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LEVERAGING DATA MINING TECHNIQUES IN ENHANCING THE EFFICACY OF HEALTHCARE IN THIRD WORLD COUNTRIES: SPOTLIGHT ON TURKISH CASE STUDY

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ABSTRACT

This paper presents a utilization of the information mining technique to decide the financial profiles of the public clinics in Turkey. The review depends on the information accumulated in 2004, covering 645 public clinics run by the Ministry of Health (MoH) as the fundamental supplier of essential and optional wellbeing administrations in Turkey. The public medical clinics, as of now financed by a combination of assets allotted from the overall spending plan and separately worked rotating reserves, need critical answers for their financial issues as a piece of a continuous public change exertion. The examination takes on the Chi-Square Automatic Interaction Detector (CHAID) choice tree calculation, as one of the most efficient and cutting-edge information digging technique utilized for division.

The investigation has discovered that the public clinics could be sorted by the CHAID into 12 unique profiles as far as their financial execution. These profiles have directed us in deciding the key financial markers to be engaged upon in the public emergency clinics and present accepted procedures to work on their individual financial exhibitions. The findings have likewise permitted strategy ideas regarding the financial techniques that might be considered in working on the financial execution of the public medical clinics toward an effective wellbeing area change in Turkey.

INTRODUCTION

Further developing wellbeing administrations is a lasting issue in the plan of the strategy producers and governments in the Western industrialized nations just as the creating scene. In nations with fairly chose governments, the change needs in wellbeing establish a vital thing in the party programs, promising better arrangement of wellbeing administrations. Be that as it may, the discussion frequently includes minimal about the monetary and financial input needed to acknowledge such approach recommendations and surprisingly less as far as the information prompting such arrangement investigations. Regardless of the huge disparities between their degrees of advancement, it is difficult to define a country, which has totally tackled its medical issues overall. Wellbeing administration has consistently been risky in all nations.

There have been many investigations completed by sequential governments in Turkey to work on the arrangement of wellbeing administrations since the beginning of the Republic. However, it was not until the last part of the 1980s that the wellbeing administration was focused on for an overall update. At the point when

Turkey went through a progression of primary changes, the examinations upheld by the World Bank on the wellbeing area in 1990 defined the 'current circumstance' as a 'issue' which ought to be tended to by proper changes (MoH, 2003).

The wellbeing change in Turkey has pointed toward getting sorted out, financing, and conveying the wellbeing administrations in a compelling, useful, and equivalent way. In December 2003, the public authority of Turkey reported a new and complete change program, named 'Wellbeing in Transition.' The significant parts of this program contained the institutional fortifying of Ministry of Health (MoH), presentation of a general health care coverage, a rearrangement of the wellbeing administration conveyance, improvement of the HR in the wellbeing area, quality confirmation and accreditation of wellbeing offices, foundation of a National Pharmaceutical and Medical Devices Agency, and the advancement of a sound data framework for the public wellbeing administration. Wellbeing administrations in Turkey are given basically by clinics. The MoH is the significant supplier of essential and auxiliary medical care and the main supplier of preventive wellbeing administrations. There are additionally other public and private medical clinics including those run by the colleges, Ministry of Defense, and private and other public institutions.1 This divided construction in medical care arrangement makes it difficult to guarantee a successful coordination and conveyance of wellbeing administrations (Kisa, 2001; World Bank, 2002; Giray, 2003). Different examinations have likewise demonstrated that the financing of wellbeing administrations is deficient in Turkey contrasted with the OECD nations and that there has been a low presentation and efficiency issue in the Turkish public medical clinics (SPO, 1990; Vassilou and Tokat, 1990; Kavuncubasi and Ersoy, 1995; MoH, 1992; Ozcan and Ersoy, 1994; Ozgulbas and Okem, 2002; World Bank, 2002; Ozgulbas, 2003; Ozgulbas and

Kisa, 2005; Ozgulbas and Koyuncugil, 2005; MoH, 2004). In 2004, the total wellbeing spending represented 7.7% of GDP in Turkey, more than one rate point beneath the normal of 8.9% across the OECD nations. (OECD, 2006).

The medical clinics considered under the wellbeing area change need dire improvement in their financial and the board structure as a piece of the basic strides for a general accomplishment of the change endeavors. Henceforth, the first step should include an exhaustive and

dependable investigation of the current circumstance with respect to the financial profiles and execution of the Turkish public clinics for a compelling plan and execution of Turkey's medical services change. However, there has been no such endeavor attempted by the MoH, nor by the singular emergency clinic organizations.

Consequently, this review targets deciding the financial profiles of the Turkish public emergency clinics by the information mining technique and along these lines defining their financial attributes to help strategy ideas in working on their financial execution. Given this unbiased and the way that the current information on medical clinic financing and financial the executives in Turkey are immense and conflicting, we recommend that the information mining technique can demonstrate valuable for the financial profiling of the public medical clinics.

Profiling and distinguishing more grounded and more vulnerable relations among the emergency clinics as far as factors would set a guide and focus for them. At first, this would require

i. A clarification of relations among the factors.

ii. Segmentation.

The clarification of relations among factors suggests information mining. Information mining is the investigation of information to find jewels of stowed away data in the tremendous amount of information caught in the ordinary course of the business. In this sense, it is not quite the same as the regular factual investigation. It requires building a Business Intelligence (BI) choice help application, specifically an information mining application, utilizing the information mining devices. The information mining application would then be able to utilize a complex mix of old style and progressed parts like artificial knowledge, design acknowledgment, data sets, conventional measurements, and illustrations to introduce stowed away connections and examples found in an association's information pool (Koyuncugil, 2004).

DATA COLLECTION

Information digging takes on different means for various targets. Choice trees are one of the most valuable and efficient information-digging techniques for division. It is a method of addressing a progression of decisions that lead to a class or worth. With such a series of rules acquired from choice trees, it is feasible to make profiles of firms and afterward characterize them as far as their differing

level of financial execution by utilizing such profiles. For each profile, the key financial markers, which require improvement for coming to an upper profile, are still up in the air. Along these lines, it is feasible to distinguish the model medical clinics, which the others ought to imitate, the methodologies to be followed, and the financial markers to be improved toward the outcome to be achieved toward the end. We have embraced the Chi-Square Automatic Interaction Detector (CHAID) choice tree calculation, as one of the most efficient and modern information mining techniques, for the division of public clinics and in deciding the presentation qualities of each profile. In the accompanying, we will first present an outline with respect to the information mining, choice trees, and the choice tree techniques. We will then, at that point, give a definition of the dataset and the technique. Afterward, the execution of the CHAID as the choice tree calculation and its outcomes will be introduced. At last in the closing segment, we will examine some proposed techniques for the improvement of financial execution of public emergency clinics in Turkey.

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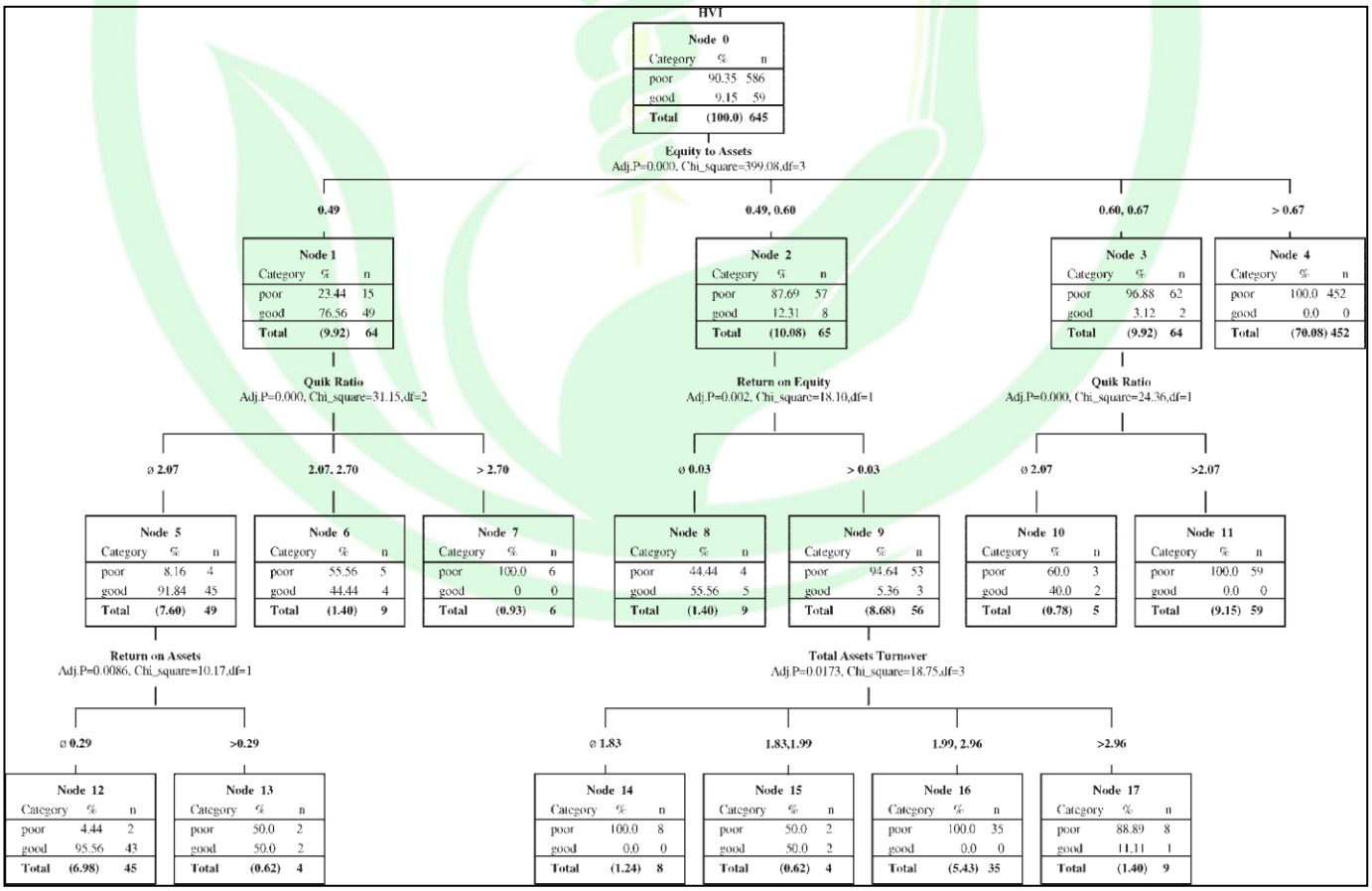
FINDINGS



The choice tree in Figure 1 clarifies the profiling and financial execution status of the Turkish public medical clinics dependent on CHAID strategy. It ought to be noticed that, despite the fact that it is feasible to comprehensively partition the emergency clinics into two classes as far as their great or poor financial execution, the CHAID technique empowered 12 distinctive profiles as far as their degree of financial execution. These profiles mean the financial markers the medical clinics ought to consider for great financial execution. They likewise fill in as models for the ineffectively performing medical clinics in working on their financial exhibitions.

As found in Figure 1, the CHAID strategy necessitates that the medical clinic profiling depends on value to resources proportion, which has the most grounded connection with the financial execution ($p < 0.000$). All things considered, the medical clinics with value proportion higher than 0.67 are gathered in the first profile. Every one of the 452 medical clinics (70.08%) out of totally shrouded in the review had poor financial execution.

Those with value proportion somewhere in the range of 0.60 and 0.67 are gathered in the second and third profiles. It was discovered that among the second and the third profiles, which covered a sum of 34 medical clinics, a 3.13% (2 clinics) had great while the excess 96.86% (32 emergency clinics) had poor financial execution.

Another proportion the CHAID identified as influencing the financial execution of the clinics in these gatherings has been the speedy proportion. Consequently, the profiles are put together with respect to the value proportion, yet in addition the fast proportion ($p < 0.000$).

The second profile contains 59 clinics or a 9.15% of the all out with fast proportion higher than 2.07, all of which had poor financial execution.

Then again, the third profile contains five clinics with speedy proportion more modest than or equivalent to 2.07, a 40% of which had great financial execution while the leftover 60% had poor financial execution.

The value to resources proportion, the profit from value ($p < 0.0002$), and the all out resources turnover rate ($p < 0.0173$) have been influential in deciding the profiles of the emergency clinics gathered in the fourth to eighth profiles, involving a sum of 65 medical clinics. The value

proportion of the emergency clinics under these profiles differed from 0.49 to 0.60. A 87.69% of these (57 emergency clinics) had poor financial execution and the leftover 12.31% (8 clinics) had great financial execution.

It was tracked down that the all out resources turnover rate was additionally influential alongside the value proportion in defining the financial execution of the clinics in these gatherings. The value to resources proportion of the clinics in the fourth to seventh profile bunches have been higher than 0.03.

Complete resources turnover pace of the medical clinics in the fourth profile bunch was higher than 2.96, of which 88.89% had poor financial execution and the excess 11.11% (one medical clinic) had great financial execution.

Complete resources turnover pace of the clinics in the fifth profile bunch differed between 1.99 and 2.96, and those medical clinics had poor financial execution.

Absolute resources turnover pace of the relative multitude of four emergency clinics in the 6th profile bunch changed from 1.83 to 1.99, a big part of which had poor financial execution and the rest with great financial execution.

Complete resources turnover pace of the emergency clinics in seventh profile bunch was not exactly or equivalent to 1.83, all of which (8 emergency clinics) had poor financial execution.

The 44.44% of the emergency clinics in the eighth profile bunch with value proportion not exactly or equivalent to 0.03 had poor financial execution while the leftover 55.56% had great financial execution.

The 23.44% (15 emergency clinics) of an aggregate of 64 clinics in the 10th to twelfth profile bunches with value proportion not exactly or equivalent to 0.49 had poor financial execution and the excess 76.56% (49 emergency clinics) had great financial execution. The liquidity proportion and the profit from resources ($p < 0.0088$) have additionally been influential in defining the financial execution of the medical clinics remembered for these profile gatherings.

The fast proportion of all out six clinics in the 10th profile bunch was higher than 2.07 and every one of them had poor financial execution. The 55.56% of absolute nine clinics in 10th profile bunch with a liquidity proportion somewhere in the range of 2.07 and 2.70 had poor financial execution and the excess 44.44% had great financial execution.

The speedy proportions of the medical clinics in the 11th and the twelfth profile bunches were not exactly or equivalent to 2.07. The profit from resources, being another influential proportion of the emergency clinics in the 11th profile bunch was higher than 0.29 while it was not exactly or equivalent to 0.29 for the clinics in the twelfth profile bunch.

A portion of the four emergency clinics in the 11th profile bunch had great financial execution while the other half had poor financial execution. There were 45 emergency clinics in the last profile bunch, 4.44% of which (2 clinics) had poor financial execution, while the excess 95.56% (43 clinics) had great financial execution.

CONCLUSION

The CHAID choice tree calculation permitted us to decide 12 distinct financial profile bunches among the MoH clinics with spinning reserves. Among these, the medical clinics in the twelfth profile bunch were found to have the best financial execution record. We were then ready to define five proportions as the financial execution markers for the clinics shrouded in the review. These proportions are the value to resources proportion, the speedy proportion, return on value, return on resources, and the absolute resources turnover.

Among these, the value to resources proportion is found by the CHAID calculation to have the most grounded connection with financial execution. As to capital construction of the covered emergency clinics, this was normal, yet the investigation likewise uncovered that the value to resources rate ought to be lower than 0.49. This implies that the medical clinics should look for getting to finance their tasks, rather than vigorously depending on their value for better financial execution. The benefits of obligation financing include that it is finite, you will square away the obligation over the long run to a lose-lose balance with no further commitment to the loan specialist, less expensive than value, simpler to get, and no weakening of possession. The expense of capital is by all accounts the most significant among these, due to the diminishing impact of financial execution. The dangers implied, then again, could be considered the exorbitant interest, reimbursement, and significant weight of obligation, which ought to be thought of. A further idea in this setting is that the MoH ought to permit more independence to the clinics in their financial the executives.

One more significant issue is the administration of resources. The speedy proportion and absolute resources turnover show the current resources, at the end of the day the working/working capital of the emergency clinics. For an ideal degree of efficiency, the fast proportion should be beneath 2.07 and the resources turnover over 2.59. The approaches recommended here may include the streamlining of the degrees of money and record receivables to diminish measure of speculation, and to build use of the current resources.

The profit from value and return on resources measure the profitability of values and resources. A methodology to improve obligation financing and the use of current resources would expand the profitability, then, at that point, the profit from value and return on resources, and henceforth the financial execution.

It is accepted that through a viable execution of the changes, Turkey will actually want to expand availability, to disseminate reasonably the assets at a public level, and to utilize them successfully. In doing as such, the change interaction ought to at last target giving widespread inclusion, the conveyance of the wellbeing administrations to the requirements of the local area and in the end to arrive at a better society. The executions should cover both the full scale parts of the framework and the miniature level, that is, the institutional necessities. This review is planned to add to the procedures and strategies that will direct the execution of such changes at an institutional level, by a financial profiling of the public clinics, which have for some time been experiencing substantial financial issues. It permits us to presume that it is feasible to work on the financial execution of the public clinics with an exhaustive examination and profiling of their financial execution and the applications by information mining can be a helpful apparatus in this manner.

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