Critical Success Factors for Adopting Electronic Document Management Systems in Government Units

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Abstract—This study aims at proposing the framework of critical success factors (CSFs) for the adoption of an electronic document management system (EDMS) in government units and at identifying such factors for local government in Poland. The study was based on a literature review, interviews with field experts, and a questionnaire survey. The results suggest a framework of 23 factors that were considered prerequisites for successful EDMS adoption. The factors are grouped into four categories to reflect economic, organizational, technological, and legal issues. Furthermore, nine CSFs for EDMS adoption in Polish local government units were identified. They include legislation imposing the obligation on EDMS adoption, technological readiness, quality of back-office software and its integration with front-office and ERP software, employees' awareness of EDMS adoption, front- and back-office software functionality and scope of its adoption, and information security. It is worth noticing that there are no economic factors in the set of the nine CSFs.

I. Introduction

In recent years, government units in Poland have been and still are subject to significant organizational and technological changes, like the public administration in the world [1]–[6]. The main goal of the changes is to improve the quality of government services and to adapt them to the constantly increasing demands of customers, especially citizens and businesses [7]–[9]. Information-communication technologies (ICTs) in public administration are necessary to provide an electronic communication contact with the customer, minimizing the number or even eliminating the need for customer visits to a government unit [10]. The implementation of appropriate technological solutions related to the introduction of organizational and legal changes allows government clients to safely submit documents, applications, and letters to government units, and receive responses through the same channel [11].

To meet such challenges, government units adopt ICT to improve customer relations and support internal processes related to document collection and management [12]–[15]. Solutions of this type are called electronic document management systems (EDMS). Generally, EDMS may be defined as "an umbrella concept covering various technologies including document imaging, document retrieval, reporting, character recognition, document management, workflow, form processing, content management, digital signature management, storage and archiving technologies, business process management, and collaboration." [16]

In this paper, EDMS is specified as an approach in the electronic management of documents across document entire lifecycle, i.e., ranging from submitting a document by a client to a government unit electronically to a client receiving a response from a government unit electronically. In this approach, paper circulation at each step of the document lifecycle is eliminated. In general, EDMS requires two kinds of software, i.e., front- and back-office software. Front-office software is available for government clients and provides them with electronic forms through which they can submit a relevant document (application, letter) to government units and receive a response.[1] On the other hand, back-office software is available to employees of government units and is used to manage these documents (applications, letters) in government units, i.e., register documents received from clients, manage processes related to these documents, and prepare and send responses to clients.[2]

The provisions of the law in force in Poland allow government units to resign from paper documents in whole or in part, depending on the type of public service provided [17]. Nonetheless, despite this possibility, a small number of government units decide to switch to EDMS[3] as the so-called basic system [18], i.e., one in which all processes and activities related to the provision of individual public services and the handling of related documents take place electronically without the use of paper documents.

However, the studies conducted so far have not analyzed the reasons why processes in government units are still carried out in the traditional – paper system, even though they have the appropriate software. The factors determining EDMS adoption as the basic system were also not analyzed, and no recommendations were given to improve this state of affairs. Such knowledge gaps represent a research gap. Therefore, it allowed us to formulate the research objectives, which are: proposing the framework of critical success factors (CSFs) for the adoption of EDMS in government units and identifying such factors for local government in Poland.

Consistent with the purpose, the remainder of the paper is organized as follows. Section 2 reviews the current research

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[1] In Poland, the front-office software that the client uses to submit letters, applications, and documents to government units is called ESP. On the other hand, ePUAP is an example of front-office software that allows clients to submit letters, applications, and documents and receive responses.

[2] In Poland, such software is called eSOD.

[3] In Poland is called EZD.

on CSFs for EDMS adoption in organizations. Section 3 describes the research methodology and the data set used for the empirical work. Based on these data, Section 4 presents the results, including a framework of CSFs for EDMS adoption within government units and an assessment of the factors. Section 5 provides the study's contributions, implications, and limitations as well as considerations for future investigative work.

II. THEORETICAL BACKGROUND

The methodological basis for identifying the determinants of EDMS adoption is provided by the theory of CSFs [19]. According to this theory, CSFs are those areas and operations which determine success in a project and lead to obtaining desired objectives. Pursuant to this theory, it is, therefore, necessary to identify the most significant areas in electronic document management on which activities must be focused to achieve the assumed goal – success in adopting EDMS. This goal is directly related to the elimination of paper documents and the paper flow of documents.

The literature presents the results of research on the determinants of EDMS systems, however, they mainly concern business organizations, and only few relate to public organizations[16], [20].

Smyth pointed out two CFSs for the adoption of EDMS in public organizations, i.e., an information-sharing culture and senior management support [21].

Johnston and Bowen noted that EDMS adoption in organizations requires the engagement of policymakers and EDMS users and EDMS integration with the organization's processes . They also emphasized the necessity to educate, advise, and support EDMS users [22].

Hjelt identified three CSFs for EDMS in business organizations, i.e., EDMS and information quality, support quality (training, guidelines), and technological infrastructure [23].

Dyczkowski, in his research on improving the efficiency of IT projects in public management in Poland, listed among the success factors of IT projects, which is undoubtedly EDMS adoption: involvement of EDMS users, management support, experienced project manager, competent project team, efficient communication in the project team, clear business goals of the project, defined EDMS user requirements, ICT infrastructure standards and linking EDMS adoption goals with the organization's business strategy and with the personal goals of team members (motivation) [24].

Based on the study of Australian local and state government units, Nquyen indicated nine success factors for EDMS in the public sector: adequate and ongoing training and support, top management support, staff recordkeeping awareness and practice, excellent strategies of change management, good project management, motivated great implementation team, clear business vision and plan, system performance monitoring and management, well-prepared file plan [25].

McLeod et al. examined the literature on electronic documents and record management from 1996 to early 2009 [20]. They uncovered 44 case studies of EDMS adoption, of which 16 were related to the public sector. The following CSFs for EDMS projects were indicated: aligning projects with business objectives, chief executive commitment, and support of officers, involving employees at all levels within the organization including external stakeholders. According to the authors, communication, piloting and testing, change management, training, and support for users, policies, and guidelines are as critical as good planning and project management, and the existence or development of necessary "infrastructures" and demonstrating benefits.

Based on insights gleaned from a case analysis of practices and experiences of a local government in the UK, that has implemented an EDMS, Jones identified a set of lessons for EDMS adoption which include feasibility study, senior executive commitment, aligned business strategy, project management, improvements to user ownership, training, system utilization, information management processes, printing strategy, and post-implementation review [26].

Based on the existing studies and content analysis approach, Abdulkadhim et al. indicated 14 common factors related to the adoption of EDMS divided into three types, i.e., organizational, technical, and users [27]. Organizational factors included top management support, budget/cost, strategic plan, legislation environment, and collaboration. Technical factors embraced ICT infrastructure, EDMS implementation team, security and privacy/trust, user requirements, data quality, and system integration. Users factors were related to awareness, staff training, and resistance to change.

Alshibly et al. composed a list of 37 factors that were considered prerequisites for successful EDMS adoption. Then these 37 factors were grouped into six categories, i.e., technological readiness, top management support, training and involvement, resource availability, system-related factors, work environment, and culture [16]. Through a questionnaire survey and factor analysis, the authors confirmed that the factor group "system-related factors" was deemed the most important of all for successful EDMS implementation, followed by "top management support," "resource availability," "training and involvement," "technological readiness," and "work environment and culture."

Aziz et al. identified ten factors based on a literature review, UTAUT (Unified Theory of Acceptance and Use of Technology) and ISSM (Delone-McLean Information System Success Model), as well as experts' opinions. The factors included performance expectancy, effort expectancy, social influence, facilitating condition, system quality, information quality, service quality, the perceived value of records, policy, and security [28].

In summary, the most frequently mentioned success factors are top management support, internal communication, change management, a competent and properly selected project team, training for employees, as well as appropriate hardware and software infrastructure.

III. RESEARCH METHODOLOGY

A multi-step approach was applied in our research methodology:

1. Reviewing the literature. The general purpose of this step was to critically synthesize and appraise the current state of knowledge related to CSFs for EDMS adoption. The search for the appropriate literature began with five bibliographic databases, that is Ebsco, Science Direct, Web of Science, and Scopus. This was achieved by developing a relevant set of keywords and phrases such as "critical success factors," "CSFs," "electronic document management" "electronic government," "success factors," and "success" in all possible permutations and combinations (taking into consideration the logical AND, and OR as appropriate) and conducting a corresponding search. In addition, Google Scholar was searched to find some relevant literature, especially describing Polish experiences in EDMS adoption for governments. The set of CSFs for EDMS identified in the literature is included in Table I.

2. Defining and verifying the prototype framework of CSFs. This step required a combination of theoretical knowledge and practical experience. Only theoretical knowledge based on the literature review and practical experience based on working in practice can provide insights to indicate meaningful factors influencing e-government. Therefore, the factors indicated based on the literature were analyzed in the context of Polish government circumstances and the prototype CSFs for EDMS adoption were indicated on the basis of action research. The action research means the very close longstanding collaboration of the research team members with public government units in Silesia Province (Poland) which plan, implement, and use EDMS. Then, the 23 prototype CSFs were examined and verified through the means of interviews with field experts, i.e., employees of local and state governments who are responsible for EDMS adoption.

3. Creating the final framework of CSFs. At this stage, a survey questionnaire covering 23 CSFs was prepared. The survey question was: On a scale of 1-5 state to what extent do you agree that the following factors influence the adoption of EDMS in government units? A Likert scale was used to evaluate the strength of the influence of particular factors on EDMS adoption, which represented: 1 – disagree strongly, 2 – disagree, 3 – neither agree nor disagree, 4 – agree, 5 – agree strongly, respectively. Then, the pilot study was conducted in which 28 experts participated. The selection of experts was made in such a manner as to combine the knowledge and experience of scholars, researchers, and practitioners. The experts were employees of local and state government (25) who are responsible for ICTs and e-government adoption, and professors of Polish universities (3) who conduct studies and empirical research on e-government. The pilot study was carried out between May 8, 2017 and June 9, 2017. The variability and reliability analyses (the value of Cronbach's alpha coefficient was 0.91) of data collected proved the internal consistency of factors and underpinned the reasoning behind the decision to conduct further study of the 23 CSF framework. Additionally, at this step, some experts proposed minor changes in the prototype factors related to confusing or incomprehensible statements. It allowed us to elaborate on the final framework of CSFs (Table I) and the final version of the survey questionnaire.

4. Assessing 23 CSFs proposed and identifying CSFs for government units in Silesia Province. Having applied the Computer Assisted Web Interview, the survey questionnaire was uploaded to the website and submitted to all 185 government units in Silesia Province. The respondents were advised that their participation in completing the survey was voluntary. At the same time, they have been assured anonymity and guaranteed that their responses would be kept confidential. The data were collected between July 11, 2017 and September 19, 2017. After screening the responses and excluding outliers, there was a final sample of 110 usable, correct, and complete responses. It means that 60% of all government units from Silesia Province completed their responses fairly, in all respects. The sample ensured that the error margin for the 95% confidence interval was 5%. Government units varied in their types and the number of employees. The data were stored in Microsoft Excel format. Using the Statistica package and Microsoft Excel, the data were analyzed. The descriptive statistical analysis was employed to identify CSFs (Table I). The following statistics were calculated: min, max, mean, median (MDN), standard deviation (SD), and coefficient of variation (CV).

IV. FINDINGS AND DISCUSSION

Based on the literature review (step 1 of the research process), the interviews with experts (step 2 of the research process), and the pilot survey questionnaire (step 3 of the research process), a framework of 23 economic, organizational, technological, and legal CSFs for the adoption of EDMS in government units were identified (Table I).

Table I presents the detailed descriptive analysis of all 23 CSFs examined. Out of these factors, nine factors were identified that obtained the highest values of the arithmetic mean (above 4.0) and the median (equal to 4.0) in the study. These factors have been seen as critical for EDMS adoption as the base system. Using the Pareto [29] principle as critical among 23 factors, it was necessary to focus on five of them, those that determine EDMS adoption to the greatest extent. However, in the end, this number of factors was extended to nine, which was due to the slight differences in the values of their arithmetic means and medians, and expert opinions.

To sum up, the results of statistical analyses allowed us to recommend nine CSFs for EDMS adoption in Polish government units. These are: Legislation imposing the obligation on EDMS adoption (X23); Back-office software functionality and scope of its adoption (X19); Employees' awareness of EDMS adoption (X4); Quality of back-office software (X14); Integration of back-office and ERP software (X13); Technological readiness (X11); Integration of front- and back-office software (X12); Information security (X18); Front-office software functionality and scope of its adoption (X20).

TABLE I.
A FRAMEWORK OF CSFs FOR THE ADOPTION OF EDMS IN GOVERNMENT UNITS AND DESCRIPTIVE STATISTICS OF 23 CSFs

No	Description	Type*	Min	Max	Mean	MDN	SD	CV (%)
X23	Legislation imposing the obligation on EDMS adoption	L	2	5	4.19	4	0.851	20.31
X19	Back-office software functionality and scope of its adoption	T/O	2	5	4.15	4	0.768	18.50
X4	Employees' awareness of EDMS adoption	O	1	5	4.13	4	1.015	24.58
X14	Quality of back-office software	T	1	5	4.12	4	0.906	22.00
X13	Integration of back-office and ERP (Enterprise Resource Planning) software	T	1	5	4.10	4	0.928	22.64
X11	Technological readiness	T	1	5	4.06	4	0.998	24.56
X12	Integration of front- and back-office software	T	1	5	4.05	4	0.956	23.58
X18	Information security	T/O	1	5	4.03	4	0.981	24.36
X20	Front-office software functionality and scope of its adoption	T/O	2	5	4.01	4	0.862	21.50
X7	Information culture	O	1	5	3.96	4	0.877	22.13
X22	Legal regulations, procedures, policies, and guidelines	L	1	5	3.95	4	0.85	21.50
X15	Quality of front-office software	T	1	5	3.94	4	0.979	24.88
X16	Maturity of e-government services	T	1	5	3.92	4	1.006	25.67
X5	Employees' soft competences	O	1	5	3.91	4	0.963	24.64
X21	Integration of solutions at local and national levels, and their interoperability	L/T/O	1	5	3.91	4	1.045	26.74
X2	Expenditure on employees' ICT education and training	E	1	5	3.80	4	0.936	24.65
X9	Top management support	O	1	5	3.80	4	0.865	22.77
X6	Motivated and involved employees	O	1	5	3.69	4	0.983	26.65
X1	Expenditure on ICT	E	1	5	3.68	4	1.156	31.42
X8	Competent great adoption team	O	1	5	3.64	4	1.081	29.74
X3	Demonstrating economic benefits	E	1	5	3.59	4	0.979	27.28
X17	ICT risk management	T	1	5	3.54	4	0.974	27.54
X10	Management concepts adoption	O	1	5	3.08	3	0.858	27.84

* Notes: E – Economic, O – Organizational, T – Technological, L – Legal

It is worth noticing that there are no economic factors in the set of the nine CSFs. In the opinion of the government units examined, technological, organizational, and legal factors are the most important ones. A critical factor for EDMS adoption is a legal factor, i.e., legislation imposing the obligation on EDMS adoption in government units. Introducing mandatory electronic communication stimulates and accelerates front- and back-office software adoption for document management for a broad range of government processes, government services, relations with government clients, and relations between government employees within government units and between government units. Critical factors also include technological factors, i.e., technological readiness, quality of back-office software, and its integration with front-office and ERP software. Such integration is of great importance in improving the organization of work, processes, and document workflow, e.g., by eliminating duality – the need to conduct double document workflows (paper and electronic). The challenges, benefits, and risks of EDMS adoption also have a critical impact on EDMS adoption. The CSFs for EDMS consist of organizational and technological factors, including organizational solutions and methods, as well as technological issues. One of them is front- and back-office software functionality and the scope of its adoption, i.e., the

usage of EDMS for managing various documents and providing various government services for government clients. Information security, which includes technological solutions, organizational procedures, and legal regulations, is also critical for EDMS adoption.

V. CONCLUSIONS

Generally speaking, the adoption of EDMS poses a challenge and thus is an interesting subject of research. This research puts an effort to make some contribution to the development of studies on EDMS, especially on their successful adoption in government units. It explores the EDMS concept, indicates CSFs for EDMS based on the literature review, and identifies a comprehensive set of CSFs based on action research and expert interviews. Finally, it proposes the framework of CSFs for EDMS adoption. The research findings showed technological, organizational, and legal factors matter in accelerating the ability and willingness of government units to adopt EDMS successfully.

The CSFs framework proposed can be useful for transition, emerging, and developing economies, especially in Central and East Europe. Government practitioners could find answers to an important question: which areas and activities of government units should be a primary focus for achieving

the most satisfying results of transforming traditional document management to electronic document management. This research suggests important issues for programming, building, and developing EDMS.

The framework of critical success factors for EDMS adoption shown in this research should be explored in greater depth. By focusing on longitudinal research and expanding the number of government units examined from various countries, the authors hope to thoroughly verify this framework. Furthermore, there is also a need to conduct more in-depth research on EDMS, especially in: (1) exploring "best practices" to be used to successfully adopt EDMS, (2) investigating the "demand-side" of EDMS from the viewpoint of government units clients, i.e., citizens and businesses view, and (3) identifying strengths, weaknesses, opportunities, and threats of EDMS in government units. Those will be considered as future work.

VI. REFERENCES

[1] D. MacLean, and R. Titah, "A Systematic Literature Review of Empirical Research on the Impacts of e-Government: A Public Value Perspective," *Public Administration Review*, vol. 82, no 1, pp. 23-38, 2022. https://doi.org/10.1111/puar.13413

[2] N. Darmawan, "A Bibliometric Analysis of E-Government Research," *Library Philosophy and Practice (e-journal)*. 5861, 2021. https://digitalcommons.unl.edu/libphilprac/5861

[3] J. D. Twizeyimana, and A. Andersson, "The public value of E-Government – A literature review," *Government Information Quarterly*, vol. 36, no 2, pp. 167-178, 2019. https://doi.org/10.1016/j.giq.2019.01.001

[4] J. M. Sánchez-Torres, and I. Miles, "The role of future-oriented technology analysis in e-Government: a systematic review," *European Journal of Futures Research*, vol. 5, no 15, pp. 1-18, 2017. https://doi.org/10.1007/s40309-017-0131-7

[5] E. Ziemba, "The Contribution of ICT Adoption by Local Governments to Sustainability—Empirical Evidence from Poland," *Information Systems Management*, vol. 38, no 2, pp. 116–134, 2020. https://doi.org/10.1080/10580530.2020.1738600

[6] E. Ziemba, "The ICT adoption in government units in the context of the sustainable information society," in: *Proceedings of the 2018 Federated Conference on Computer Science and Information Systems FedCSIS*, M. Ganzha, L. Maciaszek, and M. Paprzycki, Eds., Adam Mickiewicz University, September 9-12, 2018, pp. 725-733, 2020. https://doi.org/10.15439/2018F116

[7] D. Agostino, I. Saliterer, and I. Steccolini, "Digitalization, accounting and accountability: A literature review and reflections on future research in public services," *Financial Accountability and Management*, vol. 38, no 2, pp. 152-176, 2022. https://doi.org/10.1111/faam.12301

[8] European Commission, *eGovernment Benchmark 2021: Entering a new digital government era*, Publication Office of the European Union, Luxembourg, 2021.

[9] I. Lindgren, and G. Jansson, "Electronic Services in the Public Sector: A Conceptual Framework," *Government Information Quarterly*, 2013, vol.. 30, no 2, pp. 163-172, 2013. https://doi.org/10.1016/j.giq.2012.10.005

[10] M. L. Correa Ospina, D. Saxena, and B. H. Díaz Pinzón, "Mechanisms underpinning the usage of e-government services by businesses: A proposal based on previous empirical research," *JeDEM - eJournal of eDemocracy and Open Government*, vol. 13, no. 2, 2021, Ongoing Papers. https://doi.org/10.29379/jedem.v13i2.685

[11] F. K. Y. Chan, J. Y. L. Thong, S. A. Brown, and Viswanath Venkatesh, "Service Design and Citizen Satisfaction with E-Government Services: A Multidimensional Perspective," *Public Administration Review*, vol. 81, no 5, pp. 874-894, 2021. https://doi.org/10.1111/puar.13308

[12] A. A. Aziz, Z. M. Yusof, U. A. Mokhtar, and D. I. Jambari, "The implementation guidelines of digital document management system

for Malaysia public sector: Expert review," *International Journal on Advanced Science, Engineering and Information Technology*, vol. 10, no 1, pp.198-204, 2020.

[13] A. Zuiderwijk, Y.-C. Chen, and F. Salem, "Implications of the use of artificial intelligence in public governance: A systematic literature review and a research agenda," *Government Information Quarterly*, vol. 38, no 2, 101577, 2021. https://doi.org/10.1016/j.giq.2021.101577

[14] J. Amend, J. Kaiser, L. Uhlig, N. Urbach, and F. Völter, "What Do We Really Need? A Systematic Literature Review of the Requirements for Blockchain-Based E-government Services," in: *Innovation Through Information Systems. WI 2021. Lecture Notes in Information Systems and Organisation,* F. Ahlemann, R. Schütte, and S. Stieglitz, Eds., Springer, vol 46, 2021. https://doi.org/10.1007/978-3-030-86790-4_27

[15] C. Fredriksson, F. Mubarak, M. Tuohimaa, and M. Zhan, "Big Data in the Public Sector: A Systematic Literature Review," *Scandinavian Journal of Public Administration*, vol. 21, no 3, pp. 39-61, 2017.

[16] H. Alshibly, R. Chiong, and Y. Bao, "Investigating the Critical Success Factors for Implementing Electronic Document Management Systems in Governments: Evidence From Jordan," *Information Systems Management*, vol. 33, no 4, pp. 287-301, 2016. https://doi.org/10.1080/10580530.2016.1220213

[17] Regulation of the Prime Minister of January 18, 2011, on document management offices, uniform subject file indexes, and instructions on the organization and scope of operation of institutional archives (Journal of Laws 2011 No. 14 item 67).

[18] Główny Urząd Statystyczny Urząd Statystyczny w Szczecinie, *Społeczeństwo informacyjne w Polsce w 2020 r.*, Warszawa, Szczecin, pp. 51-53, 2020.

[19] J. F. Rockart, and C. Bullen, *A Primer on Critical Success Factors*, Center for Information Systems Research Working Paper, 69, Sloan School of Management, MIT, Cambridge, 1981.

[20] J. McLeod, S. Childs, and R. Hardiman, "Accelerating positive change in electronic records management: Headline findings from a major research project," *Archives and Manuscripts*, vol. 39, no 2, pp. 66-94, 2011.

[21] Z. Smyth, "Implementing EDRM: Has it provided the benefits expected?," *Records Management Journal*, vol. 15, no 3, pp.141-149, 2005. https://doi.org/10.1108/09565690510632328

[22] G. Johnston, and D. Bowen, "The benefits of electronic records management systems: A general review of published and some unpublished cases," *Records Management Journal*, vol. 15, no 3, pp. 131-145, 2005. https://doi.org/10.1108/09565690510632319

[23] M. Hjelt, *End-user attitudes towards EDM use in project work: a case study of the Kamppi Center Project (Master's thesis)*, Department of Management and Organization, Swedish School of Economics and Business Administration (HANKEN), Helsinki, pp. 90, 2006.

[24] M. Dyczkowski, *Wiedza o krytycznych czynnikach sukcesu jako istotny element poprawy efektywności przedsięwzięć informatycznych w sferze zarządzania publicznego*, Akademia Ekonomiczna, Wrocław, 2007.

[25] L. T. Nguyen, P. M. C. Swatman., B. Fraunholz, and S. Salzmon, "EDRMS implementation in the Australian public sector," in: *Proceedings of the 20th Australasian Conference on Information Systems*, Melbourne, pp. 915-928, 2009.

[26] S. Jones, "eGovernment Document Management System: A case analysis of risk and reward," *International Journal of Information Management*, vol. 32, no 4, pp. 396-400, 2012. http://doi.org/10.1016/j.ijinfomgt.2012.04.002

[27] H. Abdulkadhim, M. Bahari, A. Bakri, and H. Hashim, "Exploring the common factors influencing electronic document management systems (EDMS) implementation in government," ARPN Journal of Engineering and Applied Sciences, vol. 10, no 23, pp. 17945-17952, 2015.

[28] A.A. Aziz, Z.M. Yusof, U.A. Mokhtar, and D.I. Jambari, "A Conceptual Model for Electronic Document and Records Management System Adoption in Malaysian Public Sector," *International Journal on Advanced Science Engineering and Information Technology*, vol. 8, no 4, pp.1191-1197, 2018. https://doi.org/10.18517/ijaseit.8.4.6376

[29] J. M. Juran, *Quality Control Handbook*, McGraw-Hill, 1951.