tools that support them in the mission's fulfillment and management. Moreover, new technologies are used by CIs as both employees' reinforcement as well as their replacement.

Keywords: *culture management, technology, artificial intelligence, cultural studies, heritage management, digitalization*

1. INTRODUCTION

Cultural market has attracted the interest of both management and economic studies due to the specific nature of its offer as well as the needs this offer satisfies. Sobocińska (2008) defines cultural market as "all the exchange relations between entities offering goods and services that meet the cultural needs and the consumers and institutions purchasing the cultural products". According to Patricia Martin (2007), culture consumer is a person who uses cultural products and participates in the cultural events. Sobocińska (2008) emphasizes the existence of "buyers of culture", which may

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be individuals, public institutions, companies and non-governmental organizations. Culture products help consumer to self-develop, feel belonging to a particular social group and avoid social exclusion (Durrer and Miles, 2009). For this reason, cultural needs might be classified on the Maslow's pyramid as higher-order ones. Hence, as Cornelia et al. (2017) suggest, cultural products must compete not only with each other, but also with products that meet the lower-order needs. Organizations that create and distribute culture products are called 'cultural institutions' (Wróblewski, 2012). Carr (2003) gives museums, theaters, operas and art galleries as examples of cultural institutions. Wróblewski (2013) and Sobocińska (2008) expand this list with organizations such as cinemas and film studios. Burgeon-Renault (2009) highlight that cultural institutions perform several functions. First of all, they store and display cultural goods. Secondly, they support culture's creators and provide them with infrastructure for work. Thirdly, they strengthen social ties and shape a society's identity.

The hallmark of cultural institution has become the 'pro-social mission', which a particular organization fulfills (Mastenitsa, 2015). Kolb (2013), Wróblewski (2013) as well as Modliński (2019) suggest that there are mission-oriented cultural institutions (MSSCL) and market-oriented cultural institutions (MOCL). Since ancient times, cultural institutions have been financed externally (by the state government, local government or private patrons). The main goal of cultural institutions has not been to generate profit but to develop a society as well as the culture itself. Such an approach became the foundation of MSSCL. Along with free market development, however, more and more cultural institutions were founded by individuals who intended to earn income from cultural products (Van

Aalst and Boogaarts, 2002). In this way, MOCLs emerged and started to spread worldwide. Kusters (2010) and Lehman (2009) suggest that MSSCLs are rather skeptical about adapting to the audience's expectations, do not run intensive promotional campaigns and are reluctant to combine learning with entertainment. MOCLs, on the contrary, adapt their offers to clients, conduct market research, use new solutions to attract visitors and build their loyalty. Modliński (2019) claims that MOCLs intensify competition on the culture market and force cultural institutions to face several challenges listed by Hagoort (2003): globalization, cultutainment (combining culture and entertainment), and digital revolution.

Digital revolution and development of artificial intelligence affect both business and culture (Bakhshi and Throsby, 2010). It is extremely difficult to find a cultural institution that does not have a website or social media account today. Free access to the Internet and social platforms (such as YouTube) have resulted in more and more culture consumers who look online for a content that combines education and entertainment (Addis, 2005). Moreover, they do not only search online for offline offers but rather limit themselves to online culture consumption. Interestingly, people watch recorded recitals, concerts, opera and theater plays, with no intention to visit the cultural institution in person (Throsby, 2012). In most cases, cultural institutions do not make money from this form of entertainment. As a consequence, CIs are looking for alternatives to attract culture consumers and encourage them to spend money on culture product (Camarero and Garrido, 2012). Watching materials in their own homes deprives culture consumers of talking with other people, making new friends and engaging in self-development activities.

In consequence, cultural institutions record lower income and do not fulfil educational and socialization functions.

Various strategies are used by cultural institutions in response to threats coming from digitization. Firstly, they adopt marketing solutions that are aimed at positioning and promoting institutions among potential clients (Kotler et al., 2008). This solution, however, means that a cultural institution gets rid of its current identity, which is not always welcomed neither by the artists, managers nor by the actual consumers. Secondly, cultural institutions apply for external funding from the local government, international institutions and private patrons (Huges and Luksetich, 2004). This solution is an opportunity to maintain the organization's identity, but it does not solve the problem of clients' reduced interest in the offer and it is associated with increased uncertainty. CI has no certainty that it will receive further funding in the next season. It impedes planning as well as reduces the morale of the staff who seek stability and development. Thirdly, cultural institutions adopt technological solutions and tools that encourage consumers to visit a particular institution in person and involve them in the cognitive process (Camarero et al., 2014). This solution, however, requires a change in the mentality of both managers and consumers of culture.

Cultural institutions are stereotypically perceived as the types of organizations that do not adapt to the changing environment to increase its economic performance (Lehman, 2009), which is, however, a misleading assumption. There are many examples of cultural institutions that focus on both mission-fulfillment and economic performance or those for whom the economic performance plays a predominant role on the market (mainly MOCLs)

(Rushton, 2014). Mission-, economy-, or mixed-orientations depend on several variables such as: organization's status (private vs. public one), strategy and profile. Technology that a cultural institution uses is linked to its orientation and managerial approach.

2. TECHNOLOGY IN CULTURAL INSTITUTIONS

2.1. Complementary and substitutive technology

In all types of organizations, technology serves several functions. Firstly, technology and tools were used in workshops to help the craftsman in product creation. They were used to help to (1) take off the load from men, (2) complete a more precise product, and finally, (3) speed up the production process. This kind of technology can be called 'complementary technology' as its main function is to support man, expanding his capabilities and abilities. The complementary technology (CT) has developed together with employees in the offices and factories for centuries. CT is directly linked with (a) the idea of Emerson (1875) who perceived technology as the extension of human's body or even with the (b) transhumanic approach where the intelligent CT is supplementing human, becoming the foundation of the so-called 'organic-mechanic hybrid' (Loh, 2019). Literature has not focused, so far, on the role of technology in various types of cultural institutions. In MSSCL, technology used to play a rather secondary role for several reasons. Firstly, technology requires investment while MSSCL are organizations with rather limited budgets. Secondly, MSSCL employs art experts and artists rather than technicians and innovation specialists. Therefore, MSSCL's managers cannot know how to

adapt a particular tool to their organizations or might even not be aware of new solutions that exist. However, the competition from MOCLs and public pressure resulted in that MSSCLs began to open up to new technologies as well. However, the factors mentioned previously still significantly limit these efforts.

Along with AI's development and digitalization, the so-called 'substitutive technology' emerged and is being adapted successfully to organizations. The core of the substitutive technology (ST) is not to assist individuals in their work (like CT), but to replace them. Its beginning is linked directly to the development of automation where new machines completed the repetitive work more successfully and cheaper than men did. ST used to push out human workers from the organization and standardize the work's outcome. At present, deep learning helps machines to learn and make justified decisions. In consequence, employees responsible for contact with clients, data analysis or content creations, are fired. To sum up, progress in robotics and artificial intelligence resulted in construction of machines and robots, replacing people in both manual, as well as basic intellectual work (Daugherty and Wilson, 2018). Such a process changes both organizations and the labor market, constituting new challenges for managers, employees and policy makers. Although they have not been described in the literature so far, similar trends can also be noticed in cultural institutions.

Modliński (2019) notes that cultural institutions use new technologies and tools such as: sensorial solutions, gamification, holograms, virtual reality, augmented reality, 3D, interactive solutions, and haptic tools. Both Modliński (2019) and Sheng-Ping (2013) claim that new technologies in cultural institutions serve primarily to provide entertainment and promotion. This approach, however, does not seem to be sufficient to illustrate current changes in cultural institutions, and requires further investigations. While interviewing employees of both Polish and Portuguese cultural institutions from 2017 to 2020, two research questions were raised: (1) do cultural institutions adopt CT and/or ST?, and (2) in what fields do they adopt them? Our research consisted of two stages. First, 23 interviews with Polish and Portuguese managers of cultural institutions (theaters, museums) gathered during our previous studies were used to create a general framework for our research. Using the theory introduced in the previous subchapter, we observed that new technologies in MSSCL might serve to fulfill the organization's mission (to educate and to disseminate culture), and in MOCL they may be used to manage the organization and customer relations. At the second stage, the websites of 139 cultural institutions around the world (theaters, art galleries, operas, museums) were reviewed to check if CT or/and ST are used there. Based on the websites, 11 examples of CT and ST in cultural institutions were found. Next, they were juxtaposed with two types of cultural institutions based on their 'reason-to-be' (MSSCL and MOCL). On this basis, a matrix that differentiates the type of technology (CT/ST) and the purpose (managerial / mission) for which cultural institutions adopt them (see Figure 1) was created. By using (1) descriptions provided on the websites, analyzing (2) audiovisual content, and (3) online leaflets, as well as (4) explanatory interviews with the representatives of cultural institutions identified in the research, the fields, in which CTs and STs are currently used by cultural institutions, were reconstructed and described.
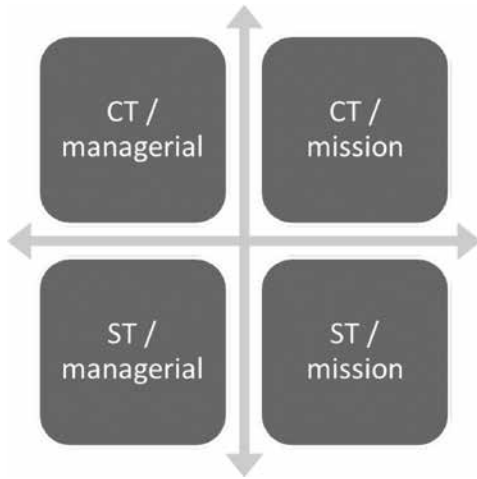
Figure 1. The form and purpose of technologies in cultural institutions.

2.2. Complementary technologies used for managerial purposes (CT/managerial)

Two areas, in which CTs are used for managerial purposes in cultural institutions were identified: (1) collecting data and (2) rearranging the offer. Glass and Callahan (2014) claim that we live in an era where data has become an organization's primary resource. It is used to analyse the environment, improve organization's overall performance and increase competitiveness on the market (1). CTs are used to process large amount of data that humans could not. In cultural institutions, an example of such a CT is the IoT (Internet of Things). French Louvre uses the IoT to collect data about visitors' interests and behaviour to make its exhibitions more attractive. Cameras track visitors to control how much time they spend in front of a particular work of art, and then algorithms suggest curators what elements might be replaced. Moreover, CTs can recognize visitors' emotions, code them and provide conclusions in the summary reports. Hence, managers know who likes the exhibition the most and who does not. Additionally, new algorithms can recognize a visitor, attribute their behaviour to a social media account and customize the content that a cultural institution sends to them. Data collected by algorithms can be used to redefine the organization or reorganize the space that the cultural institution provides (2). An application, called LikePlace, helps to assess how much people are satisfied with their visit to a particular location. When a photo is made, using a digital application for mobile phones, it is processed by an algorithm, which recognizes both geometric shapes and colours. This algorithm is based on the original methodology of Kandinsky, who analysed the correlations between colour, shape and emotions (Siebenbrodt & Schobe, 2012). As a result, the user receives the percentage of visitors' expected satisfaction level. Managers working for cultural institutions can use such an application to decide the colour of the walls or light arrangement and rearrange the space to attract more visitors and improve their experience.

2.3. Complementary technologies used for mission's fulfilment (CT/mission)

Cultural institutions use CTs to perform their missions by: (1) arousing emotions, (2) developing imagination and (3) increasing visitors' knowledge. The development of visitors' emotions and sensitivity is the essence of most cultural institutions. They use both visual and sound experiences to strengthen the message coming from the artists' work. In our study, it was found that new technologies might be used to further deepen these impressions. An example of such a CT that helps to arouse emotions (1) is the use of 3D technology by the Polish 'Buffo' theatre in the musical

"Romeo and Juliet". During the performance, the second plan is equipped with a three-dimensional technology that allows viewers to feel the vibe and understand the emotional context of the play. Human emotional development is associated with expanding their imagination and training abstract thinking. This approach is stressed in missions of various cultural institutions. Examples of CT that allows the elements of cultural mission to be fulfilled (2) are virtual (VR) and augmented reality (AR). Perez Art Museum in Miami first used AR technology in 2017, during the local Art Week. The visitors had the opportunity to enter a virtual world created by Felice Grodin to visualize both current and future changes in the ecosystem caused by climate change. The Petersen Automotive Museum, the Tate Modern, the National Museum of Finland use AR and VR as an addition to the work of the guides. Being simultaneously in the virtual world thanks to goggles and listening to the guide, the visitors have a chance to better conceive the content of the exhibition. Ultimately, CTs help to expand the knowledge, while interacting with culture (3). In this area, it was also found that games, gamification and tests were used. All of them help to involve visitors' cognition and refresh the knowledge after visiting cultural institution. It was also discovered that the American Museum of Natural History has introduced the service called 'Telepresence robots', which allows visitors to pose a question to a real expert, who is connected via Internet and displayed on the screen. All of the CT applications described above enable a more efficient fulfilment of cultural institutions' mission, combining learning with entertainment, involving visitors into the learning process and encouraging them to come back.

2.4. Substitutive technologies used for managerial purposes (ST/ managerial)

STs are used by cultural institutions for managerial purposes in two main areas: (1) environment analysis and control, and (2) office work automation. In the era of social media, it is becoming important to control the customers' opinions, reviews and comments. Currently, more and more content is being created. As a result, the managers have problems reading clients' comments and reacting to them appropriately. However, there are algorithms that use artificial intelligence to track, collect, categorize customers' comments, and create reports for the managers (1). Such algorithms are already used by cultural institutions. Content analysis system (CAS) has been adopted by the Polonia Theater in Warsaw. Using this tool, managers are able to anticipate crises, as well as to control the level of visitors' satisfaction without having a big team of people, digging through the internet for hours. Hence, the reports provided by CAS are delivered faster and cost less. Surprisingly, cultural institutions also use STs to automate the routine, repetitive tasks, such as e.g., invoicing, selling tickets, receiving complaints. In the majority of institutions included into our research, invoices are made automatically by the algorithms. Moreover, 136 out of 139 institutions offer their tickets online and visitors can select the preferred seats. It was also discovered that three institutions were considering closing their ticket offices and investing in ticket vending machines to reduce the costs. The Carnegie Museums of Pittsburgh launched the virtual assistant (chatbot) called 'Andy', which talks to potential clients through the Messenger, encourages them to visit the museum, answers questions about the current offers and plans. By using it, the museum has reduced

the number of employees, as well as the expenses for customer support. To sum up, STs are used in cultural institutions to reduce the time and cost spent on managerial task.

2.5. Substitutive technologies used for mission's fulfilment (ST/mission)

It was found that cultural institutions use STs to fulfil their mission in three areas: (1) to educate clients, (2) to protect cultural heritage, and (3) to create culture by replacing artists. Due to robotics achievements, machines started to replace humans in various areas of their work. Cultural institutions use robots to guide tours and teach visitors (1). An example is a French museum Musée de la Grande Guère, where a robot tells the story of trenches from the World War I. Similar technology is used at the Mob Museum in Las Vegas, in the Canadian Science and Technology Museum and the French Louvre. Buying a robot is an investment that simultaneously reduces the cost of salaries and attracts the customers' attention. Another example of STs used for mission's fulfilment is a chatbot in Anne Frank's House (the Netherlands), which is installed on Messenger and tells the story of Anne Frank through personalized messages. Managers claim that its role is to educate, inspire and engage people in anti-discrimination actions. The Illinois Holocaust Museum & Education Center (IHMEC) uses ST to protect cultural heritage and memory (2). The IHMEC created holograms of 13 people, who survived concentration camps during World War II. Virtual silhouettes of prisoners are based on hours of interviews with these people and visitors can ask them questions. Holograms can be used even after the death of survivors, preserving their memory for future generations (2). Algorithms based on artificial intelligence learn people's behaviour and can successfully imitate them. They are already being used by cultural institutions to replace deceased artists (3). An example might be the algorithm that mimics Marilyn Monroe in new movies, or the hologram of Whitney Houston, which replaced her on tour. Cope algorithm composes music that mimics the style of Ludwig van Beethoven. Algorithms replacing people can educate and sensitize the audience, contributing to cultural development.

3. LIMITATIONS AND FURTHER RESEARCH

Although our study answered two research questions posed at the beginning, it also has several limitations. Only 139 institutions were included into the sample. In our work, the focus was primarily on the largest cultural organizations, that have their own websites. It is possible that smaller organizations use CT and ST also for other purposes. The proposed matrix can, therefore, be extended in the future with new cases. Secondly, not all organizations, where CT or ST was identified, responded to our email or phone inquiries. Language and cultural differences were the main constraints to obtain the materials in the Middle East (e.g., Dubai) where interactive cultural institutions are developing dynamically. Thirdly, the cases were reconstructed using leaflets and audio-visual materials. Although methodological rigor justifiable for constructivism were kept, it is possible that not all the details were captured. Last, but not least, in our study the focus was on identifying the areas of CT and ST application. It was not our intention to quantify them and/or to draw general conclusions on their basis. This study may be an inspiration for future researchers who want to understand more profoundly the purpose

of using new technologies in cultural institutions, scale of this phenomenon and its effectiveness.

4. CONCLUSIONS

Cultural institutions evolve together with technological changes. Each of them must decide whether its 'reason-to-be' is to fulfil a cultural mission or to generate income. Our research shows, however, that cultural institutions try to balance both approaches. For this reason, it becomes necessary to precise rules that an organization wishes to follow. It is important that managers themselves realize that technology is complementary to their work. Algorithm suggestions can be countered. They are fallible and still do not completely replace human wisdom and experience.

Our research shows that cultural institutions use both CTs and STs to fulfil their mission and organize their space. CTs are used primarily to collect data about visitors, arouse emotions, develop imagination and increase the cultural knowledge of the audience. CTs have become the reinforcement for both managers and clients. They help to increase visitors' experience, engage them in the cognitive process and sensitize the world. Moreover, they allow managers to process information faster and respond more effectively to emerging signals. Although previous scientific studies have not noticed the problem, cultural institutions begin to replace humans with technologies, as well. It was found that this is done for several reasons: to reduce the costs of their functioning, to increase visitors' interest, to get rid of repetitive office tasks, to educate audience and to protect the cultural heritage. It seems, however, that the list of cases is not final. Along with the development of new technologies

and scientific progress, cultural institutions will most likely continue their transformation. The direction of this transformation is, however, still unclear. It will be not only culture managers who decide about the changes, but also artists and audience, whose tastes and expectations are continuously changing.

References

1. Addis, M. (2005). New technologies and cultural consumption. Edutainment is born!*, European Journal of Marketing*, *39*(7/8), 1-13.

2. Bakhshi, H., & Throsby, D. (2010). *Culture of Innovation. An Economic Analysis of Innovation in Arts and Cultural Organisations*. London: NESTA.

3. Bourgeon-Renault, D. (2009). *Marketing de l'Art et de la Culture : Spectacle vivant, patrimoine et industries culturelles*. Paris: DUNOD.

4. Camarero, C., & Garrido, M.J. (2012). Foresting Innovation in Cultural Contexts: Market Orientation, Service Orientation, and Innovations in Museums, *Journal of Service Research*, *15*(1), 39-56.

5. Camarero, C., Garrido, M.J., & Vincente, E. (2014). Achieving effective visitor orientation in European museums. Innovation versus custodial, *Journal of Cultural Heritage*, *16*(2), 228–235, http://dx.doi.org/10.1016/j.culher.2014.05.006

6. Carr, D. (2003). *The Promise of Cultural Institutions*. Plymouth: AltaMira Press.

7. Cornellia, A.H., Putra, H.S.A., Priyambodo, T.K., & Widyaningsih, Y.A. (2017). Social media based proposed model for museum marketing

strategy in Yogyakarta, *Advanced Science Letters, 23*(11),10636-10639.

8. Daugherty, P.R., & Wilson, J.R. (2018). *Human + Machine: Reimagining Work in the Age of AI,* Harvard Business Review Press, pp. 264.

9. Durrer, V., & Miles, S. (2009). New perspectives on the role of cultural intermediaries in social inclusion in the UK. *Consumption, Markets and Culture* (*12*), 225-241.

10. Emerson, R.W. (1875). *Society and Solitude: Twelve Chapters.* Boston: James R. Osgood and Company.

11. Glass, R., & Callahan, S. (2014). *The Big Data-Driven Business: How to Use Big Data to Win Customers, Beat Competitors, and Boost Profits.* Hoboken, New Jersey: Wiley.

12. Hagoort, G. (2003). *Art Management: Entrepreneurial Style.* Eburon: Utrecht School of Art.

13. Hughes, P., & Luksetich, W. (2004). Nonprofit Arts Organization: Do Funding Sources Influence Spending Patterns?, *Nonprofit and Voluntary Sector Quarterly*, *33*(2), 203-220.

14. Kotler, N.G., Kotler, P., & Kotler, W.I. (2008), *Museum Marketing and Strategy: 2nd Edition.* San Francisco: Jossey-Bass.

15. Kuesters, I. (2010). Arts Managers as Liaisons between Finance and Art: A Qualitative Study Inspired by the Theory of Functional Differentiation, T*he Journal Of Arts Management, Law, And Society* (*40*), 43-57.

16. Lehman, K. (2009). Australian Museums and the Modern Public: A Marketing Context, *The Journal of Arts Management, Law, and Society,39*(2), 87-100.

17. Loh, J. (2019). *Trans- und Posthumanismus*. Junius Verlag.

18. Martin, P. (2007). *Renaissance Generation: The Rise of the Cultural Consumer and What it Means to Your Business.* Avon: Platinum Press.

19. Mastenitsa, N. N. (2015). Social functions of the museum in the global world. *Proceedings of the St. Petersburg State University of Culture and Arts, 210*, 13-22.

20. Modliński, A. (2019). *Strategie instytucji kultury wobec niezadowolenia i bojkotów konsumenckich.* Łódź: Wydawnictwo Uniwersytetu Łódzkiego.

21. Rushton, M. (2014). Hybrid Organizations in the Arts: A Cautionary View, *The Journal of Arts Management, Law, And Society*, *44*, 145-152.

22. Sheng-Ping, T. (2013). Personality, Motivation, and Behavioral Intentions in the Experiential Consumption of Artworks. *Social Behavior & Personality: international journal*, *41*(9), 1533-1546.

23. Siebenbrodt, M., & Schöbe, L. (2012). *Bauhaus – 1919-1933.* New York: Parkstone International.

24. Sobocińska, M. (2008). *Zachowania nabywców na rynku dóbr kultury i usług kultury.* Warszawa: Polskie Wydawnictwo Ekonomiczne.

25. Throsby, D. (2012). *The Economics of Cultural Policy*. Cambridge: Cambridge University Press.

26. Van Aalst, I., Boogaarts, I. (2002). From Mass Museum to Mass Entertainment, *European Urban and Regional Studies,9*(3), 195-209.

27. Wróblewski, Ł. (2012). *Strategie marketingowe w instytucjach kultury*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

UPRAVLJANJE ZAMJENSKIM I KOMPLEMENTARNIM TEHNOLOGIJAMA U KULTURNIM USTANOVAMA: PERSPEKTIVE TRŽIŠTA I MISIJE

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Sažetak

Digitalizacija i umjetna inteligencija mijenjaju moderne poslovne organizacije. Nove tehnologije pomažu pri analizi poslovnog okruženja, praćenju kupaca, kontroli radne uspješnosti i poboljšanju proizvoda. Spomenutom fenomenu posvećeno je malo pozornosti u suvremenoj literaturi o upravljanju kulturom. Cilj nam je utvrditi (1) koje vrste tehnologija kulturne institucije (KI) koriste i (2) iz kojeg razloga. Hipoteza istraživanja je da se KI koriste raznim tehnologijama i alatima. Analizirane su mrežne stranice, letci i audiovizualni materijali 139 kulturnih institucija širom svijeta (kazališta, umjetničkih galerija, opernih kuća i muzeja), te je utvrđeno da KI koriste komplementarne (KT) i zamjenske tehnologije (ZT) u svrhu upravljanja i orijentiranosti na misiju. U članku je predložena matrica tehnologija koje koriste KI. Rezultati sugeriraju da se KI prilagođavaju promjeni tehnološkog okruženja primjenom alata koji ih podržavaju u ispunjavanju i upravljanju misijom. Štoviše, KI često koriste nove tehnologije kako bi osnažili zaposlenike, ali i zamijenili ih.

Ključne riječi: *upravljanje kulturom, tehnologija, umjetna inteligencija, kulturološke studije, upravljanje baštinom, digitalizacija*