

ENTREPRENEURIAL DIGITAL STRATEGY AS MANAGERIAL TOOL FOR BUILDING SMART HOSPITAL

Piotr KORDEL

Silesia University of Technology, Department of Organization and Management; piotr.kordel@polsl.pl,
ORCID: 0000-0002-3610-830X

Purpose: to build the research model of Entrepreneurial Digital Strategy (EDS) as crucial managerial tool for shaping hospitals as smart, network oriented organisations.

Design/methodology/approach: the main research method is a systematic literature review in order to conceptualize the EDS as crucial driver of shaping hospitals as smart, network oriented organisations. Statistical analyses using data from OECD Health were used to present chosen input and output indicators of Polish national healthcare system.

Findings: the proposition of research model of EDS as the digital technology road map towards building the smart hospital based on cost and quality performance healthcare processes. Additionally, using chosen statistical data, the Polish national healthcare system in the world context is presented.

Research limitations/implications: the concept of smart organization is still not widely recognized in management science, so it is difficult to create detailed model of hospital assessment as a smart organization. Simultaneously, the current scientific output consulting company knowledge in this field is enough to create especially strategic concepts of smart hospital.

Practical implications: the draft of practical managerial tool for hospital managers who are going to transform their hospitals towards smart ones is presented in the article.

Social implications: the article has a special social impact which consist of strategic management concept oriented towards managing the challenges of today hospitals (esp. public ones). These challenges are concentrated on simultaneous need for quality growth and cost reduction.

Originality/value: the concept presented in the article is the part of assumptions of new managerial model suited for hospital transformation towards smart organization.

Keywords: entrepreneurial strategy, digital strategy, entrepreneurial digital strategy, smart hospital.

Category of the paper: research paper.

1. Introduction

According to Siemens (Siemens, 2020) among the most important challenges facing today hospitals are:

- high pressure on cost productivity, the potential of cost improvements in hospitality is very high and the operational margins are dropping,
- changing care models, shifting from quantity based to quality and value based,
- personalization and consumerization of healthcare,
- digitalization of healthcare and cybersecurity,
- WHO predicts the deficiency of two million health professionals across the EU by 2020.

In the context of above listed challenges the very promising idea in management science is smart organisation which in the reality of hospitals can be translated into smart hospital. The main purpose of this paper is to describe the theoretical assumptions of Entrepreneurial Digital Strategy (EDS) as a kind of vehicle which support the hospital managers to bring their hospitals closer to the concept of smart organisation. The main method used in the paper is wide systematic literature review based both on scientific articles and consulting firms publications. Although the category of smart organisation is not very well recognized in management science the existing scientific output is enough to create conceptual proposition especially on the strategic level.

The most important feature of smart organisation is resilience understood as organisational ability to develop in complex and unpredictable environment. According to Khan and Haleem (Khan, Halem, 2012) smart organisations are based on knowledge and network abilities, dynamically adopting new organisational forms and practices, they are learning and agile in their ability to opportunity identification and exploitation. Among the most important theoretical categories reviewed in the article are following constructs: entrepreneurial strategy, digital strategy as basics for new category of EDS and the smart hospital as an industrial specification of smart organisation category. The concept of EDS supported by two basic managerial tools, i.e. market opportunity navigator and balanced scorecard is presented in the paper. In other words the author proposes the agile strategic management concept EDS, which exploits both executive and emergent natures of organizational strategy, in order to support hospital managers on their way of building smart hospitals.

2. Entrepreneurial digital strategy

Entrepreneurial Digital Strategy (EDS) is a new concept in management science. In the nature of this strategic model is the well known concept of disciplined entrepreneurship (Sull, 2004) and strategic entrepreneurship (Ireland, 2001). Strategy and entrepreneurship create a paradoxical synthesis which stands for long-term organisational development which in complex and unpredictable environment is both executed and emergent. The central organizational competence in EDS strategy is digitalization, in other words digital resources are essential both for accomplishing strategic goals and identifying/exploiting strategic opportunities. The overall concept of EDS scientific category is presented in the figure 1.

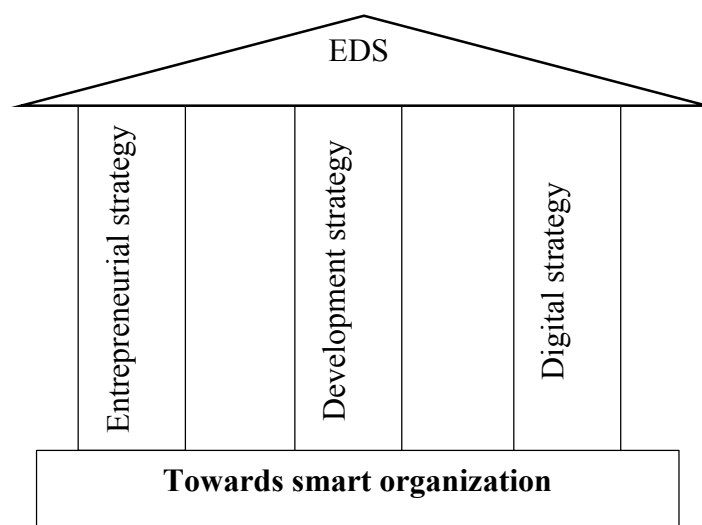


Figure 1. Entrepreneurial digital strategy of organizational development. Source: own study.

The above concept regards the new strategic model of organizational long-term development, which is both entrepreneurial and digital. In other words, the long-term competitive advantage of the organization is rooted in its entrepreneurial and digital competencies. Entrepreneurial development means strategic development model which is based on proactiveness, innovativeness and creativity (Kordel, 2018), in turn digital means development model which exploits digital technologies, including (Wolniak, Gajdzik, 2021): big data, new generation of sensors, artificial intelligence, machine learning, internet-of-services, internet-of-things, cloud computing, cybersecurity, mechatronics and advanced robotics, additive manufacturing, machine to machine communication and digital twin. The three key words creating the EDS category are: entrepreneurial, digital and strategy. After putting these words with the conjunction „and“ (i.e. entrepreneurial AND digital AND strategy) in Scopus engine with the option to search in titles, keywords and abstracts only one scientific article was generated (Drummond et al., 2020). The article concerns only the social media marketing.

Two the most important scientific categories which create the basic pillars for EDS are digitalisation strategy and digital entrepreneurship. The same literature searching method was used to analyze these categories like in previously described case of EDS with one narrowing difference being that searching key words only in article titles. However, the outcomes are entirely opposite, in case of digital strategy 193 scientific articles have been founded with the oldest dated on 1995 (Sakakibara, 1995), in case of entrepreneurial strategy 182 scientific articles have been founded with the oldest dated on 1984 (Murray, 1984). The visualisation analysis of theoretical research outcomes regarding two above described categories is presented on figure 2 and 3.

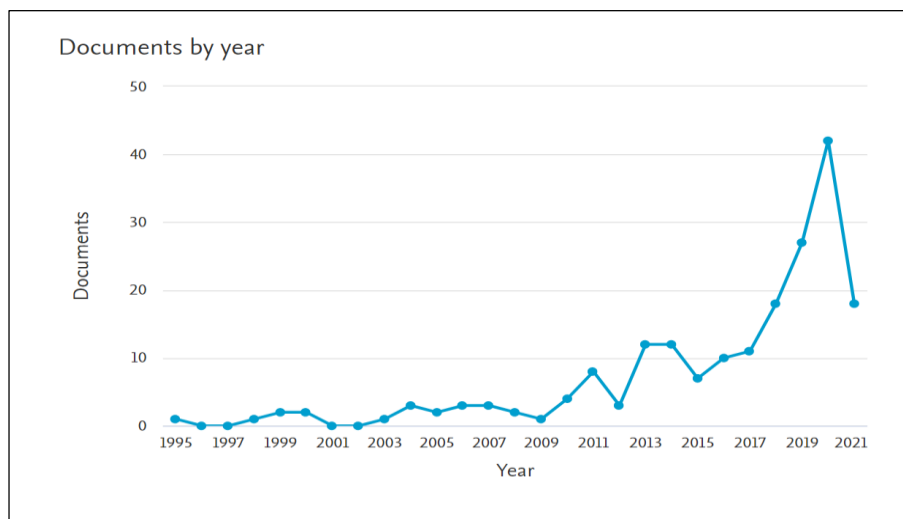


Figure 2. Outcomes of theoretical analysis of digital strategy category. Source: own study.

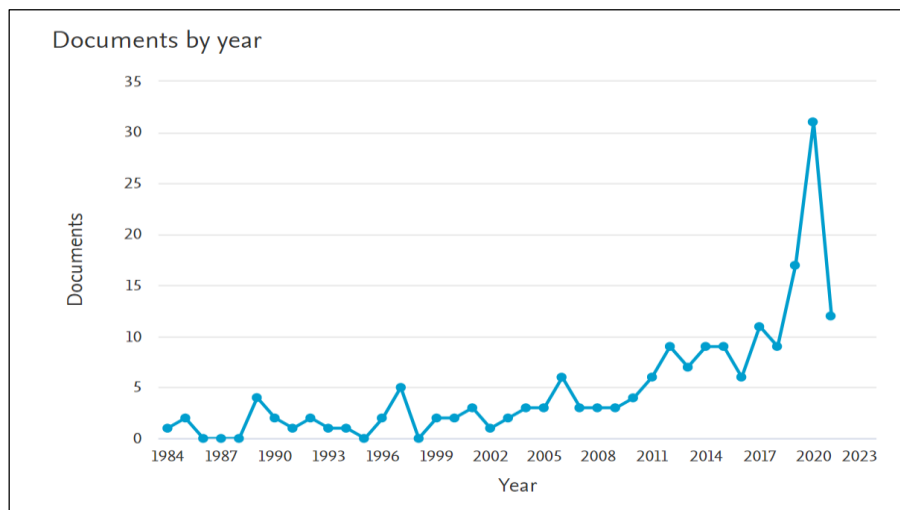


Figure 3. Outcomes of theoretical analysis of entrepreneurial strategy category. Source: own study.

Both above figures show the similar growth trend of no of scientific articles regarding digital and entrepreneurial strategies. Although the entrepreneurial strategy is elder scientific issue, both categories are marked by a clear jump in interest in 2020. It proves that the subjects are today very timely, and their merging into one concept of EDS would be scientifically very

interesting. The present quantity of articles (i.e. 193 in case of digital strategy and 182 in case of entrepreneurial strategy) is big enough to merge them multidimensionally in one.

The digital strategy is defined as (Bharadwaj et al., 2013) organizational strategy formulated and executed by leveraging digital resources to create differential value. This definition puts the digital business strategy over the functional strategies (e.g. human resource and marketing strategies) and emphasizes the general value of digital resources. The digital business strategy is based on digital mission, vision, tasks and targets, directly responsible for creating differential business value and connected with achieving KPIs as measures of organizational competitive advantage. The four essential themes connected with digital business strategy are (Bharadwaj et al., 2013): (1) the scope of digital business strategy; (2) the scale of digital business strategy; (3) the speed of digital business strategy; (4) the sources of business value creation and capture in digital business strategy. The scope of digital business strategy emphasizes its wide – transfunctional business process nature, includes the digitization of products and services and the information around them, exceeds traditional firm boundaries and supply chains and transform them into dynamic ecosystems that cross traditional industry boundaries. The scale of digital business strategy is connected with cloud computing services which provides a strategic dynamic capability for firms to scale up or down its infrastructure, network effects within multisided platforms that create rapid scale potential, information abundance and interorganizational networks (e.g. alliances and partnerships). The speed of digital business strategy is connected with time as an important driver of competitive advantage and regards time of new product introduction to the market, speed of decision making, time of supply chain orchestration and speed of network formation and adaptation. The sources of business value creation and capture in digital business strategy leveraging value from information, creation of multisided business models, capturing value through coordinated business models in networks, appropriating value through the control of the firm's digital architecture. The popular managerial tool for strategy formulation and execution is Balanced Scorecard with Dashboard (Rahimi et al., 2018).

Digital entrepreneurship (Nambisan et al., 2019) is a subcategory of entrepreneurship, maybe more specifically technology entrepreneurship, in which some or all of what would be traditionally physical has been digitized (Hull et al., 2007). In other words the most important parts of entrepreneurship phenomenon like entrepreneur, opportunity and entrepreneurial organization has been partly or entirely digitized according to the digital entrepreneurship category. The six most important topics connected with digital entrepreneurship are (Kraus et al., 2019): (1) digital business models; (2) digital entrepreneurship process; (3) platform strategies; (4) digital ecosystems; (5) entrepreneurship education; (6) social digital entrepreneurship. Digital entrepreneurship is strongly connected with three following essential categories: digital ecosystem as a context within which the digital entrepreneurship occurs, platform based digital business models as basic structures for the emergence of digital entrepreneurship and digital entrepreneurship process which is based on two generic phases,

i.e. digital opportunity formulation and exploitation. Digital ecosystem is (Sussan, Acs, 2017) “a self-organizing, scalable and sustainable system composed of heterogenous digital entities and their interrelations focusing on interactions among entities to increase system utility, gain benefits, and promote information sharing, inner and inter cooperation and system innovation”. Platform based digital business model are defined three dimensionally (McIntyre, Srinivasan, 2017): the economists emphasize the existence of direct and indirect network effects in this model, the strategists put the light on the ability of platform firm to stimulate value co-creation with their network of complementors as competitive advantage base and technology management specialists are focusing on technological architectures on which platform sponsors and complementors seek to innovate. Digital entrepreneurship process (Le Dinh et al., 2018) is defined as digital opportunity formulating and exploiting. Digital entrepreneurship is defined as the reconciliation of traditional entrepreneurship with the new way of creating and doing business in the digital era. The very popular managerial tool for digital entrepreneurship is Market Opportunity Navigator with Dartboard (Shepherd, Gruber, 2020). Merging the theoretically reviewed categories of digital strategy and entrepreneurship the following definition of entrepreneurial digital strategy can be formulated: organizational activity based on long term forecasting/planning and opportunity formulation/exploitation concentrated on leveraging digital resources to create innovation based competitive advantage (see tab. 1).

Table 1.
EDS as mix of digital strategy and entrepreneurship

Digital strategy	Digital entrepreneurship	EDS
Organizational activity based on long-term forecasting concentrated on leveraging digital resources to create competitive advantage	Organizational activity based on opportunity formulation and exploitation concentrated on leveraging digital resources to create innovations for customers	Organizational activity based on long term forecasting and opportunity formulation and exploitation concentrated on leveraging digital resources to create innovation based competitive advantage.
The most important categories: network effect as central phenomenon, dynamic ecosystem, multisided platform and information abundance	The most important categories: network effect as central phenomenon, digital ecosystem, multisided platform and information abundance	The most important categories: network effect as central phenomenon, digital ecosystem, multisided platform and information abundance
Managerial tool: Balanced Scorecard - Dashboard	Managerial tool: Market Opportunity Navigator – Dartboard	Managerial tool: balanced scorecard enhanced by innovation navigator

Source: own study.

The most important categories which are included in the pool of EDS are: network effect as central phenomenon, digital ecosystem, multisided platform and information abundance. Two basic managerial tools which support EDS are balanced scorecard with dashboard as strategy formulation and execution dimension and market opportunity navigator with dartboard as strategy emergence dimension.

3. Entrepreneurial digital strategy managerial tools towards building smart hospital

Building a digital hospital needs entrepreneurial digital strategy, in other words it requires investments in people, technology, processes, and premises. Every hospital is unique and specific with its own set of pain points, constraints, strategic objectives (incl. measures, targets and initiatives). Among the most important measures of hospital performance include (Tortorella et al., 2021): cost, productivity, quality, patient satisfaction, and patient safety. These investment should be concentrated on two basic measures, i.e. quality of healthcare delivery and cost productivity.

According to Deloitte (Deloitte, 2021) the six following core elements of an enterprise digital strategy are crucial at the beginning of building digital hospital: (a) create a culture for digital transformation, it is essential that senior management understands the importance of a digital future and drives support for its implementation at all organizational levels; (b) consider technology that communicates, digital implementation is complex. Connecting disparate applications, devices, and technologies—all highly interdependent—and making certain they talk to each other can be critical to a successful digital implementation; (c) play the long game, since digital technologies are ever evolving, flexibility and scalability during implementation can be critical. The planning team should confirm that project scope includes adding, modifying, or replacing technology at lower costs; (d) focus on data, while the requirements of data interoperability, scalability, productivity, and flexibility are important, they should be built upon a solid foundation of capturing, storing, securing, and analyzing data. According to Siemens (Siemens, 2021) the most important bases for implementing successful digital strategy are: (a) develop a multi-stakeholder group to manage and drive the smart hospital initiative; (b) clearly understand the hospital's current state in terms of technological and process constraints; (d) focus on outcome-based solutions that mitigate the key pain points; (e) evaluate solutions that have demonstrable value across multiple areas and support process re-engineering; (f) futureproof investments by ensuring solutions that are scalable and can support future integrations. The above described activities are necessary to overcome the digital strategy barriers. According to empirical research (Tortorella et al., 2020) two the most important groups of such digital strategy obstacles are social barriers and technical barriers. The first group includes misalignment with hospital's strategy, poor knowledge about technologies, absence of a qualified team and difficulties in finding good partners. The second group includes information security risks, implementing costs, regulatory changes and incorporated IT infrastructure.

The basic side of digital strategy towards building the smart hospital is knowledge in the field of spectrum of digital technologies which are available. According to McKinsey (McKinsey, 2018) the six the most cost effective digital solution are following: (a) paperless

data (incl. unified electronic health record/exchange, e-prescribing, intrahospital staff communication, clinicians' virtual assistants (AI)); (b) online interaction (incl. teleconsultation, remote monitoring of chronic disease patients, E-triage); (c) work flow/automation (incl. nurse mobile connectivity, barcoding medication administration, RFID tracking, vital parameter tracking, hospital logistics robotics, process automation through robots, e-referrals); d) outcome transparency/decision support (incl. performance dashboards, patient flow management, clinical decision support, advanced payor analytics, genetic testing); (e) patient self-care (incl. chronic disease management tools, medical chatbots, disease prevention tools, patient support networks, digital diagnostic tools, virtual reality for pain management); (f) patient self-service (incl. e-booking (electronic appointment system)). In this context, according to earlier mentioned empirical research (Tortorella et al., 2020) the technological side of digital strategy in hospitals can be divided in two bundles: (a) technologies used for capturing (sensing) and communicating information about patient, equipment, material or process, this bundle can be named sensing–communication technologies. It includes biomedical/digital sensors, IoT, big data, cloud computing and remote control/monitoring technologies; (b) technologies that process data producing actual information, moving or controlling a system, mechanism or software based on such information, this bundle can be named 'Processing–Actuation'. It includes 3D printing, collaborative robots, machine/deep learning and augmented reality/simulation.

According to Siemens (Siemens, 2020) the digital strategy provides a true competitive advantage by: increasing revenues, i.e. exploring diversified, innovative revenue streams and boosting outpatient market share and by reducing costs, i.e. sustainable cost control and innovative approaches to expense reduction. Two, the most important digital strategy activities are engaging hospital stakeholders and perform a prioritization exercise. Engage hospital stakeholders to understand the key challenges and pain points across hospital operations and how these factors map to priority outcomes such as decreasing operating costs, reducing patient accidents, or dealing with staff shortages. Perform a prioritization exercise of these pain points and objectives to help focus investment decisions and identify relevant technologies that would mitigate the high-impact challenges and support key objectives. In this process two earlier mentioned EDS managerial tools, i.e. balanced scorecard and market opportunity navigator can be very helpful. Balanced scorecard method engaged the most important stakeholders in strategy formulation and execution processes. The most important purpose of this engagement are to build the strategy as kind of common consensus and mechanism of self-motivation based on responsibility for purposes which are authored by ourselves. The most important parts of strategy according to balanced scorecard including: mission, vision, key values and next objectives, measures and targets in four interconnected fields – i.e. financial, customer, process and R&D, should be formulated and executed commonly by the most important stakeholders. The market opportunity navigator is consisted of three stages: generation of market opportunity set according to customers and application, evaluation of market opportunity attractiveness

according to their market potential and challenge for organization, and designing the agile strategy (i.e. consisted of both growth options and backup options) according to market and product relatedness of formulated set of opportunities. Using both tools in accordance with entrepreneurial digital strategy idea allows for exploiting the potentials of strategy as ordered execution of earlier formulated long term plans and strategy as emergent phenomenon based on opportunities sensing and seizing.

4. Smart hospital, the case of Poland

Although the concept of smart organization is not very mature in management science, the existing research output allows for formulation the most important features of such an organization (Khan, Haleem, 2012; Filos, 2006): agility, adaptability, flexible form, learning form, knowledge-driven form and networking capabilities. The concept of smart organization arose from the need to respond dynamically to the changing landscape of a digital economy. A smart organization is composed of internetworked and knowledge-driven org., and therefore able to adapt to new organizational challenges rapidly. It is sufficiently agile to respond to opportunities of the digital age. The three networking dimensions of smart organizations are following aspects (Filos, 2006): the ICT dimension, the organizational dimension and the knowledge dimension (see fig. 4.).

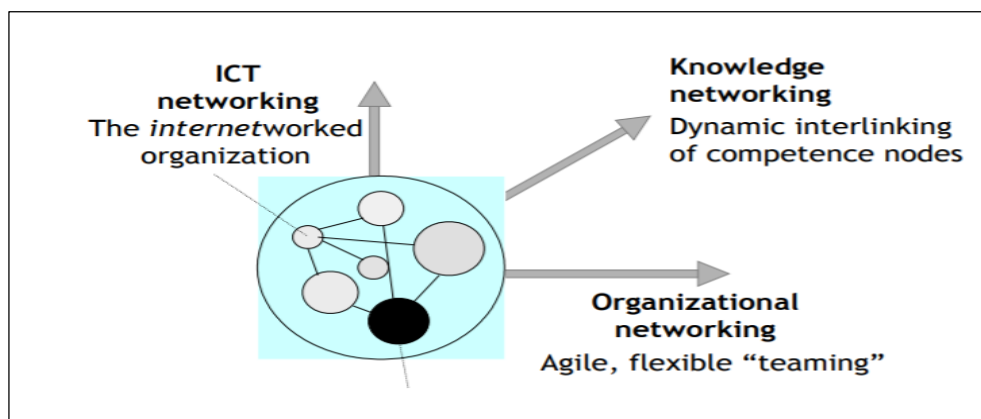


Figure 4. The three networking dimensions of smart organization. Source: Filos, E. (2006). *Smart organizations in the digital age. Integration of ICT in smart organizations*. Brussels: European Commission, Directorate-General Information Society and Media.

Networking at the ICT level enables organizations to move into extended or virtual organizational forms. The organizational dimension is based on collaborative partnerships which have become central to competitive success in fast changing global markets. The knowledge dimension is made up by three interconnected contexts, i.e. the business system, the project teams and the organizational knowledge base. Among the key enablers of smart organization are following pillars (Khan, Haleem, 2012): (a) partnership and collaboration;

(b) technology support, especially information technology (IT); (c) customer relationships management (CRM); (d) change management; (e) leadership and top management support; (f) continuous learning and worker empowering (HRM); (g) knowledge management and performance management; (h) innovativeness and creativity; (i) team working and concurrent engineering (CE)/integration and coordination; (j) continuous improvement; (k) flexibility and adaptability. The category of smart organization is not widely recognized in the literature, the category of smart hospital is especially new in the theory of management science. On one hand hospital is very promising type of smart organization because of very intensive data, information and knowledge flows, on the other hand the hospital is very complex and dynamic kind of organization with many unpredictable processes and in consequence very difficult to manage as smart organization. Building the integrated and ready for implementation concept of smart hospital is very demanding challenge.

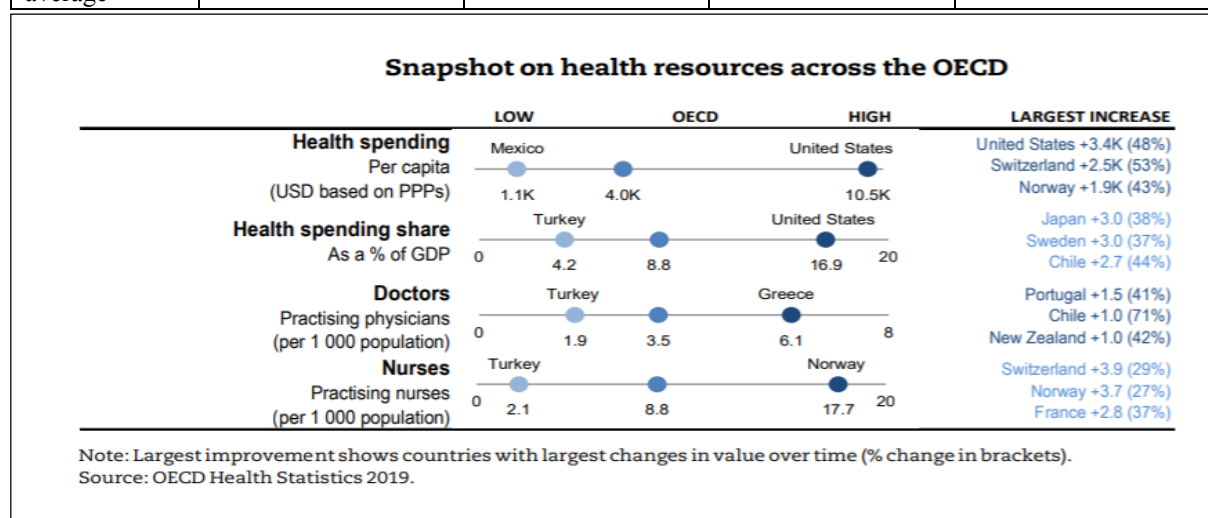
The majority of countries and many international political organisations are very strongly interested in digital strategies as ways for building smart hospitals (UE Commission, 2018). According to Deloitte (Deloitte, 2017) the digital hospital of the future can leverage technologies that transform the value processes in five following dimensions: (a) redefined care delivery; (b) patient experience; (c) staff management; (d) operations management and hospital design. Redefined care delivery will be based on centralized digital centers to enable decision-making, continuous clinical monitoring, targeted treatments (e.g. 3-D printing for surgeries), and the use of smaller, portable devices will help characterize acute care hospitals. The pillars of digital patient experience are digital and artificial intelligence (AI) technologies that can help enable on-demand interaction and seamless processes through a choice of devices to improve patient experience. Staff management will concentrate on enhanced talent development. Robotic process automation (RPA) and AI can allow caregivers to spend more time providing care and less time documenting it, as well as help enhance development and learning among caregivers. Next future digital hospital dimension, operation management and operational efficiencies through technology, will be based on digital supply chains, automation, robotics, and next-generation interoperability. These operation management digital technologies can drive operations management and back-office efficiencies. The last dimension, healing and well-being designs, is oriented both towards patients and staff members. An emphasis on the importance of environment and experience in healing will likely be important in future hospital designs. According to Siemens (Siemens, 2020) the crucial features of a smart hospital are: (a) greater efficiency through automation, for example integration of lighting, HVAC, shading systems reduces installation costs and enables patients to control the whole room; (b) improving outcomes via solutions that cut across historical silos. For example, use of Real Time Location Services (RTLS); (c) leveraging data (from multiple sources) to gain maximum value from the underlying technology; (d) overcoming technological choke points in a way that is scalable. For example hospitals are installing IoT sensors on a long range low power network to complement data collection.

The literature review in the field of smart hospital shows that although consulting companies (e.g. Deloitte, Siemens) offer very interesting implementation concepts of smart hospital and management science literature offers a lot in the field of smart organization there is a gap regarding the mature theory of smart hospital in the field of management science. The concepts of consulting companies are strongly technologically oriented without very important management aspects like organizational structure incl. culture as well, organizational leadership and organizational development strategy. The theoretical concept of smart organization should be unfolded towards hospitals as very complex organizations.

Building smart organization model for hospitals in Poland and EDS as smart vehicle of Polish public hospitals towards smart ones requires taking into account the analysis of Polish national healthcare system. Various parameters which describe this system can be divided into input parameters and output parameters. The most important input parameters according to OECD are presented in the table 2.

Table 2.
Dashboard on health resources in 2019

	Health spending	Health spending share	Doctors	Nurses
	Per capita (USD based on purchasing power parities)	As a % of Gross Domestic Product (GDP)	Practising physicians (per 1 000 population)	Practising nurses (per 1 000 population)
World leader – US	10 586	16.9	2.6	11.7
Lider UE – Sweden	5 447	11.0	4.1	10.9
Outsider world – Mexico	1 138	5.5	2.4	2.9
Outsider UE – Latvia	1 749	5.9	3.2	4,6
Poland	2 056	6.3	2.4	5,1
OECD average	3 994	8.8	3.5	8.8



Source: OECD Health at a Glance 2019.

Every input parameter, incl. health spending (per capita and as a % of Gross Domestic Product) and numbers of doctors and nurses is clearly below OECD average and near to EU outsider – Latvia. Very interesting data on Polish hospital resources especially in the context of digitalization strategy are published by OECD (see fig. 5).

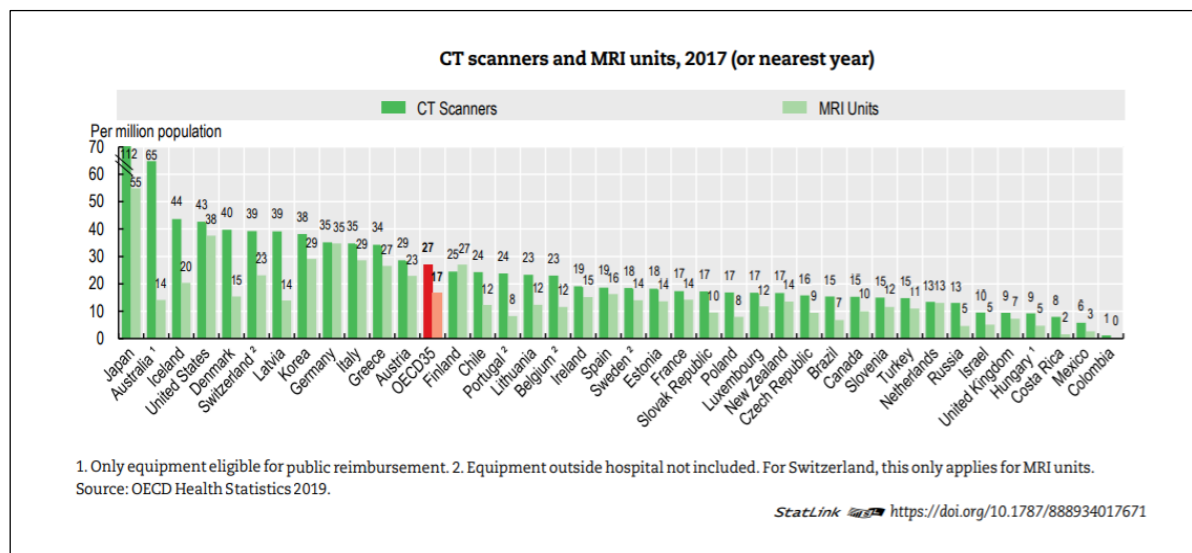


Figure 5. The level of digitalization of hospitals measured by no of CT scanners and MRI units. Source: OECD Health Statistics 2019.

According to the no of CT scanners and MRI units public hospitals in Poland ranks eleventh among OECD countries, and this position is also clearly below OECD average. The most important output parameters characterizing Polish public hospitals system according to OECD are presented in the table 3.

Table 3.
Dashboard on public health effectiveness in 2019

	Safe prescribing	Effective primary care	Effective secondary care	Effective cancer care
	Antibiotics prescribed (defined daily dose per 1 000 people)	Avoidable asthma/COPD* admissions (per 100 000 people, age-sex standardised)	30-day mortality following AMI** (per 100 000 people, age-sex standardised)	Breast cancer 5-year net survival (%; age standardised)
World leader – United States*	No data	268	5.0	90.2
Lider UE –Sweden*	10.2	169	3.9	88.8
Outsider world – Mexico*		85	27.5	No data
Outsider UE – Latvia*	12.1	242	13.4	76.9
Poland	23.8	236	4.1	76.5
OECD average	17.8	225	6,9	84.5

*COPD Chronic Obstructive Pulmonary Disease.
**AMI Acute Myocardial Infarction.

Source: OECD Health at a Glance 2019.

The output parameters for Polish healthcare is rather close to OECD average, only in the field of no of antibiotics prescribed the situation in Poland is clearly below OECD average. Very interesting standardized tool for performance assessment in hospitals was published by WHO (The Performance Assessment Tool for Quality Improvement in Hospitals – PATH). According to this method the most important dimensions of hospital performance are: (a) clinical effectiveness and safety; (b) efficiency, (c) staff orientation and staff safety, (d) patient centeredness.

After reviewing both healthcare measures system (see table 2 and table 3) and hospital level effectiveness measures on input and output sides one can conclude generally that hospital effectiveness measures system are well developed. Of course taking into account the EDS the performance measurement system should be complemented.

5. Conclusions

In the context of the most important challenges facing hospital system described in the introduction to this paper, i.e. (Siemens, 2020):

- high pressure on cost productivity, the potential of cost improvements in hospitality is very high and the operational margins are dropping,
- changing care models, shifting from quantity based to quality and value based,
- personalization and consumerization of healthcare,
- digitalization of healthcare and cybersecurity,
- WHO predicts the deficiency of two million health professionals across the EU by 2020.

Today hospitals should transform towards smart organisation. The first step in this process is diagnosis of hospital maturity as a smart organisation. This diagnosis can be made on three following levels (Filos, 2006; Khan, Haleem, 2012): digital technologies, partnership collaboration and knowledge contexts. After this strategic diagnosis the entrepreneurial digital strategy should be formulated using balanced scorecard and innovation navigator (Rahimi et al., 2018). This two strategic tools are complementary and ensure dual nature of strategy consisted of executive and emergent dimensions. This strategy should be measured by well developed, multidimensional system of effectiveness monitoring. The example of such a measurement dedicated to hospitals is described in chapter 4 PATH tool. The entire three steps process of EDS implementation is presented on below figure (see fig. 6).

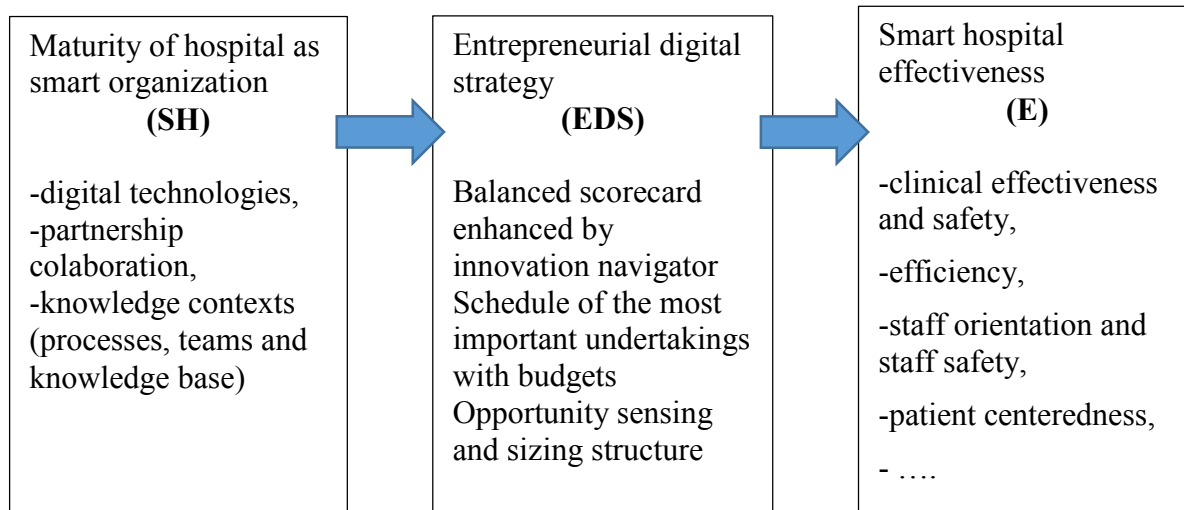


Figure 6. Draft of entrepreneurial (both executive and emergent) strategy of building smart hospital. Source: own study.

The above proposed model is conceptual, based on literature review (both scientific and published by consulting companies). It should be discussed and empirically validated. The model of smart organization maturity should be developed, operationalized and adjusted to the hospital environment. The entrepreneurial digital strategy as central mechanism of transforming hospital towards smart organization should be developed regarding issues like smart leadership and smart organizational structures incl. cultural aspects. Smart functional strategies, especially marketing and human resource strategies as crucial parts of EDS should be also developed. The multidimensional performance measurement system need to be complemented with measures specific for smart organisation concept.

It should also be remembered that the vast majority of hospitality in Poland is part of the national health care system. Any changes on hospital level should be enhanced or inspired by changes on national health care system. Meanwhile, the analysis of OECD data on health care expenditure presented in the table 2 (i.e. national health spending per capita and as a % of GDP, no of doctors and nurses per 1 000 population) compared to OECD associated countries show that polish indicators are drastically lower than the leaders indicators and below the average, but quite close to outsiders. Similar situation is when taking into account no of CT scanners and MRI units which is presented in figure 5. In the context of this it is obvious that success of EDS implementation on hospital level as part of national healthcare system should be preceded by drastic increase in national healthcare expenses. The adequate national healthcare programs should be formulated and next the hospital can implement strategic tools like EDS.

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