

ORGANIZATIONAL MATURITY (MATURITY MATRIX DENTISTRY-MMD) AS A FACTOR OF PRODUCTIVITY OF DENTAL PRACTICES IN SLOVENIA

Rok Škrbinc

Faculty of Economics, University of Ljubljana, Slovenia
rok@skrbinc.si

Abstract:

On a global scale, there have been few studies carried out in the fields of productivity and maturity assessments of dental practices, and so far none has been carried out in Slovenia. With my research, I intend to explain the causes of varying productivity levels by implementing the Maturity Matrix Dentistry. Productivity will be analyzed in private and public dental practices in Slovenia and compared to a comparable study carried out in the USA in 2010 by Conrad et al. The Maturity Matrix Dentistry will be used to explain various levels of productivity. Maturity Matrix Dentistry is a simple tool to carry out maturity assessments of primary-level medical organizations. The assessment tool was developed in England, at Cardiff University.

The healthcare system is currently in a transitional period, as the policies of public and private operation in the fields of concessions, as well as self-financing operation are yet unclear. There is a strong initiative for acquiring concessions in fields creating high added values, such as dentistry. Considering this, a large number of new small practices are being established; such practices desire to operate independently, but do not have the requisite knowledge and resources for business organization and management. On the other hand, there are public healthcare institutions with resources that are not being utilized in a sufficiently efficient manner; the policies and strategies for improving productivity and improvements in the field of business organization are also insufficiently clear. The results and interpretations will represent the first such survey in Slovenia in the field in question. The survey results will contribute to the view of the situation.

Keywords: scientific study, dentistry, productivity, organizational maturity.

1. INTRODUCTION

The research will be carried out in the field of productivity and organizational maturity of practices (Maturity Matrix Dentistry) in Slovenia. On a global scale, there have been few such surveys, and so far none has been carried out. With the study, I intend to explain the causes of varying productivity levels by implementing the organizational maturity of practices (Maturity Matrix Dentistry). The research will be carried out in private and public practices.

1.1. Productivity of Dental Practices

The key to improving the productivity of a dental practice lies in the capabilities of the dentist, not in the capabilities and speed of his or her assistant staff. The more efficient the dentist, the larger the team of assistant staff he or she requires to provide service support. Each practice has its own form and key to success, which is composed of many small factors.

Pourat (2009, p. 1027–1031) notes that dental hygienists can improve the dentists' productivity, but that more than a third of dentists do not wish to hire them. The profession would require more information on the reasoning and characteristics of dentists that do not wish to employ dental hygienists. Pourat (2009, p. 1035) concludes that the hiring of a dental hygienist increases the capacity of the practice to treat a higher number of patients; however, not all dentists reach such a decision. The most important consequence of the decision regarding the hiring of a dental hygienist is the future development of the size of the practice.

By using a computer simulation model, Mullins (Mullins et al, 1998, p. 572–576) carried out a study of the effect of an increased number of assistant staff on the productivity of the practice. The study showed that by increasing the number of assistant staff, the income on average increased by 11 percent, whereas the net profit increased by only 3 percent.

Lipscomb (1986, p. 636) concludes that the cost efficiency of a practice increases with its size. The study was carried out in practices with one to four dentists working in the same practice. It showed that the size of the practices is subject to market conditions and socio-economic and political connections in the specific environment.

From the patient's viewpoint, Lipscomb (1986, p. 659) established that the size and cost efficiency do not necessarily affect lower service prices, shorter waiting periods and other non-price benefits.

1.2. Maturity Assessment of Practices (Maturity Matrix)

In 1997, Elwyn in Myres developed the "Maturity Matrix" tool for establishing maturity of primary-level organizations. Between 1997 and 2002, a pilot study was carried out in Wales and the tool proved to be a good tool for assessing organizational activities that support key development characteristics of organizations carrying out primary-level medical services. The "Maturity Matrix" is now in use in Great Britain and several European countries and has been approved by several professional institutions.

The "Maturity Matrix" was developed for several branches inside the primary level. In 2004, Cardiff University and its collaborators began developing tools for dental medicine. The pilot study was carried out in Wales. As the "Maturity Matrix" is a well-researched and established tool, the pilot study was carried out on a sample of 30 practices. The pilot study was

successfully concluded. The leaders as well as participants concluded that the tool is suitable and appropriate for use.

Maturity assessment is oriented towards organizational procedures and processes. It includes the persons employed in the work process and is beneficial as it points towards the importance of team work in the process of changing and developing the organization processes. The tool offers organization assessment, the comparison option (benchmarking) and provides the participants with immediate feedback on organizational maturity. The tool is suitable for primary-level organizations, regardless of type and size (Elwyn, Rhydderch, Edwards, Hutchings, Marshall, Myres & Grol, 2004).

For the needs of dental practices, the Maturity Matrix Dentistry-MMD was developed later on. The Maturity Matrix is a two-dimensional table, where columns represent the maturity measuring scale of the field, and the rows represent twelve development levels, which influence the maturity levels.

2. FRAMEWORK

2.1. Purpose

The research was oriented towards work processes and procedures and employees in a dental practice. As results of the practice operating well, excellent dental care and patient satisfaction we were able to determine a guide in assessing practice maturity.

By validating an international tool for assessing practice maturity, I wished to introduce maturity assessment of practices, as well as measurable criteria as a tool for development and productivity improvement of dental practices.

The purpose of the dissertation was to establish the connection between productivity and maturity assessment of practices within the framework of a theoretical and empirical section. For dental practices that will not participate in this study, the developed criteria will represent a guide as to which fields contain possibilities for improvement.

2.2. Aim

The first study in the field of productivity of dental practices, which would explain the connections between variables in the fields of productivity and organizational maturity of practices (MMD).

2.3. Hypothesis

Fields with lower assessment scores in organizational maturity (MMD) had a negative effect on productivity.

3. RESEARCH METHODOLOGY

3.1. Data and research methodology

I am proposing the following methodology: I will design a questionnaire containing typical questions relating to productivity and MMD. The answers to the questions will be gathered by

conducting personal interviews. I have chosen personal interviews primarily because MMD assessment requires an external assessor. The self-assessment procedure is divided into three sections. In the first section, the assessor explains the purpose and goal of the assessment and acquires group consent for filling out the questionnaire. In the second section, each individual self-assesses the development level of each field; then, the participants, with the assistance of the assessor, combine their opinions and try to reach a joint assessment of the development levels for individual fields. The purpose of the discussion is to reach a consensus on the assessment of development levels; in case a consensus cannot be reached, the lower assessment score of a development level is taken into account. In the third section, dental practices receive feedback on the assessment of development levels (MMD) and on the level of practice productivity, with deviations from the average of practices in Slovenia and abroad.

3.2. Data analysis

Productivity

The basic problem in measuring productivity is measuring the output. In past studies, the output was measured as gross invoiced realization (Nash & Wilson, 1987, Beazoglou et al, 2002); gross fee of the dentist (Gray, 1982); number of patients or visits (Doherty & Hussain, 1975); number of patient visits in the observed week (Conrad et al, 2010), and the majority of productivity analyses define output as the number and type of treated patients (Ozcan, 2008, Smith et al, 2009).

Productivity will be analyzed in private and public dental practices in and compared with a comparable study. A comparable study was carried out by Conrad et al (2010), in which the dependent output measurement, dentist visits, was determined by the number of patient visits in the observed (typical) week.

Assessment of practice maturity (Maturity Matrix Dentistry)

The MMD will be measured and compared for private and public dental practices and compared to a study carried out in England. MMD is carried out to assess the maturity level of a dental practice and represents a tool that enables the further development of the practice and benchmarking between dental practices. The research results will provide assessments of practice maturity on twelve observed development levels.

4. POTENTIAL FINDINGS

I will carry out a benchmark analysis of productivity and assessment of practice development levels.

To assess the practice development levels, I will carry out a frequency analysis of the collected data, followed by a factor analysis. As we observe the maturity of practices in relation to various factors, this is essentially a multiple linear regression (practice maturity depending on various factors). I will also perform an analysis of mutual dependencies of independent variables, and by applying factor analysis, rule out the effect of mutually connected variables. The application of factor analysis will allow me to extract some of the most important factors vitally influencing the quality of medical services and thus the maturity of practices.

To assess the connections of inputs and outputs of the production function, I will use the ordinary least squares (OLS) method. With the Structural Equation Modelling method, which complements the regression method of least squares, I will prepare separate analyses for private and public practices with the aim to determine how the independent variables affect the dental care output and their direct effect on other independent variables.

5. CONCLUSION

5.1. Defining the scientific contribution

On a global scale, there have been few studies carried out in the fields of productivity and maturity assessments of dental practices, and so far none has been carried out. As my purpose is to explain the reasons for various levels of productivity by applying the organizational maturity of practices (MMD), the results and interpretations will represent first such survey carried out in the field in question. The results of the survey will contribute to the view of the situation in Slovenia. Given that the healthcare system is in a transitional period, the dissertation will provide a broader meaning and possibilities for efficiency improvement.

5.2. Defining the work limitations

The basic problem in measuring productivity is measuring the output. In research in the field of productivity of dentists, the output was defined as the number of patients and income per dentist (Mullins et al, 1979); the number of services per dentist and income per dentist (Beazoglou et al, 2002); the number of dentist's working hours and number of patient visits (AIHW Dental Statistics and Research Unit, 2006), the number of patients per dentist (Doherty & Hussain, 1975); the number of performed services (Grytten & Dalen, 1996); income per dentist (Gray, 1981); four productivity measurements: number of patients per dentist's working hour, number of services per dentist's working hour, income per dentist's working hour and income per dentist when effectively working at the dentist's chair (Sintonen, 1986) and number of patient visits per input unit (Conrad et al, 2010).

REFERENCE LIST

1. AIHW Dental Statistics and Research Unit. (2006). *Trends in productivity of dentists in Australia*. Adelaide: The University of Adelaide.
2. Beazoglou, T., Heffley, D., Brown L. J. & Bailit, H. (2002). The importance of productivity in estimating need for dentists. *JADA*, 133, 1399–1404.
3. Conrad, A. D., Lee R. S. Y., Milgrom, P. & Huebner, E. C. (2010). Estimating determinants of dentist productivity: new evidence. *Journal of Public Health Dentistry*, 1–7.
4. Doherty, N. & Hussain, I. (1975). Costs of providing dental services for children in public and private practices. *Health Services Research* 10, 244–253.
5. Elwyn, G., Rhydderch, M., Edwards, A., Hutchings, H., Marshall, M., Myres, P. & Grol R. (2004). Assessing organizational development in primary medical care using group based assessment: the Maturity MatrixTM. *Qual. Saf. Health Care*.13, 287–294.
6. Gray, A. M. (1982). The production function of dental care in the British National Health service. *Scottish Journal of Political Economy* 29, 59–74.
7. Grytten, J. & Dalen, D. M. (1997). Too many or too few? Efficiency among dentists working on private practice in Norway. *Journal of Health Economics* 16, 483–497.

8. Lipscomb, J. & Douglass, C. W. (1986). Are Larger Dental Practices More Efficient? An Analysis of Dental Services Production. *Health Services Research*, 21(5), 636–661.
9. Mullins, M. R., Kaplan, A. L. & Mitry, D. J. (1979). Production-economic effects of delegation and practice size in a private dental office. *JADA*, 98, 572–577.
10. Nash, D. K. & Wilson, W. J. (1979). *Economies of Scale and Productivity in Dental Practices. Final Report*. Durham: Research Triangle Institute.
11. Ozcan, A.Y. (2008). *Health care benchmarking and performance evaluation*. New York: Springer Science+Business Media, LLC.
12. Pourat, N. (2009). Differences in Characteristics of California Dentists Who Employ Dental Hygienists and Those Do Not. *JADA*, 140, 1027–1035.
13. Sintonen, H. (1986). Comparing productivity of public and private dentistry, in: Culvyer A.J. & Jonsson B. eds., *Public and Private Health Services, Complementarities and Conflicts*. Basil Blackwell, Oxford.