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## IMPACTS OF MODERN TECHNOLOGIES ON SUSTAINABLE COMMUNICATION OF CIVIL SERVICE ORGANIZATIONS

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**Abstract.** The role of modern technologies on competitive advantages of organizations is extensively analysed by many scholars or studies (Wascher et al. 2018; Maduro et al. 2018; Accenture, 2019). In order to sustainably communicate and meet stakeholders' expectations (Hovland, 2005; Macnamara, 2015; the UK Government Communication Plan 2017/2018; Bahena-Álvarez et al. 2019), both private and public organizations (including civil service institutions) implement technological innovation and apply modern communication tools (including a spectrum of digital marketing techniques); however, many factors, such as limited financial autonomy, dependence on political priorities, heavy bureaucracy and complicated jurisdiction or simply insufficient technological knowledge and competences (along with modest innovation systems and inefficient monitoring ) make the present topic relevant to civil service organisations of Central and Eastern European Countries. The research question is **how to unleash potential of modern technologies in order to make civil service organizations' communication strategies sustainable and value-adding**. Instead of artificially separating communication worlds of private and public sectors, the present publication is focused on combining the best communication strategies (Ferguson et al. 2016) from different angles, such as business intelligence, financial analysis, social innovation, digitalization, innovative Human Resource Management, and etc. **The semi-structured qualitative experts' interviews** help examine the process of applying modern technologies (including digital marketing communication techniques) in practice of civil service organizations as well as provide the guidelines for communication strategy improvement. **The conceptual matrix of technological effects** is backed by qualitative research results, which is of significant value-added to future success and sustainability of communication strategies of CEEC's civil service organizations.

**Keywords:** communication sustainability; technologies, digital communication; civil service organizations

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## 1. Introduction

Based on a number of scholars, such as Husain (2013), Bhatnagar (2014), Luthra and Dahiya (2015), Shanga et al. (2017) or McEwan et al. (2017), communication efficiency plays a critical role in sustainable development of organizations, and its success is related to a set of criteria, such as application of modern technologies (IT, Mechatronics, and etc.), innovation and networking processes, leadership, and/ or communication management models. For instance, digital marketing and, in particular, digital communication instruments (which in the present publication refer to the examples of modern technologies) are considered among the key priorities in order to smoothly interact among stakeholders. Moreover, digital communication competences should be continuously enhanced to make communication more flexible. Learning from mistakes and being accountable to society (with respect to strategy development and execution) calls for continuous interaction with stakeholders (while engaging citizens into decision-making process), monitoring, and preparing accountability reports. Therefore, organizations are under pressure to communicate flexibly with society, while digital marketing (including Social Media), video advertising (particularly via mobile technologies), webinars, online forums, live interactive conferences, are only a few examples of modern communication techniques which make the communication and marketing strategy more efficient and socially engaging. Sustainability also refers to consistency and continuity, which might be rather challenging in countries undergoing numerous reforms.

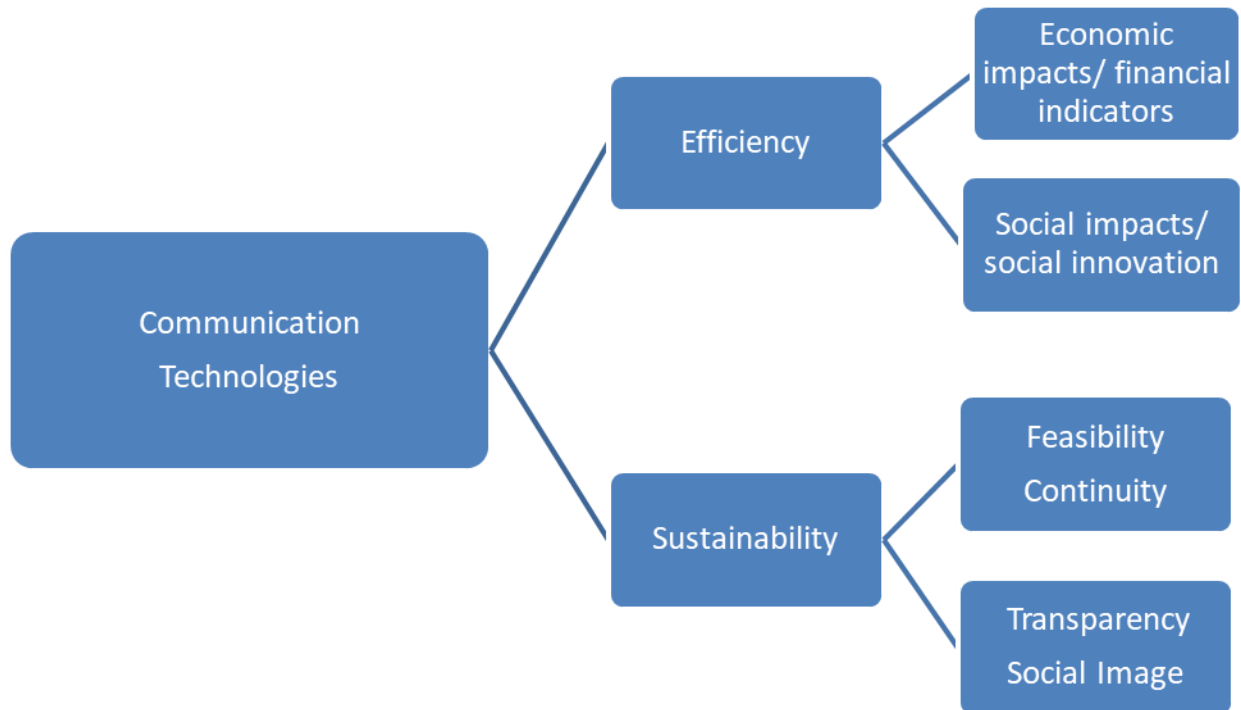
Apart from artificial intelligence and modern technologies, talented communicators remain critical intermediaries within external communication, and their talent must be upgraded to technologically more intuitive communication style. A great number of scholars (Tene and Polonetsky, 2014; Diakopoulos, 2016; Etzioni and Etzioni, 2016) emphasize the role of new technologies within communication: technologies make communication more visible; therefore, dissemination of internal communication is of significant value and might be a challenge for organizations with somewhat taller hierarchy. Efficient communication, thanks to new technologies, might help strengthen social image, engage society, create community (particularly when social trust is 'broken'), cut costs and information asymmetry, as well as increase employee motivation and satisfaction (Abel et al. 2016, Taylor et al., 2017; Otterlo, 2017).

In light of emerging role of big data management and business intelligence tools on the performance of modern organizations (along with the use of Social Media and digital marketing), human capital remains a key driver of innovations processes. Many of modern communication efficiency tools are rapidly evolving and calling for life-long learning: educating how to use technology in organizations across different industries and economies. For instance, digital marketing efficiency is bit by bit becoming a key strategic axis of vaster marketing and strategic management, because it is tightly related to communication strategies; however, communication leaders should be sufficiently knowledgeable and intelligent in order to combine these inter-related communication aspects and technological tools in their performance.

The multi-facet application of modern technologies in strategic development of organizations is in parallel marked by a diversity of technology effects on sustainability of civil servants' communication, mainly to a lack of experience and modest competences of applying modern communication tools in practice, along with insufficient attention to modern communication technologies within policies and political priorities. The diverse technology effects on communication sustainability might be tackled from the perspective of value-added through using efficiency-related terms, such as marketing, technical or economic efficiency.

The analysis of these key-words might back to the nineties, when interpreting Chahal' and Gill's (1991) insights, Kanakaraj (2010), argues that marketing efficiency is comprised of economic efficiency (which is oriented to

competition conditions, pricing, and competitive advantages) and technical efficiency. Thus, pricing or economic efficiency in general relate to functional efficiency or to a degree of competition in the market. Lipsey et al. (1993) identify two types of economic efficiency: productive efficiency and allocation-based efficiency. Trading and pricing affect competition, while competitive and fair distribution of prices ensures remunerative and value-adding prices to various economic agents. Technological innovation lead to competitive advantage in terms of capacity, time, expenditure, quality, brand, and many other effects that are also significant among civil service organizations. In order to better understand the effects of modern technologies on communication sustainability of civil service organizations, the matrix of technology impacts is developed (which is tested by applying qualitative research methodology). See Figure 1.



**Figure 1.** Matrix of Technology Effects on Communication Sustainability

*Source:* prepared by paper authors

Technologies manifest in modern organizations in different forms, such as robots, digital hubs, artificial intelligence, open source innovation, mobile application services, and etc., which not only change the communication of modern organizations, but also draw attention to cultural and social norms (for instance, social trust among stakeholders), evolved collaboration phenomenon (shared value economy; intensity, scope and various ways of interaction among partners) or competitive advantages via a vast spectrum of synergy effects. To profoundly examine the communication sustainability during the time of technological change, the next chapter is centred on the marketing effectiveness and efficiency, which nowadays is tightly related to digital marketing and modern communication technologies.

## 2. Marketing and communication within technological evolution

Driven by technological innovation and significant effects of technologies on economic and social wealth, marketing techniques (with its new forms and tools) remain among the most important interaction ways among various stakeholders. While overviewing some earlier researches on marketing efficiency versus effectiveness, a somewhat stronger focus on economic impacts of marketing is witnessed. Some of the scholars refer to marketing efficiency while analysing operational efficiency and tackling marketing inputs/ expenses or possibilities to minimize the cost of physical operations (Kohls, 1956). Lau and Yotopoulos (1971) add the concept of technical efficiency, which is measured by magnitude of outputs an organization can generate by using its inputs. Thus, production is oriented to efficient use of existing technology and resources to produce larger outcomes. The scholar revealed that efficient marketing should derive from operational and economic efficiency. Therefore, marketing efficiency could be translated to higher utility with the most efficient usage of scarce resources.

Based on Daukševičiūtė et al. (2011), marketing efficiency refers more to return on marketing expenditure. While examining marketing effectiveness these authors advice use of both financial and non-financial metrics. Similar as marketing in a more generic sense, according Kotler and Keller (2009), marketing effectiveness depends on a set of aspects, such as the consumer philosophy, integrated marketing and communication systems, strategic orientation, operative strategy, organizational imperatives, and etc.

Gao's (2010) introduced Integrated Model for Measuring Marketing Performance (MMMP) shows that the marketing effectiveness measurement is a complex process which should reflect both the current state of an organization and its future changes. Kotler and Keller (2009) emphasise retrospective analysis of organizational performance in order to improve future business strategy. Thus, modern organizations should address management functions, such as quality and monitoring management, which could contribute to communication sustainability of organizations. According to a number of authors, such as Petersen et al. (2009), the marketing strategy should be linked to financial analysis, as it demonstrates concrete pertinent results and value-added which is generated during the analysed period or development cycle of an organization.

Solčanský et al. (2011) draw attention to financial metrics, including indicators, such as ROI, ROE or ROMI, data analysis and reports of costs, revenues and profit margins, whereas non-financial metrics refer to comparative studies, customers' satisfaction, loyalty, and/or customer lifetime value. Milichovský et al. (2011) add the classification of marketing metrics: financial indicators (turnover, profit or return indicators), market measures (market share and etc.), customer behaviour measurement (e.g. loyalty, number of new customers, and etc.), measurement of image among customers (e.g. customers' satisfaction, brand recognition), measurement of direct customers (levels of distribution, returns from intermediaries), measurement of innovation (numbers of new products, share of new products on earnings). Moreover, Sampaio et al. (2011) identifies ten most relevant metrics: strength of brand or knowledge about products; commitment to purchase, consumer satisfaction, the market share, the number of complaints, the perceived quality, profits, ROI, sales growth, and service/product availability. Many of these indicators might be used in both private and public organizations.

Although ROMI (Return on Marketing Investment) could be expressed as a percentage of net profit and costs, it differs from ROI (Solčanský and Šimberová, 2010), because marketing investment activities are not identical to general business investments. Young and Aitken (2007) define marketing ROI as a process of creating positive value for business as well as reaching the actual cost effectiveness. Such indicators in a more limited extent can be efficiently used in public administration organizations. For instance, dissemination campaigns in various projects of civil service organizations can be based on similar indicators.

Although marketing metrics provide the means to track progress, demonstrate accountability, and help improve efficiency of marketing activities, it is important for marketers to be flexible and capable to easily reshape the

marketing strategy in order to compete in the changing marketplace. Thus, Marketing budgeting and planning should be directly related to economic and social impacts, as well as communication efficiency. In 2009, Bates added, that digital technologies and associated networks were rapidly changing media and information markets, cost and value structures, and consumer attitudes and expectations (with stronger focus on content). This aspect is still relevant and critical for communication sustainability of civil service organizations.

Grant (2012) accentuated the role of specificity of an industry and its specific context, while efficiency was interpreted from a more holistic perspective. For instance, while monitoring Coaching performance, financial indicators, such as ROI, do not fully capture outcomes of this specific activity. On the contrary, the financial focus can trigger job-related stress and anxiety; thus, well-being and engagement framework is suggested. This Grant's framework could be particularly useful in civil service organizations. To continue, apart from traditional efficiency indicators, civil service organizations should emphasize more innovation commercialization success indicators, social impacts, the value-added of each partner, and consistency/ sustainability of communication (including aspects, such as society engagement, community gathering, combination of high-tech and low-tech, stakeholders' satisfaction, and many others).

To continue, focus on many financial efficiency indicators (related to dividends, bonuses, pricing ratios, and etc.) might imprison companies in short-term plans, while the long-term value (such as the upside potential of the share price, communication sustainability, brand innovation, and etc.) might be neglected. MacDonald and Sulsky (2009) introduce a context-specific approach for enhancing the effectiveness of performance management. Relying on arguments of authors, such as Hogan, Jarrow, Teo and Warachka (2003), a large number of empirical studies focused on stock prices versus the efficient market phenomenon, which can indirectly contribute to better understanding of communication efficiency and sustainability.

As it was investigated by Jegadeesh and Titman (1993), within trading strategies of buying the well-performing stocks and selling poor-performing stocks, there was an average excess return of 12% per year calculated, based on a standard capital asset pricing model. Lakonishok et al. (1994) reached a similar conclusion by analysing glamour stocks via such variables as price earnings ratios, dividends, the book to market value, cash-flows, and sales growth. Thus, many factors, such as dividends, earnings, the stock price or the number of outstanding shares have influence on average returns. Fama (1998) added that it was critical to choose a sound statistical methodology to better monitor the performance and reach sustainable results in the longer run.

Given the specificity of civil service organizations, measurement of returns (it is interpreted more as value-added or economic and social impacts), discrepancies between expected outputs and factual results (which might refer to feasibility) remains of significant value, while the economic performance indicators should be adapted to a context of socially vulnerable groups and political priorities (with more emphasis on social impacts of public policies). Zaimova et al (2012), suggest key success factors of implementing and coordinating social policy: monitoring of the service quality and promoting entrepreneurial solutions.

Having a list of scholars' works analysed from the perspective of finance, it is worth focusing on marketing efficiency and effectiveness from the perspective of information technologies, as technological progress and the emerging business intelligence phenomenon changes communication style among stakeholders; thus, it is tempting to examine the liaison between marketing and IT. For instance Zhu (2015) shows that IT and marketing effectiveness are both positively correlated to productivity while efficiency is not significantly correlated to effectiveness: productivity calls for efficient use of IT and Marketing expenditure, while allocation of resources is related to budgeting. It is added, that the use of budget more than scope of it has a direct relation to performance. Within the analysed global hotel industry, the author recommends paying more attention to a profound analysis of IT and marketing expenditure, along with extensive analysis how these resources are used.

Jain and Yadav (2017) go one step further while overviewing the evolution of marketing and measurement of impacts of marketing technologies. According to the authors, more interactive and participative communication with stakeholders (via technologies) makes marketers dependent on digital media devices, such as smartphones and computers, as well as influenced by continuous collaboration with stakeholders in creating value-added and commercializing innovation. Apart from many positive effects (such as engagement in decision making), Jain and Yadav (2017) argue that amalgamation between technology and marketing requires bigger expenditure (for instance in the area of R&D) and the necessity of faster and often riskier decisions, based on the context of scarcer time and bigger data. Therefore, innovation becomes a right blend within combination of marketing and technology.

The topic on the role of digital marketing tools on organizational performance has been consistently tackled for c.a. 2 decades; for instance, it is worth mentioning results of the State of Digital Marketing Survey (2011), prepared by Webmarketing123, where the largest part of marketing experts stated that website traffic is a common success indicator among both B2B and B2C digital media campaigns. Among other indicators experts underlined lead generation, website clock-through rate, sales, call-to-action conversions, brand awareness, and many others. Many of these indicators evolved, but they are still relevant.

Analysis of success of digital marketing programs implies a set of indicators which refer more to effectiveness rather than efficiency; however, they are relevant and important in the competitive market. Pagani (2013) first of all links digital business strategy to value creation, while digital marketing communication peculiarities (including main channels and modern techniques) are tackled by a great number of authors, such as Acar and Puntoni (2016), Fortin and Ning (2017), Bruhn and Schnebelen (2017). Some scholars, such as Batra and Keller (2016) emphasize the role of Integrating Marketing Communications, as modern organizations should focus on enhancing both “bottom-up” and “top-down” communications models.

Thus, the majority of these approaches to digital marketing communication refer to the level of customer’s response, compared to the associated cost base; but they all can be applied in both business and civil service organizations. There is a rapidly growing interest in digital marketing as a set of practical tools to generate a bigger economic value-added for organizations (Bala and Verma, 2018). Responses could be translated to Clicks (the number of times the user clicks an advertisement), Clicks To Call (the number of times the user initiates a call by clicking on a link), Click Through Rate (the number of users who have clicked on an advertisement, compared to the number of impressions), Cost for Thousand Impressions (the cost an advertiser pays for thousand impressions of an online advertisement), Cost Per Click (CPC) (the price an advertiser pays every time the user clicks on an advertisement), and many others. In spite of a great variety of digital marketing tools, every investment requires an efficient evaluation method, which is flexible towards yet undiscovered risks and volatile returns (Bruhn and Schnebelen, 2017).

The comparison of peers’ projects, activities, companies and methods always help to choose the best alternative or increase the efficiency of further investment. Thus, understanding fundamental principles of investment finances and being able to apply them in practice is crucial for any organization. Investments in digital marketing efforts in civil service organizations are not an exception. On the contrary, digital marketing brings many indirect effects that could be turned into value-added (for instance, the increase in number of citizens engaged, a stronger brand and image, the percentage of recommendations and innovative ideas coming from society, synergy effects among stakeholders, and etc.).

Saura et al (2017) point out at another important organizational challenge within digital marketing which is the necessity to continuously and rapidly realign the knowledge and skills of digital marketing with the context of the market and technological evolution. The authors find out that there is a gap between competences of monitoring and assessing marketing actions in digital marketing, which reveals the lack of knowledge on strategic orientation

of an organization; therefore, digital ecosystem marketers should be trained to understand and use context-specific key performance indicators while combining them with more generic strategies and linking them to more traditional tools of marketing monitoring.

In light of stronger amalgamation between marketing and technology in order to position an organization closer to citizens, modern organizations are under pressure to generate social value-added. As for instance, by using Domini400 Social Index, Dow Jones Sustainability World Index and FTSE4Good Index, Carini et al (2017) conclude that CSR firms have better long-run performance, thanks to the reputation effect, which also positively affects sales volumes and profits, as well as long-run cost base. Singh et al (2015) back the social value of marketing within entrepreneurship while emphasizing the specificity and context of the market (including socioeconomic conditions, technological literacy, culture, and social structure of the target audience), social marketing strategies (which should match the local requirements), and the technology in terms of both innovation and distribution. The authors argue that customer orientation is important in all types of organizations (non-profit, not for profit, or for-profit), thus their implications might be useful for civil service organizations. However, reinforcement of public policies via guidelines and acts would be of significant help.

For instance, while examining social value in the UK construction industry, Cartigny and Lord (2017) refer to the term of Social Capital (accumulation of human labour regarding social networks and trust) at individual and community levels. According to the authors, the UK Construction industry cannot reach political priorities of social value at a community level, but individual social value-added could be measured by jobs and training opportunities which might enhance individual social capital and enable them to network with others. From the communication point of view, French (2017) expands the value-added phenomenon by non-financial motivation via engagement of employees and society and mitigation of the negative effect of economic performance optimization through innovation encouragement tools, creativity enhancement, and creative leadership (French, 2017). This interpretation of efficient performance is relevant for both, private and public organizations; thus, civil servants should apply the combination of economic and social value-added to make the communication more sustainable (continuous and consistent), whilst modern technologies, including digital marketing communication tools, could facilitate the knowledge share, strategy development and execution of various policies and strategies among stakeholders.

### **3. Methodology: semi structured interviews with leaders of civil service organizations**

Internal communication efficiency refers to a set of dimensions, such as speed, feasibility of various projects, generation of innovative ideas and innovation commercialization process, creative leadership, employees' satisfaction, and etc. (Macnamara, 2015), while external communication is driven by key liaisons with other strategies (Marketing, R&D or Internationalization), cultural and social norms (as part of social capital dimensions), cooperation activities (including main synergy effects among stakeholders), as well as social value-added (Hovland, 2005). Therefore, modern technologies could improve communication efficiency in many areas. While selecting methodology and building research questionnaire, it is intended to avoid of artificial cleavage between communication in business and public organizations, as modern technologies trigger similar challenges and trends across various industries and economies; therefore, civil service organizations' leaders should not diminish the experience of private companies (Ferguson et al. 2016). Moreover, communication technologies should facilitate horizontal communication, enhancement of creativity system, and knowledge sharing within teams (the UK Government Communication Plan 2017/2018).

The literature review led to the concluding matrix of technology effects on communication sustainability, which was later on tested within semi structured interviews with 20 experts from Lithuanian civil organizations (mainly occupying managing positions in various ministry departments). The questionnaire was built while relying on various scholars' argumentation and positive experience of other countries. Taking into account the key

dimensions of the present publication (which are technologies and communication sustainability) the main focus was on how these two factors are inter-related: what outcomes can be expected in civil service organizations via applying modern technologies in practice.

The qualitative research was centred on coding the experts, based on their diploma, duration of working in civil service, and competences in communication technologies. The answers were regrouped and interpreted in order to test the matrix (developed by the authors in the previous chapters), which served as the theoretical framework for the interviews. In total valid responses were collected from 20 civil service leaders.

Given a vast diversity and scope of technology effects on communication, the results of semi structured interviews help answer the research question, as well as deepen the knowledge on Lithuanian civil service agents: whether they acknowledge or not the role of technologies and various innovative communication techniques; if they have sufficient knowledge on how to apply these instruments in practice, as well as a necessary number of educators/ consultants surrounding them who could teach how to use these technologies in digital marketing and communication innovations. Moreover, the research reveals how Lithuanian civil servants measure communication efficiency and sustainability. Thus, semi-structured interviews supported the theoretical implications and helped test the developed conceptual model/ matrix, which could be further used in other countries or industries or tested by applying quantitative methodologies in the next publication of the same series.

#### **4. Preconditions and measurement of communication sustainability in civil service organization: the role of technologies**

Having the evolution of the 'Efficiency' concept overviewed within the previous chapters (where modern communication efficiency theories refer to both economic and social value-added), going further, it is intended to examine how modern technologies (including digital marketing communication techniques) are applied in practice of civil service organizations while referring to a set of critical questions:

- Do the leaders of Lithuanian civil service fully acknowledge the role and effects of digital communication (knowledge, skills, and perception)?
- Is the sustainability respected and monitored, and do experts know how to use technologies in the time of change?
- Do and how the interrogated leaders of civil service organizations measure communication efficiency?
- How do civil servants link technology-based communication with political priorities, available inputs/ budgets, and strategies?
- Are stakeholders involved in digital networks of civil service organizations?

The qualitative research led to pertinent findings which were in line with scientific literature analysis and revealed the role of technologies on communication sustainability of Lithuanian civil service organizations. Based on the research results, technologies (including digital marketing) affect one third of the interviewed ministry representatives: with no respect to their communication experience the experts emphasized the opportunity to improve social image via Social Media. A great number of tools, channels and characteristics (such as the quality information on Facebook, interesting news and educative sessions on YouTube, life interactive dialogue with citizens and other stakeholders via webpages, content marketing, and online games) were mentioned, driven by their intention to improve transparency and social image.

Experts underline, that while sharing the information on various ministry activities (including progress reports) via social networks, ministries should ask citizens for advice in order to create stronger community spirit and engage society. Moreover, civil service organizations (including various ministry departments) should publish



relevant and innovative G2C-driven (Government to Citizens) articles online and directly consult/ educate people and other stakeholders in various topics. Two interrogated experts emphasize that nowadays' success stories and projects should be presented in an innovative and engaging way (for instance, videos, social events, and etc.); society should be involved in dissemination activities and innovation processes via participative marketing, open-source innovation, and new technologies. In parallel, citizens should be engaged in continuous monitoring and market research campaigns, while the main threats and challenges should be presented via digital marketing.

The role of Social Media, and more generically of technologies, was also emphasized in the context of non-financial reward: two interviewed respondents recommended presenting various activities, projects, results, best employees, and etc. via intranet and Social Media. One employee accentuated the role of various celebrations, events, excursions, trips, which could help build social trust and community spirit inside and outside organizations.

According to one third of the interviewed ministry representatives, the internal communication in civil service organizations is not centred on technologies. It is interesting to note, that three experts with business administration-oriented education were more pessimistic about the progress in transferring the information into digital space, while applying various digital communication tools and signing documents with digital signatures. It could be explained by their more profound knowledge and skills, related to technological innovation and digital communication, which are part of business-oriented study programs and compulsory in modern companies. The other two respondents with public administration background accentuated the role of administrative structures and communication efficiency within these structures: internal communication should be centred on horizontal communication in virtual space while digitalization means (transferring information from paper format to digital data, using more interactive techniques, such as messenger, email, e. signature, doclogic, and etc.) should help improve communication within administrative structures. Moreover, internal communication should be linked to external communication via webinars, video, and online consulting.

Notwithstanding experts' commitment to improve internal and external communication via technologies, it is obvious that their knowledge and skills in communication technologies and human resource management are limited: 9 experts did not mention the role of Social Media at all, while the mentioned modern techniques were far away from technological innovations. On the contrary, many experts accentuated more simplistic tools, such as Intranet and Messenger, while no one mentioned digital hubs, CRMs, robots, and other forms of artificial intelligence. It is interesting to note that one expert differentiate communication style, based on management level: medium level managers face the necessity to communicate more frequently; however, the experts could not mention any additional communication tools, related to medium-level management.

Given inefficient use of modern technologies, civil service organizations face the necessity to use more traditional communication channels (TV, Radio, and etc.) to reach the target audience and improve their social image, which might cause information asymmetry and emerge as a barrier for building community and engaging society. Smart communication technologies, social digital hubs (which connect various stakeholders), mobile technologies, application software are modern tools to communicate externally and internally; while among the main technological communication efficiency criteria it is worth mentioning factors, such as a number of engaged people, a number of activities and the scope of projects/ events, communication intensity/ frequency, transparency, a number of complains and reviews, perception of services and social image, information asymmetry in terms of response time and feedback content, and many others.

Smart technologies in use by civil servants, in particular mobile applications, could present ministry activities, engage society and build community, which is critical for social image. Open source innovation-driven hubs and applications, social advertising, digital marketing should help attract and collect creative ideas from citizens, involve the youth in technological innovation and build stronger community. More than one third of the experts acknowledged the effect of transparency strengthening via modern technologies: it was mentioned by experts with

rather diverse experience in civil service organizations and rather specific connection to internal and external communication.

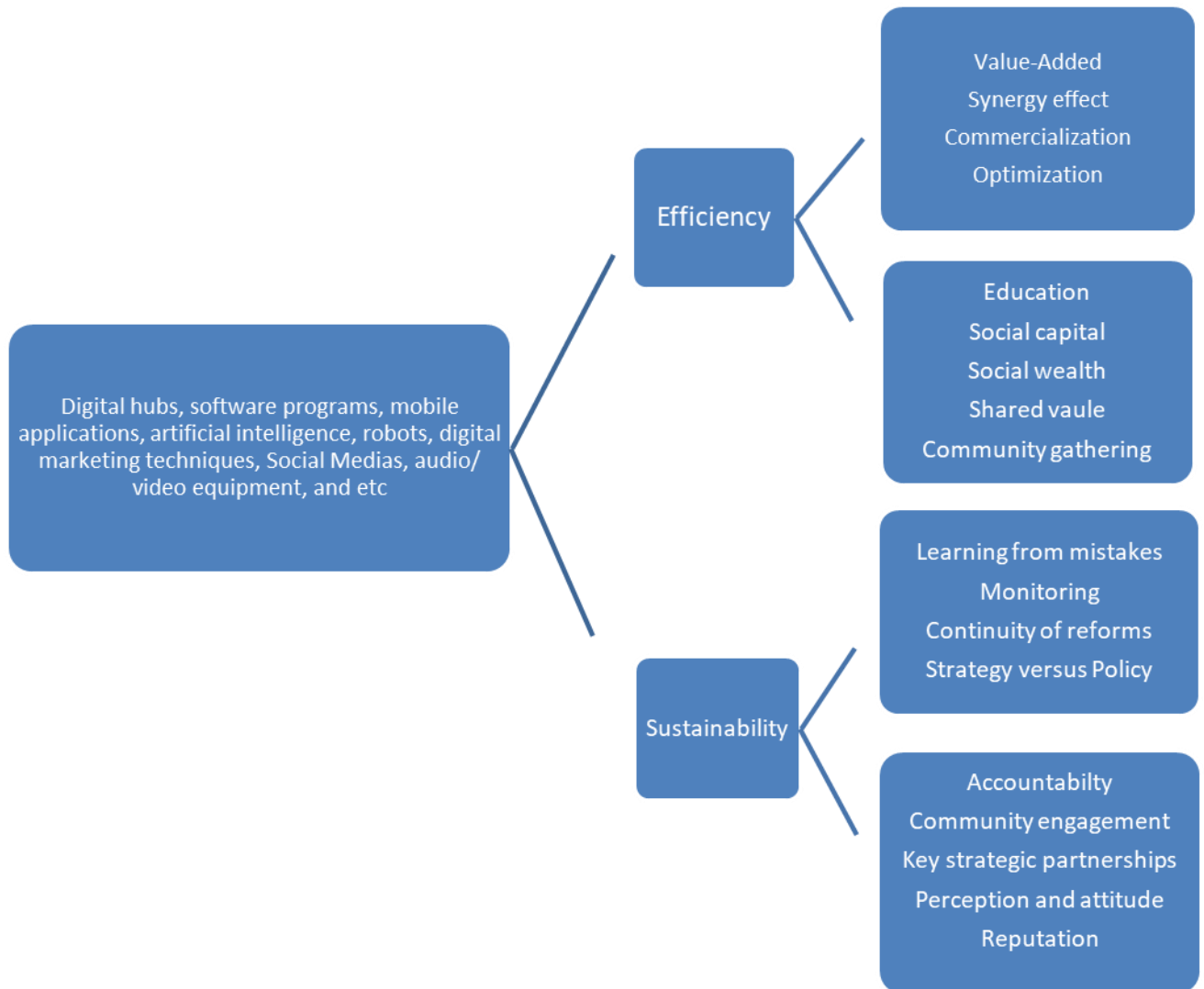
The civil servants with business education background emphasized the role of dissemination of on-going projects, activities, progress reports, and results via applications, digital hubs and social events. Driven by dissemination plans, the experts emphasized significance of engaging society, while asking clear questions and collecting stakeholders' feedback. A similar argumentation came from civil servants with Public Administration-related education: they emphasized the importance of dissemination via mobile applications, digital hubs, and social media networks; however, they also acknowledged the focus on budgeting for external communication, elimination of bureaucracy and 'bureaucratic jargon', as well as more frequent open-day meetings with society. Therefore, the combination between modern technologies and traditional communication ways should be established in civil service organizations, as the headcount is composed of employees of different age groups.

Similar technological improvement was mentioned by 4 civil servants in the context of internal communication: two of them emphasized amelioration of more traditional communication tools (such as Newsletters, Intranet or transferring the data from books to digital format, video conference equipment, and etc.); the other two respondents suggested the intensification of application of various software programs or interactive forums online. Only one expert identified the technological advantage of tracking the feedback of resigning employees in order to find out the main reasons of employee turnover: satisfying or dissatisfying factors of choosing a particular public organization.

Although scholars and approximately one third of interrogated experts agree that modern technologies help improve the transparency and social image, communication technologies are not interpreted in the context of holistic innovation culture (which consists of many important aspects, such as creativity system, knowledge diffusion models, psychological climate, lifelong learning opportunities or continuous talent development). All these aspects might be achieved via intermediary factors, such as a number of creative leaders, innovation sponsors and intrapreneurs, clear and well-established innovation processes, cultural diversity and cultural employees, good psychologists, as well as on-going modern technology-driven research and digital marketing campaigns. Therefore, in the context of innovation, communication is interpreted via knowledge and human capital-intensive aspects and requires innovative Human Resource Management.

Within monitoring models, it is worth mentioning a set of efficiency criteria/ KPI-s (which could be used as efficiency metrics), such as a number of creative ideas, a percentage of commercialized innovative ideas, innovation commercialization speed and popularity/social image of civil service organization, employees' satisfaction and social trust, a number of complaints and conflicts, as well as teams' sustainability and project feasibility. Along with a set of efficiency criteria, communication monitoring models should be oriented to different age groups, in particular to unique "Z" generation and the youth or socially more vulnerable elder people.

Taking into account a somewhat limited cultural diversity in Lithuanian civil service organizations, it should be useful to connect to Lithuanian people living abroad or foreign students studying in Lithuania, to prepare digital innovation newspaper in Lithuanian and English, reward citizens with the best innovative ideas, employ Erasmus students for internship, create innovative ideas banks inside an organization, engage society in this initiative, and focus more on social life (hobbies, informal meetings, and events out of work). Within civil service organizations, creative leaders should be identified and encouraged in order to contribute to communication sustainability via both use of technologies and enhancing healthy psychological climate of an organization. To continue, research results helped support the theoretical matrix of technology effects (which was presented in the previous chapters) by concrete observations and insights of Lithuanian civil service experts; thanks to the research, the matrix was adjusted accordingly. See Figure 2.



**Figure 2.** Matrix of Technology Effects on Communication Sustainability in Lithuanian Civil Service Organizations

*Source:* prepared by paper authors, based on research results

Although Lithuanian civil servants acknowledge the role modern communication technologies play nowadays, they also underline the lack of knowledge and skills of using these technologies in practice. Thus, the communication efficiency during the time of reforms calls for lifelong learning and practical/ entrepreneurial education in terms of technological literacy, digital marketing and IT: all these technology aspects could facilitate knowledge sharing, improve communication quality and synergy effect among stakeholders, as well as help generate higher social value-added.

Although experts admit that without efficiently using communication technologies it is unlikely to contribute to social wealth of citizens, reach political priorities and corresponding strategic targets (such as shared value economy, networking, and community engagement/ gathering), they also accentuate a big gap between political priority and their strategies in terms of the use of communication technologies, as well as a limited consistency of

political directions and reforms. Moreover, technologies could have a great influence on sustainability, which refers to continuity, transparency, social image and feasibility, if sustainability was exceeded via social capital dimensions (such as social trust, fear of failure, perception, attitude, and etc.) thanks to interactive communication with stakeholders (reaching them via digital hubs, mobile applications, video advertising, and etc.). Community gathering and engagement through technologies would also contribute to transparency, social image, perception, and attitude.

### **Conclusions and Recommendations**

Notwithstanding that the literature on the role of technologies on communication sustainability is well established, the effects vary from purely financial results to non-financial, such as social value-added, community gathering or engagement; while Lithuanian Civil Service Organizations lack knowledge, experience and commitment to use communication technologies and techniques (including digital marketing) in practice, which jeopardize the smoothness and efficiency of internal and external communication. It is getting difficult to be transparent, engaging and satisfying other stakeholders without digital platforms, artificial intelligence, innovative software, mobile applications, and video advertising. Moreover, the society and key strategic partners bit by bit set higher communication standards as well as expectations towards civil service experts and their communication style.

An innovative Monitoring department of digital communication would be of significant value for civil service organizations with tall hierarchies and strict bureaucratic rules, while human resource managers should help develop or enhance employees skills in digital marketing, in particular of Social Media, and communication technologies, as collaboration-driven projects emerge as predominant form of activities; therefore, technologies help mitigate potential risks, increase synergy effect among stakeholders, improve transparency, accountability and society engagement, as well as accelerate innovation process and progress.

In spite of bureaucratic constrains, insufficient financial autonomy and limited support from policy makers in the area of modern communication technologies, the creative leaders of Lithuanian civil service organizations should lead informal technology and digital marketing-related education programs, encourage more interactive dialogue with citizens and other stakeholders while contacting them via the most popular and user-friendly technologies (such as mobile applications or digital hubs), as well as enhance creativity systems and innovation climate, which might help facilitate technology innovation in the future. The applied economic and social value-added indicators of communication efficiency should be accompanied by a number of success criteria which could track cooperation synergy effect, society engagement, and community gathering.

### **References**

- Abel, D.; MacGlashan, J.; Littman, M. (2016). Reinforcement of learning as a framework for ethical decision making. The Workshops of the Thirtieth AAAI Conference on Artificial Intelligence, Ethics, and Society: Technical Report WS-16-02, p. 8. <https://pdfs.semanticscholar.org/4f3b/3459cd39ef417966b9859dfd69659327d99a.pdf>
- Acar, O.A.; Puntoni, S. (2016). Customer empowerment in the digital age. *Journal of Advertising Research*, 56(1), 4-8. <https://doi.org/10.2501/JAR-2016-007>
- Accenture. (2019). The post-digital era is upon us: are you ready for what's next: Accenture Technology Vision 2019. Available online: [https://www.accenture.com/t20190304T094157Z\\_w\\_us-en/acnmedia/PDF-94/Accenture-TechVision-2019-Tech-Trends-Report.pdf](https://www.accenture.com/t20190304T094157Z_w_us-en/acnmedia/PDF-94/Accenture-TechVision-2019-Tech-Trends-Report.pdf)
- Bahena-Álvarez, I.L.; Cordon-Pozo, E.; Delgado-Cruz, A. (2019). Social Entrepreneurship in the Conduct of Responsible Innovation: Analysis Cluster in Mexican SMEs, *Sustainability*, 11(3714) <https://doi.org/10.3390/su11133714>

- Bala, M.; Verma, D. (2018). A Critical Review of Digital Marketing. *International Journal of Management, IT & Engineering*, 8(10) ISSN: 2249-0558, [https://www.researchgate.net/publication/328253026\\_A\\_Critical\\_Review\\_of\\_Digital\\_Marketing](https://www.researchgate.net/publication/328253026_A_Critical_Review_of_Digital_Marketing)
- Bates, B.J. (2009). Transforming information markets: Implications of the digital network economy. *Proceedings of the Association for Information Science and Technology*, pp.1-11. <https://doi.org/10.1002/meet.2008.1450450218>
- Batra, R.; Keller, K.L. (2016). Integrating Marketing Communications: New Findings, New Lessons, and New Ideas. *Journal of Marketing: AMA/MSI Special Issue*, 80(6), 122-145 <https://doi.org/10.1509/jm.15.0419>
- Bhatnagar, S. (2014). Public Service Delivery: Role of Information and Communication Technology in Improving Governance and Development Impact. ADB economics working paper series, No. 319, p. 36, ISSN: 1655-5252, <https://www.adb.org/sites/default/files/publication/31238/ewp-391.pdf>
- Bruhn, M.; Schnebelen, S. (2017). Integrated marketing communication—from an instrumental to a customer-centric perspective. *European Journal of Marketing*, 51(3), 464-489, <https://doi.org/10.1108/EJM-08-2015-0591>
- Carini, C.; Comincioli, N.; Poddi, L.; Vergalli, S. (2017). Measure the Performance with the Market Value Added: Evidence from CSR Companies. *Sustainability*, 9(2171), 1-19. <https://doi.org/10.3390/su9122171>
- Cartigny, T.; Lord, W.E. (2017). Defining social value in the UK construction industry. *Proceedings of the Institution of Civil Engineers – Management, Procurement and Law*, 170(3), 107-114, <https://dspace.lboro.ac.uk/dspace-jspui/bitstream/2134/25137/3/jmapl.15.00056.pdf>
- Daukševičiūtė, I.; Valainis, A.; Vilkaitė, N. (2011). Conceptualization of the Effectiveness of Marketing Tools. *Intellectual Economics*, 2(10), 200–211 <https://www.mruni.eu/upload/iblock/947/DAUKSEVICIUTE.pdf>
- Diakopoulos, N. (2016). Accountability in algorithmic decision making. *Communications of the ACM*, 59(2), 56–62. <https://doi.org/10.1145/2844110>
- Etzioni, A.; Etzioni, O. (2016). Designing AI systems that obey our laws and values. *Communications of the ACM*, 59(9), 29–31. <https://doi.org/10.1145/2955091>
- Fama, E.F. (1998). Market efficiency, long-term returns, and behavioral finance. *Journal of Financial Economics*, 49, 283-306, PII S0304-405X(98)00026-9, <http://www.e-m-h.org/Fama98.pdf>
- Ferguson, J.; Ronayne, P.; Rybacki, M. (2016). Comparing Leadership Challenges: Civil Service vs. Private Sector. *Centre for Creative Leadership, White Paper Part 2 in a 3-Part Series*, p. 20: <https://www.ccl.org/wp-content/uploads/2016/02/ComparingLeadershipChallenges.pdf>
- Fortin, D.; Ning, N.C. (2017). Guest editorial. *Journal of Consumer Marketing*, 34(6), 469-471, <https://doi.org/10.1108/JCM-07-2017-2268>
- French, S. (2017). Negotiating changes to Civil Service Performance Management Schemes: an analysis of the proposed Civil Service Performance Management Framework, p. 17: [https://www.pcs.org.uk/sites/default/files/site\\_assets/resources/performance\\_management/Performance%20Management%20-%20Renegotiating%20PM%20Report%202017.pdf](https://www.pcs.org.uk/sites/default/files/site_assets/resources/performance_management/Performance%20Management%20-%20Renegotiating%20PM%20Report%202017.pdf)
- Gao, Y. (2010). Measuring marketing performance: a review and a framework. *The Marketing Review*, 10(1), 25-40. <https://doi.org/10.1362/146934710X488924>
- Government Communication Service (2017). *The UK Government Communication Plan: Our Priorities in 2017/2018*, Crown Copyright, p. 44: [https://gcs.civilservice.gov.uk/wp-content/uploads/2017/08/6.3149\\_CO\\_GCS-Comms-Plan\\_FINAL\\_WEB.pdf](https://gcs.civilservice.gov.uk/wp-content/uploads/2017/08/6.3149_CO_GCS-Comms-Plan_FINAL_WEB.pdf)
- Grant, A.M. (2012). ROI is a poor measure of coaching success: towards a more holistic approach using a well-being and engagement framework. *Coaching: An International Journal of Theory, Research and Practice*, 5(2), 74-85, <https://doi.org/10.1080/17521882.2012.672438>
- Hovland, I. (2005). *Successful Communication: A Toolkit for Researchers and Civil Society Organisations Research and Policy in Development Programme*, Overseas Development Institute, ISBN 0 85003 776 X, p. 78 <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/192.pdf>

- Husain, Z. (2013). Effective communication brings successful organizational change. *The Business & Management Review*, 3(2), 8 [http://www.abmr.com/myfile/conference\\_proceedings/Con\\_Pro\\_12315/7-dubai13.pdf](http://www.abmr.com/myfile/conference_proceedings/Con_Pro_12315/7-dubai13.pdf)
- Jain, E.; Yadav, A. (2017). Marketing and Technology: Role of Technology in Modern Marketing, *IOSR Journal of Business and Management*, 19(5), 49-53, <https://doi.org/10.9790/487X-1905064953>  
[https://www.researchgate.net/publication/317308663\\_Marketing\\_and\\_Technology\\_Role\\_of\\_Technology\\_in\\_Modern\\_Marketing](https://www.researchgate.net/publication/317308663_Marketing_and_Technology_Role_of_Technology_in_Modern_Marketing)
- Jarrow, R.A.; Hogan, S.; Teo, M.; Warachka, M. (2003). Testing Market Efficiency Using Statistical Arbitrage with Applications to Momentum and Value Strategies, p. 48, available at SSRN: <https://ssrn.com/abstract=386440> or <http://dx.doi.org/10.2139/ssrn.386440>
- Jegadeesh, N.; Titman, S. (1993). Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *The Journal of Finance*, 48(1), 65-91. <https://doi.org/10.2307/2328882>
- Kanakaraj, M. (2010). An empirical validity of market integration hypothesis with special reference to the pepper market in Kerala. Pondicherry University, Dissertation. URL: <http://shodhganga.inflibnet.ac.in/handle/10603/900>
- Chahal, S.S.; Gill, K.S. (1991). Measurement of Marketing Efficiency in Farm Sector: A Review. *Indian Journal of Agricultural Marketing*, 5(2), 138-143.
- Kotler, P.; Keller, K.L. (2009). *Marketing Management*, 13th edition, Pearson, p. 816, ISBN-13: 9780136009986.
- Kohls, R.L. (1956). Toward a More Meaningful Concept of Marketing Efficiency. *Journal of Farm Economics*, 38(1), Oxford University Press on behalf of the Agricultural & Applied Economics Association, pp. 68-73, <https://doi.org/10.2307/1234491>  
<https://www.jstor.org/stable/1234491>
- Lakonishok, J.; Shleifer, A.; Vishny, R.W. (1994). Contrarian Investment, Extrapolation, and Risk. *The Journal of Finance*, 49(5), 1541-1578, <https://doi.org/10.1111/j.1540-6261.1994.tb04772.x>
- Lau, L.J.; Yotopoulos, P.A. (1971). A Test for Relative Efficiency and Application to Indian Agriculture. *American Economic Review*, 61(1), 94-109 [https://aae.wisc.edu/aae705/References/Lau\\_Yotopoulos.pdf](https://aae.wisc.edu/aae705/References/Lau_Yotopoulos.pdf)
- Lipsey, R.G.; Fraser, S; Harbury, C. (1993). *First Principles of Economics*. Oxford University Press, p. 544, ISBN0297821202 (ISBN13: 9780297821205) <https://global.oup.com/education/product/9780297821205>
- Luthra, A.; Dahiya, R. (2015). Effective Leadership is all about Communicating Effectively: Connecting Leadership and Communication. *International Journal of Management & Business Studies*, 5(3), 6: ISSN: 2231-2463  
[https://www.mcgill.ca/engage/files/engage/effective\\_leadership\\_is\\_all\\_about\\_communicating\\_effectively\\_luthra\\_dahiya\\_2015.pdf](https://www.mcgill.ca/engage/files/engage/effective_leadership_is_all_about_communicating_effectively_luthra_dahiya_2015.pdf)
- MacDonald, H.A.; Sulsky, L.M. (2009). Rating formats and rater training redux: a context-specific approach for enhancing the effectiveness of performance management. *Canadian Journal of Behavioural Science*, 41(4), 227-240. <https://doi.org/10.1037/a0015165>
- Macnamara, J. (2016). *Organizational listening: the missing essential in public communication*. New York, NY: Peter Lang, p. 377. ISBN-13: 978-1433130526
- Maduro, M.; Pasi, G.; Misuraca, G. (2018). Social impact investment in the EU. Financing strategies and outcome oriented approaches for social policy innovation: narratives, experiences, and recommendations, EUR 29190 EN, Publications Office of the European Union, Luxembourg, ISBN 978-9279-81783-0. <https://doi.org/10.2760/159402>, JRC111373, 100 p.
- McEwan, D.; Ruissen, G.R.; Eys, M.E.; Zumbo, B.D.; Beauchamp, M.R. (2017). The Effectiveness of Teamwork Training on Teamwork Behaviors and Team Performance: a Systematic Review and Meta-Analysis of Controlled Interventions. *PLoS ONE*, 12(1) <https://doi.org/10.1371/journal.pone.0169604>
- Milichovský, F.; Solčanský, M.; Sychrová, L. (2011). Approaches to Measuring the Effectiveness of Marketing Activities. *Trends Economics and Management*, 5(8), 131-138, [https://dspace.vutbr.cz/bitstream/handle/11012/19827/08\\_12.pdf?sequence=1&isAllowed=y](https://dspace.vutbr.cz/bitstream/handle/11012/19827/08_12.pdf?sequence=1&isAllowed=y)
- Otterlo, M. (2017). From Algorithmic Black Boxes to Adaptive White Boxes: Declarative Decision-Theoretic Ethical Programs as Codes of Ethics. Vrije Universiteit Amsterdam, The Netherlands, arXiv:1711.06035v1, p.7 <https://arxiv.org/pdf/1711.06035.pdf>
- Pagani, M. (2013). Digital Business Strategy and Value Creation: Framing the Dynamic Cycle of Control Points, *MIS*, 37(2), 617-632 <https://misq.org/digital-business-strategy-and-value-creation-framing-the-dynamic-cycle-of-control-points.html>

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Petersen, J.A.; McAlister, L.; Reibstein, D.J.; Winer, R.S.; Kumar, V.; Atkinson, G. (2009). Choosing the Right Metrics to Maximize Profitability and Shareholder Value. *Journal of Retailing*, 85(1), 95-111. <https://doi.org/10.1016/j.jretai.2008.11.004>

Sampaio, C.H.; Simões, C.; Perin, M.G.; Almeida, A. (2011). Marketing metrics: Insights from Brazilian managers. *Industrial Marketing Management*, 40, 8–16. <http://www.imasdmasmk.es/images/11136294201217Sampaio%20et%20al2011.pdf>

Saura, J.R.; Palos-Sánchez, P.; Cerdá Suárez, L.M. (2017). Understanding the Digital Marketing Environment with KPIs and Web Analytics. *Future Internet*, 9(76), 1-13. <https://doi.org/10.3390/fi9040076>

Shanga, S.M.; Wang, Y.Y.; Wana, Q.Q.; Linb, F.; Zhoua, W.J. (2017). International Interventions to improve communication between nurses and physicians in the intensive care unit: an integrative literature review. *Journal of Nursing Sciences*, 5(1), 81-88: <https://doi.org/10.1016/j.jjnss.2017.09.007>

Singh, A.; Saini, G.; Majumdar, S. (2015). Application of Social Marketing in Social Entrepreneurship: Evidence From India. *Social Marketing Quarterly*, 21(3), 152-172. <https://doi.org/10.1177/1524500415595208>

Solčanský, M.; Šimberová, I. (2010). Measurement of marketing effectiveness. *Economics and Management*, 15, ISSN 1822-6515, [https://www.researchgate.net/publication/266489513\\_MEASUREMENT\\_OF\\_MARKETING\\_EFFECTIVENESS](https://www.researchgate.net/publication/266489513_MEASUREMENT_OF_MARKETING_EFFECTIVENESS)

Solcansky, M.; Sychrova, L.; Milichovsky, F. (2011). Marketing Effectiveness by Way of Metrics. *Economics and Management*, 16, 1323-1328, ISSN 1822-6515, [https://www.researchgate.net/publication/228463982\\_MARKETING\\_EFFECTIVENESS\\_BY\\_WAY\\_OF\\_METRICS](https://www.researchgate.net/publication/228463982_MARKETING_EFFECTIVENESS_BY_WAY_OF_METRICS)

Taylor, J.; Yudkowsky, E.; LaVictoire, P.; Critch, A. (2017). Alignment for advanced machine learning systems. MIRI (unpublished) <https://intelligence.org/2016/07/27/alignment-machine-learning/>

Tene, O.; Polonetsky, J. (2014). A theory of creepy: technology, privacy, and shifting social norms. *Yale Journal of Law and Technology*, 16(1), 45 <http://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=1098&context=yjolt>

Wascher, E.; Hebel, F.; Schrot, K.; Schultze, J. (2018). Social Innovation Labs – a starting point for social innovation, sfs/TU Dortmund University, 89 p. Available online: [http://www.kosi-lab.de/files/content/documents/Berichte/KoSI-Lab%20Report%20Social%20Innovation%20Labs\\_final.pdf](http://www.kosi-lab.de/files/content/documents/Berichte/KoSI-Lab%20Report%20Social%20Innovation%20Labs_final.pdf)

Webmarketing123 (2011). State of Digital Marketing Report, Nov. 8, <https://www.slideshare.net/ecommercenews/webmarketing123-digital-marketingreport2011>

Young, A.; Aitken, L. (2007). Profitable marketing communications: A guide to marketing return on investment (New Delhi: Kogan Page India), pp. 212. ISBN 074944942X, 9780749449421

Zaimova, D.; Genchev, E.; Mochilov, H. (2012). Efficiency and Social Impact of Public Policies and Third Sector in Bulgaria. *International Review of Social Research*, 2(2), 125-140 [http://www.irsr.eu/issue05/09\\_Zaimova\\_p125-140.pdf](http://www.irsr.eu/issue05/09_Zaimova_p125-140.pdf)

Zhu, X. (2015). IT vs. Marketing: Efficiency and Effectiveness. WHICEB 2015 Proceedings 69, Wuhan International Conference on e-Business, Summer 6-19-2015, p. 8, <https://aisel.aisnet.org/whiceb2015/69/>

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