
Process Approach in Managing the Quality of Education

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Abstract:

Purpose: The aim of the article is to present a proposal for a model of educational quality management system using a process approach for technical universities too.

Design/Methodology/Approach: The theoretical part of the article discusses the issue of an education quality management system for technical universities in terms of processes. Further, the activities carried out by universities in the field of the teaching process were identified. A top-down method was used to define the general areas of the universities' didactic activities. In the next stage, the processes carried out at a technical university were divided into managerial, core and suppository ones.

Findings: On the basis of a case study, it is possible to apply a process approach to the management of educational activities.

Practical Implications: The proposed system of education quality management using a process approach together can be implemented in every technical university.

Originality/value: The research conducted at a selected technical university allowed for the development of an original model of an education quality management system based on a process approach. This is a new model proposed for an institution operating in the field of higher education. In practice, such institutions are managed based on classical, vertical, and organizational structures.

Keywords: Education quality, process approach, education quality management system, quality indicators.

JEL classification: I23, I25, M10.

Paper Type: Research study.

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1. Introduction

Education and research are particularly important for social and technological development in the reality often described according to the VUCA world concept. A changing world (volatile, uncertain, complex and ambiguous) increasingly requires knowledge and innovation to deal with new threats and human needs (Worley and Jules, 2020).

Today's universities face a great challenge to educate and conduct research at a high level of quality, but under completely new conditions. Nowadays, universities are presented as important in creating sustainable development of regions and cities through the creation of intellectual potential and providing valuable support for innovative processes which shape the local knowledge-based economy. The role of students in the economy of regions is also important. Students can be treated as an important part of the functioning of enterprises, as the business chooses locations with access to qualified labour resources (Klemens, 2020). Moreover, the competencies provided by universities should comply with the demand declared by the labour market (Adamska and Dymek, 2018).

The aim of the article is to present a proposal for a model of education quality management system using a process approach for technical universities. The investigation of the system was preceded by literature review on process management.

The proposed model is a response to legal and market requirements for the implementation of the teaching process, considering new conditions and the growing requirements of various stakeholder groups. The paper is based on desk research analysis of secondary data, mainly strategic documents of the indicated technical university, as well as domestic and foreign literature on the subject. Based on literature data and the experience of the authors, a universal model of quality management at a university with performance measurement system indicators for core processes was proposed and analyzed.

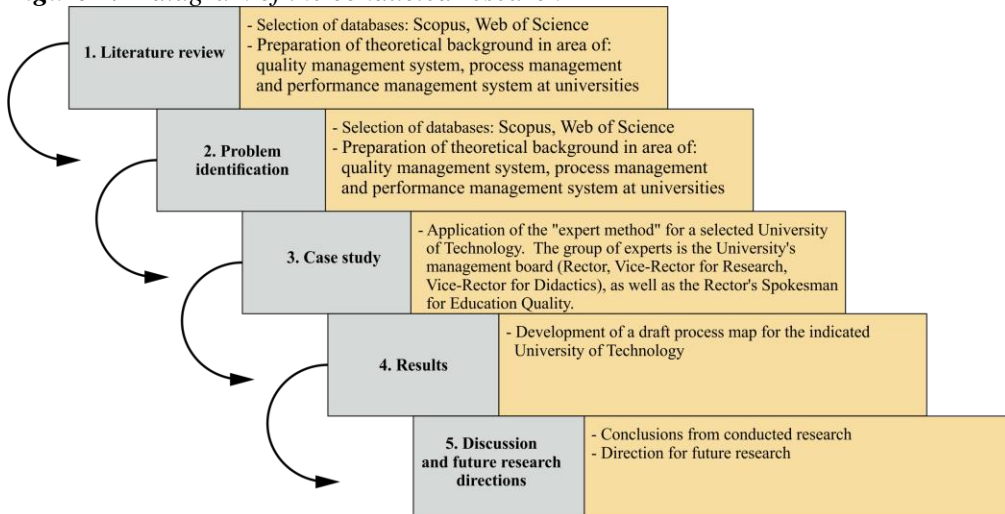
2. Materials and Methods

The research was carried out in five stages (Figure 1). Two key parts can be distinguished here: a literature review and identification of the research problem and a case study. The literature review is a necessary step in structuring the research area and deepens understanding of any emerging research domain (Easterby-Smith *et al.*, 2002).

The literature review also helps to identify the conceptual content of the field and can contribute to the development of theory (Seuring and Müller, 2008). In order to achieve the aim of the article, a case study was carried out on the basis of the procedure presented by (Czakov, 2013), while applying the principle that its

application is useful when there is little knowledge of the phenomenon under investigation (Eisenhardt and Graebner, 2007; Czakon, 2013). This is the case with regard to the research issue which has not yet been analysed in technical universities operating in Poland.

Figure 1. A diagram of the conducted research



Source: Own Elaboration based on Research.

The approach proposed in this paper assessing methods of the educational process was elaborated based on the Opole University of Technology – one of nineteen state technical universities in Poland. The University offers more than twenty-five full-time and part-time study courses in seven faculties. The Opole University of Technology is an interdisciplinary university with a predominance of technical faculties. This case was chosen because the University's management recognizes the principles of quality assessment of the educational process as a major element of the organisation's strategy.

3. Theoretical Background

3.1 Quality of Process Education

The concept of "quality" and its perception has changed in the 21st century, and it no longer boils down to just "compliance" and a focus on R&D. From the perspective of higher education, "quality" is rather an effort by the management of an organisation to harmonize the whole system in such a way that faculties, institutes, departments, administrations of universities and faculties, as well as teaching staff, strive to achieve the mission and organisational objectives in the context of assuring the quality of education in a harmonized working environment (Gulden *et al.*, 2020). On the other hand, most authors believe that "quality" is customer satisfaction, meeting customer expectations (Athiyaman, 1997), which in

turn leads to the implementation of improvements by the organisation. From this perspective and in the context of higher education, it can therefore be said that “quality” is the satisfaction of students and employers with educational services.

In order to analyze the concept of educational quality in more depth, it is also worthwhile to refer to the three dimensions of service quality, namely: material, interactive and company quality (Lehtinen and Lehtinen, 1991). Material quality is affected by the environment, i.e. the place where the educational process is carried out, the University's infrastructure and the teaching equipment used (Gadzaov and Dzerzhinskaya, 2018). It is important to emphasize the significant role of the IT infrastructure for remote learning, which is currently an important factor influencing the quality of the teaching process. The quality of interaction is determined by the relationship between the candidate/student/graduate and the university staff. Its dimension has also changed when relationships are built through electronic contact. The company quality is influenced by the reputation of a university, its history and its current image (Klemens and Kucińska-Landwójtowicz, 2019). In all the three areas, dynamic changes can be identified that require continuous improvement. This is in line with the definition saying that quality management in a university is mainly about improving the quality of education and strengthening scientific achievements (Sallis, 2014).

According to Sergeeva *et al.* (2019), in terms of education, the quality of education is considered from the point of view of the degree of compliance of the education system with the established requirements and the quality of educational services provided by an educational institution. On the other hand, it should be assessed through the prism of the effectiveness of the educational process responding to the needs of stakeholders, not only as regards students' appropriation of a certain amount of knowledge, but also the development of their personality, cognitive and creative abilities. Depending on the group of stakeholders, the quality of education may mean, respectively (Figlewicz, 2002), perfect development of students' intelligence, creativity and skills (the university' s perspective), preparation of students for work (the employers' perspective), level of research and scientific work (the Ministry' s perspective).

The quality of higher education is also closely linked to the development strategy and planning of a country. The results of a study on the history of development in European and American countries published by (Du *et al.*, 2017) have shown that improving the level of higher education can strengthen the capacity of talents to shape national economies, and can also promote prosperity and social progress.

Degtjarjova *et al.* (2018) indicate two main strategies for defining the quality of education in universities. The first one is process-oriented, the so-called IPO model, which includes elements of Input - Process - Output. The second is oriented towards indicators that focus more on financial inputs, administrative issues, student support, instruction, processes (e.g., procedural quality), results (e.g., student performance),

graduate careers, etc.

3.2 Process Approach in Education Quality Management

Over the last dozen or so years, business process management has become an important concept, which is aimed at achieving the objectives set by an organisation while minimising operating costs. Process management can be defined as the systematic identification and control of processes within a company and the links between them in order to improve their effectiveness and quality, with the aim of increasing the efficiency of the organization and meeting customer requirements (Kucińska-Landwójtowicz and Kołosowski, 2012).

It is assumed that process management, also known as the process approach, through continuous improvement of activities influences the efficiency of the organisation, and through demonstrating the need for process orientation, contributes to the creation of a flat, customer-oriented organisational structure. It requires, among other things (Bitkowska *et al.*, 2011), defining all processes in the organisation and their interrelationships; “translating” the general objectives of the organisation into process objectives, placing emphasis on the processes most important for the organisation from the point of view of added value, creating a system for measuring the effectiveness of processes and organisation, improving processes, building a process culture, creating an appropriate incentive system promoting teamwork. The process approach is mentioned as one of the principles of quality management, which is also included in the ISO 9001 standard. It forms the basis of a quality management system model whose priority is to strive for high quality products and services resulting from the operation of interconnected processes.

In recent years, this model has been recommended not only to manufacturing companies, which have been treating quality as a priority in the fight against competition for several decades, but it has also been successfully implemented in schools, universities, banks, and administrative offices. As mentioned earlier, universities now use technology for a wide range of activities, such as communication with stakeholders, data, and feedback collection. In this sense, the use of a process approach as a management strategy brings many benefits to universities, as defined, measured and improved processes lead to institutional development (Medne *et al.*, 2020). The process approach means that a higher education institution focuses primarily on its processes, and not on organisational units, workstations, or functions.

Vorozhbit *et al.* (2016) have suggested that the main objective of a management system operating in universities is the issue of control and corrective action on input streams and their internal processing operations. Consequently, obtaining the desired and planned results, while such products must be durable, which is important from the point of view of the fact that all processes are critical and some of them have a very short cycle.

In the light of the analysis, the authors define the educational quality management system using the process approach to organisation management as a set of processes, organisational structure and resources aimed at meeting quality requirements. It is a subsystem of university management and is used to guide and supervise activities regarding the quality of education.

It should be made clear at this point that process management also involves building a new organisational culture, founded on specifically defined principles (*Yusoff et al.*, 2016). The most important of these include trust and cooperation between employees, open communication and the use of the idea of teamwork, an incentive system to support the achievement of the process objectives, the transfer of adequate powers to employees, leadership and the introduction of mechanisms to reward teamwork, experience and the use of knowledge (*Skrzypek and Hofman*, 2010). These attributes of a process organisational culture can help to improve and develop the quality of education in a “soft” way, as highlighted by research of (*Sulkowski et al.*, 2016).

The implementation of a process approach in a higher education institution brings many benefits, which include (*Skrzypek*, 2003) a significant increase in the efficiency of processes, an increase in the competitiveness of the higher education institution through quality, timeliness, cost optimization, a more rational use of the school's resources, meeting the expectations of internal and external customers, the implementation of a process-based strategy, an increase in the efficiency of management, a better understanding of the higher education institution by recognizing the links between specific processes, improved communication, the incorporation of continuous improvement mechanisms into the strategy of the higher education institution, a greater emphasis on the skills of employees.

4. Results

In the first stage of the research, the activities carried out by universities in the field of the implementation of the teaching process were identified. A top-down method was used to define the general areas of the universities' didactic activities. The identification of the processes carried out in a higher education institution is very advisable and allows for: mapping the processes, indicating the links between them, examining the course of the processes to determine their place and role in achieving the basic objectives of a university, establishing a list of necessary procedures, drawing up the necessary procedures, instructions, and forms, building a pro-quality model of university management.

In the second stage, the processes were divided into managerial, core and suppository ones. Managerial processes have a strategic impact on how value is generated, regulate core and suppository processes, and their main task is to define the mission, strategy and operating principles of the entire organisation, including monitoring the effectiveness of processes (*Grajewski*, 2012). In universities, they

aim to develop and implement a quality policy for education, to manage the entire teaching process (planning, organizing, and controlling its course), and to manage and motivate human resources. In addition, in managerial processes, the following were identified: the provision of material resources to enable the implementation of the didactic process at the required quality level, information management and improvement of the education quality management system.

The managerial processes necessary for the proper implementation and operation of the education quality management system include, respectively: development and implementation of the education policy, didactic process management, human resources management, provision of material resources (premises and didactic infrastructure), information management, improvement of the education quality management system. Core processes directly generate added value and through their operation the quality and efficiency of the entire organisation is recognized and assessed.

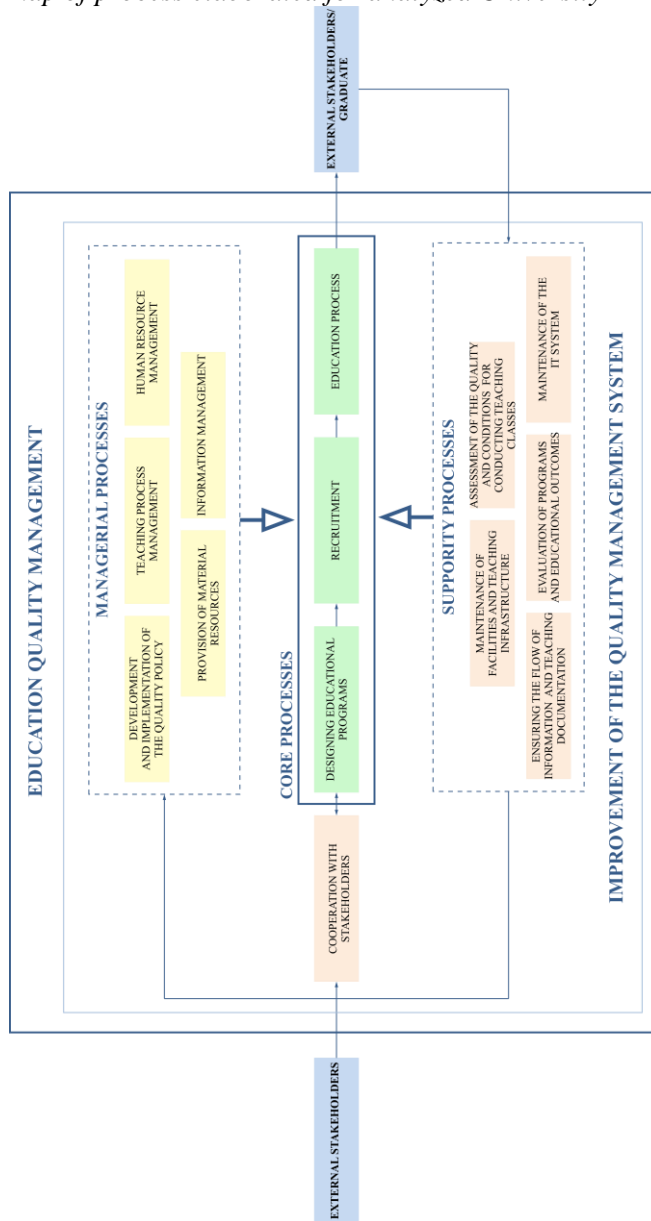
The core processes identified in student education include the design of educational programmes, recruitment and the educational process together with the diploma examination. Suppository processes indirectly generate added value, but in the case of a didactic process they affect its quality. In the university, in the group of suppository processes, the following were identified: maintenance of teaching facilities and infrastructure, evaluation of the quality and conditions of conducting classes, ensuring the flow of information and didactic documentation, evaluation of programmes and educational results, maintenance of the IT system.

The next stage of work was to develop a map of university processes. The processes identified in the education quality management system are presented in Figure 2. The development of a process map makes it possible to capture sequences of processes in individual areas of activity (managerial, core and suppository) and to present the links between them.

It is a starting point for building the next elements of the education quality management system related to process management, namely: designing the course of reference processes, developing process parameters and principles of internal market relations, developing tools supporting the operation of processes. It is also the basis for making decisions concerning the standardization of processes which allows to determine the ways of implementing activities within the scope of individual processes.

The process approach to education quality management allows for the introduction of a jointly developed model of didactic processes carried out at individual faculties of the university using best practices. It is also a point of departure for the development of a set of indicators for monitoring processes in each of the three groups identified.

Figure 2. The map of process elaborated for analyzed University



Source: See Figure 1.

The construction of a performance measurement system in process terms means designing, for each process identified in a company, a set of parameters allowing the measurement of indicated parameters (e.g., effectiveness, quality, timeliness, productivity). After the analysis of the processes, not only is a parameter describing its condition determined, but measurement points within the process are also designed, where measurement must take place. The advantage of the process

approach is to ensure ongoing supervision of the links between the individual processes in the process system, as well as their combination and interaction.

6. Discussion and Conclusions

Today, the quality and accessibility of education is a key factor in the competitiveness of a country. The provision of high-quality education is a key issue in view of technological development, economic growth, but also the need to adapt to the completely new conditions of the reality described according to the VUCA world concept. In the context of global competition in the market for educational services, attention is increasingly being paid not only to participants in the educational process, but also to scientists and researchers involved in the development of education. The quality of educational services affects not only the effectiveness of an educational organisation, but also directly the demand for graduates whose skills must meet the requirements of the labour market.

According to the observations of (Baitanayeva *et al.*, 2020), an undoubtedly important issue from the point of view of improving the quality of education is, above all, the integration of science, education and industry in a broad sense. The task of continuous updating of knowledge throughout life, in accordance with the requirements of modern socio-economic conditions, should be solved by introducing new, innovative educational methods using information technologies, i.e., the Moodle platform. The research carried out by (Baitanayeva *et al.*, 2020) has shown that the introduction of mass, open online courses, training courses with interactive participation and the use of e-learning technologies, as well as open access to the Internet, can also contribute to improving the quality of knowledge, while at the same time enabling educational establishments to be ready for the unpredictable turbulence of the COVID-19 pandemic and enabling the implementation of strategies for the internationalization of the education process.

The article presents a proposal for a model of education quality management system using a process approach for technical universities. The presented model is a response to legal and market requirements concerning the implementation of the didactic process, taking into account new conditions and growing requirements of various stakeholder groups, and also includes a draft performance measurement system for objective assessment of the quality of education. On the basis of a case study, it is possible to apply a process approach to the management of educational activities. The identification of processes implemented in a technical university and their analysis enables the selection of indicators to assess their quality.

By implementing this form of evaluation of the individual processes, it is possible to: demonstrate whether it is possible to achieve the goal, focus on the aspects that are important in achieving the goals and motivate employees to improve performance. It also enables the active participation of employees and stakeholders

in improving processes, identifying areas requiring special attention, linking parameters to company objectives, and stimulating continuous improvement.

As future research, the authors indicate the verification of the proposed model and draft performance measurement system for a technical university. The proposed performance measurement system will also be extended with indicators for management and support processes.

References:

- Adamska, M., Dymek, Ł. 2018. Didactic staff as a determining factor in the management of university image. *Scientific Papers of Silesian University of Technology. Organization and Management Series*, 124, 7-18. <https://doi.org/10.29119/1641-3466.2018.124.1>
- Athiyaman, A. 1997. Linking student satisfaction and service quality perceptions: the case of university education. *European Journal of Marketing*, 31(7), 528-540. <https://doi.org/10.1108/03090569710176655>.
- Baitanayeva, B., Aubakirova, Z., Aitbembetova, A., Sansyzybayeva, A. 2020. Problems of improving the quality of education. *E3S Web of Conferences*, 159. <https://doi.org/10.1051/e3sconf/202015909002>.
- Bitkowska, A., Kolterman, K., Wójcik, G., Wójcik, K. 2011. Zarządzanie procesami w przedsiębiorstwie. *Aspekty teoretyczno-praktyczne*. Difin.
- Czakon, W. 2013. *Podstawy metodologii badań w naukach o zarządzaniu*. Wolters Kluwer Polska.
- Degtjarjova, I., Lapina, I., Freidenfelds, D. 2018. Student as stakeholder: "voice of customer" in higher education quality development. *Marketing and Management of Innovations*, 2, 388-398. <https://doi.org/10.21272/mmi.2018.2-30>.
- Du, G., Yuan, J., Miao, F., Wei, P. 2017. Effectiveness of design process of education quality assurance system based on EFQM model. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(12), 8205-8211. <https://doi.org/10.12973/ejmste/80784>.
- Easterby-Smith, M., Thorpe, R., Lowe, A. 2002. *Management Research: An Introduction* (2nd editio). SAGE Publications Ltd.
- Eisenhardt, K., Graebner, M. 2007. Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25-37. <https://doi.org/10.2307/20159839>.
- Figlewicz, R. 2002. Kompleksowe zarządzanie jakością kształcenia w szkolnictwie wyższym na przykładzie Wyższej Szkoły Humanistyczno-Ekonomicznej w Łodzi. *OW WSHE*, 26-43.
- Gadzaov, A.F., Dzerzhinskaya, M.R. 2018. Mathematical methods of analysis of the periodic components of economic processes. *Modern Economy Success*, 1, 14-18.
- Grajewski, P. 2012. *Procesowe zarządzanie organizacją*. Polskie Wydawnictwo Ekonomiczne.
- Gulden, M., Saltanat, K., Raigul, D., Dauren, T., Assel, A. 2020. Quality management of higher education: Innovation approach from perspectives of institutionalism. An exploratory literature review. *Cogent Business and Management*, 7(1), 1-21. <https://doi.org/10.1080/23311975.2020.1749217>.
- Klemens, B. 2020. Economic Development through Clusters-Understanding the Idea of Cooperation in the Opinion of Students: A Case Study. *European Research Studies Journal*, XXIII(Issue 4), 558-570. <https://doi.org/10.35808/ersj/1700>.
- Klemens, B., Kucińska-Landwójtowicz, A. 2019. System zarządzania jakością kształcenia w

- uczelnia - ujęcie procesowe. In Ł. Sułkowski & K. Wach (Eds.), *Doskonalenie systemów organizacyjnych*. Wydawnictwo Uniwersytetu Jagiellońskiego.
- Kucińska-Landwójtowicz, A., Kołosowski, M. 2012. Determinanty dojrzałości procesowej organizacji. In R. Knosala (Ed.), *Innowacje w zarządzaniu i inżynierii produkcji*, 655-66.
- Lehtinen, U., Lehtinen, J.R. 1991. Two Approaches to Service Quality Dimensions. *The Service Industries Journal*, 11(3), 287-303.
<https://doi.org/10.1080/02642069100000047>.
- Medne, A., Lapina, I., Zeps, A. 2020. Sustainability of a university's quality system: adaptation of the EFQM excellence model. *International Journal of Quality and Service Sciences*, 12(1), 29-43. <https://doi.org/10.1108/IJQSS-09-2019-0108>.
- Sallis, E. 2014. Total quality management in education: Third edition. In *Total Quality Management in Education: Third Edition*. <https://doi.org/10.4324/9780203417010>.
- Sergeeva, M.G., Latipova, L.N., Rekhtina, I.V., Sannikova, N.I., Zemliakov, D.N., Shvedov, L.A. 2019. Organization of monitoring in the quality management system of the educational process when training of specialists. *Humanities and Social Sciences Reviews*, 7(6), 227-232. <https://doi.org/10.18510/hssr.2019.7642>.
- Seuring, S., Müller, M. 2008. From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699-1710. <https://doi.org/10.1016/j.jclepro.2008.04.020>.
- Skrzypek, E. 2003. Efektywność procesów w przedsiębiorstwie. In T. Wawak (Ed.), *Zmieniające się przedsiębiorstwo w zmieniającej się Europie*, tom 6. Determinanty jakości a efektywność procesów, 250–251. Wydawnictwo Instytutu Ekonomii UJ.
- Skrzypek, E., Hofman, M. 2010. *Zarządzanie procesami w przedsiębiorstwie*. Wolters Kluwer Polska.
- Sułkowski, Ł., Seliga, R., Woźniak, A. 2016. Kultura organizacyjna i zarządzanie uczelnią z punktu widzenia systemu zapewniania jakości w Polsce. *Przedsiębiorczość i Zarządzanie*, 17(9.3 Marketing w rozwoju innowacyjności), 221-233.
- Vorozhbit, O.Y., Rodionov, A.V., Shashlo, N.V. 2016. Mechanism of strategic, politic and process management of universities educational services quality. *Journal of Engineering and Applied Sciences*, 11(14), 3058-3066.
<https://doi.org/10.3923/jeasci.2016.3058.3066>.
- Worley, C.G., Jules, C. 2020. COVID-19's Uncomfortable Revelations About Agile and Sustainable Organizations in a VUCA World. *Journal of Applied Behavioral Science*, 56(3), 279-283. <https://doi.org/10.1177/0021886320936263>.
- Yusoff, A.R.M., Rahman, J.A., Ab-Rahman, M.S. 2016. Designing a reliable academic quality management system in nurturing future engineering professionals - a case study. *Pertanika Journal of Social Sciences and Humanities*, 24(April), 167-184.