Research Article

AI Powered Management through Individualization: The Dawn of a New Management Era

Ewa JOCHHEIM

Czestochowa University of Technology (Poland) Faculty of Management, Czestochowa, Poland
ewa@aiaconcept.com

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Abstract

The objective of the Article is to present the concept of employees' management through individualization, which supports effective attainment of business objectives. The Manager has to manage people with varying belief systems and internal resources. Managers lack tools that would support them in management in a clear, precise and reliable way. In order to manage employees effectively, an IT tool i.e., an AI powered app, was created, which supports people who analyze internal desires of employees and teams, as well as helps translate this knowledge into effective management. The tool was developed drawing on knowledge from various fields: both artificial intelligence (AI) and psychology of management and desires. The application was created on the basis of empirical studies. The app analyzes individual desires of employees and places them on the team's desires matrix in an aggregated way. The software is built using neural networks. Samples were collected during the deep learning process in order to build the model. In the software, each study is treated individually. The results are the basis for further analysis, which generates recommendations and guidelines for the Manager in terms of how to manage and motivate employees. Objectives are also set and ways of communicating them proposed so that they remain consistent with employees' desires. The user evaluates the recommendations, and thus the software learns about their employees and the team and delivers even more optimal tips. The tool was created to support the Manager in their everyday work and its core elements are knowledge about the employee's personality and clues generated by the app for the Manager. The tool gives specific and individualized guidelines for managers on employees' management and it supports organizations in a fast and effective attainment of business objectives. All that thanks to an individualized approach using new information techniques. The proposed IT solution is based on the author's own algorithms and models developed during the research stage.

Keywords: Needs Analysis, Management Through Individualisation, Artificial Intelligence.

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Introduction

Management through individualisation is a novel approach to managing employees and employee teams. A literature overview gives an insight into research on an individual attitude towards employees, but there are no articles answering the question of how to actually apply an individual approach and our knowledge about it.

There are few studies on the benefits of individualised management. Some researchers believe, however, that motivation to work is to a large extent a reflection of individual differences in character traits, such as scrupulousness (e.g., Barrick and Mount, 1991). The individualisation process was researched in many contexts, such as an active formation of one's professional career (Beck, 1992). The approach applied so far which considers money to be the best motivator (Taylor, 1996) has been criticised by researchers who stress the role of other factors in the motivational process, such as the attitude to work, type of work and team work. Maslow (1963) described in his theory five basic needs, and additional needs of some people. The role of individual needs in shaping behaviours can also be found in the Two Factor Theory of motivation by Herzberg (1968, 2003), in which internal factors, so called motivators, increase satisfaction from work, which boosts employees' productivity. That is why organisations which want to be effective in the attainment of business objectives should be designed in a way which helps satisfy individual, internal desires of employees. J. W. Atkinson (1974b) also paid attention to the fact that individual traits can have an impact on motivation to work, and some of them are genetical (Skinner, 1988). These and many other ideas (Malinowski, 1958; Maslow, 1963; Obuchowski, 1983) have been reflected in the theory developed by S. Reiss (2012), which underlines special role of an individualised approach to the employee, helping increase effectiveness and improve management. The theories presented above show that individual needs are the basis for human behaviour and motivate to perform certain activities. Therefore, getting to know the needs and their in-depth analysis should be the starting point for creating tools for effective employees' management.

The gist of management through individualisation

If an organisation cannot rise to its challenges, looking for the source of the problem should start at the management level. In one study, 359 managers were asked why organisations do not achieve their objectives and various reasons for failure were named (Longenecker, Simonetti & Sharkey, 1999). Managers from 30 different companies were asked to assess the impact of 25 factors on their ability to achieve expected results. The main reasons for failure were internal competition, lack of cooperation between employees and between the manager and employees. Another problem was ineffective communication between managers and lower --level employees, as well as contradictory objectives. But the factors that prevent them from achieving their business objectives show not only mistakes committed by managers, but also lack of company's support for the management staff (Toor & Ogunlana, 2009). On top of that, individual differences between employees have a significant impact on the effectiveness of both individuals and objectives achieved by teams. Cognitive, emotional and social individual differences between employees have an impact on group processes and the functioning of the team as a whole. What is more, individual differences influence the way in which people behave in various situations and have a significant impact on their behaviour (Robertson & Callinan, 1998; Larsson, 1989). In studies applying the Big Five model (Costa & McCrae, 1992; McCrae & Costa, 1990) as well as the results of two metanalyses (Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991), it was found that typical traits of a

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given individual have an impact on their results at work.

Given the above conclusions, the problems that organisations are not dealing with stem not only from underestimating the importance of individual differences and needs in terms of the results of individuals and teams, but also from lack of support for the management staff. The tool that we have been developing takes into account these factors and uses them to support managers in managing individual employees and teams. According to the Gallup report, 52% of employees in the USA are not engaged, which means that they are not emotionally engaged in their work, they do not invest in it enough energy and passion, which, consequently, leads to simply fulfilling orders (Gallup, 2020). Management through individualisation aims to engage employees more, which will generate more positive emotions and translate into more effective and creative work (Harter, Schmidt & Keyes, 2003).

Researching Needs – Contemporary Measurement Methods

Social sciences focus on defining and finding a perfect method of measuring a given phenomenon. Psychometric tools that are available on the market are very often expensive and difficult to interpret.

Plus, tools in social sciences have recently been often undermined. There are no transparent and reliable methods which would allow to collect the necessary content, interpret it quickly and draw conclusions (Flake & Fried, 2019). Barry and co-workers (2014) have shown in their research that 40-93 % of measurement methods used in studies published in scientific magazines did not have the accuracy of their tool confirmed. And Weidmann and co-workers (2017) have proved that out of 365 measurement methods, 69% were used without reference to any earlier studies or did not describe the scale validation process. The tool described here is a remedy to the above problems and figure 1 below shows how the prepared tool called AIA works. The AIA application is easy to interpret, highly accurate and reliable. During the design process, a set of questions and needs were defined. During the validation and tests, the number of needs was reduced to 32. The mobile application conducts online studies, and artificial intelligence prepares an individual profile of a given person. AI establishes the profile on the basis of answers, taking into account all parameters fed into the application. AI looks for correlations in the calculations. The application hones the model all the time, by feeding itself with new studies and downloaded data after the following confirmation/negation from the user.
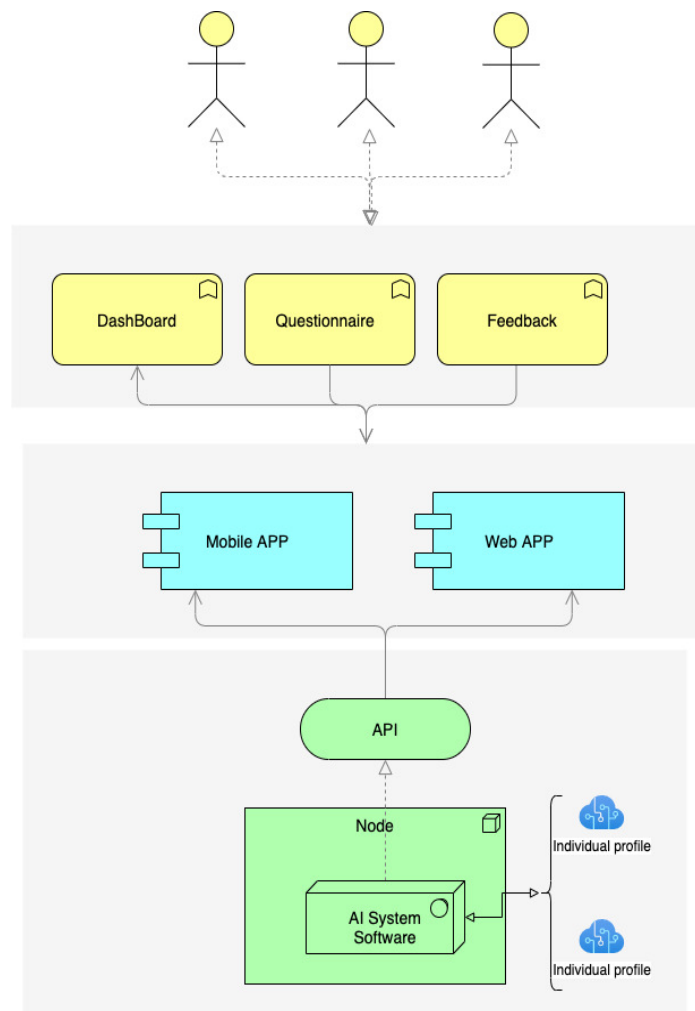
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Fig. 1: Description of the AIA system based on artificial intelligence

Source: Author's own work.

Methodology and Tool Description

The starting point for the tool (AIA) is an analysis of individual needs of the employee. Based on research on needs, the number of needs was established at 32.

Table 1 shows the name of the need and describes typical personality traits of a person who has a high (80% in comparison to the whole population) intensity of the need.

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Table 1. 32 Individual needs studied by AIA

	Need	Personality traits typical of the need
1	Influence exertion	Strong will, efficiency, ambition, power
2	Fulfilling tasks	Fulfilling tasks, acting for others, people-oriented
3	Autonomy in action	Independence, pride, individuality
4	Team work	Dependence, humbleness, building bonds, closeness, relations
5	Intellectuality	Thinking, searching for truth, insightful approach
6	Practical actions	Practicality, resourcefulness, creation, acquiring experience
7	Sensitivity to criticism	Low self-esteem, acceptance, recognition, approval
8	Confidence	High self-esteem, assertiveness, emotional strength
9	Structure and organisation	Process orientation, method, routine, punctuality, perfection
10	Openness to changes	Flexibility and creativity in action, spontaneity
11	Collecting	Collecting objects, gathering, ownership
12	Generousness	Magnanimousness, tendency to lose things, sharing
13	Responsibility	Sticking to principles, rightness, honesty, diligence
14	Opportunism	Goals orientation, calculation, self-interested
15	Social engagement	Humanitarianism, altruism, idealism
16	Social pragmatism	Realism, self-orientation, apolitical
17	Sociability	Extravert, openness to others, many contacts
18	Privacy	Introvert, reserve in contact with others
19	Taking care of your family	Bringing up and taking care of children, self-sacrifice, homebody, family oriented
20	Partnership in family	Independence of children and family
21	Prestige	Social position, importance, elitism, status, hierarchy
22	Modesty	Egalitarianism, equality, naturality, restraint
23	Competition	Comparing oneself, competition, rebelliousness, inclination to compete
24	Harmony	Compromises, arbitrariness
25	Sensuality	Romanticism, aestheticism, beauty
26	Ascetism	Practicality, utilitarianism, reserve, simplicity
27	Enjoy taste	Gourmet, food enthusiast
28	Quenching hunger	Eating as survival need
29	Movement and physical activity	Physical activity, energetic
30	Physical restraint	Sedentary, comfortable life style
31	Security	Stability, predictability, conservative position, unwillingness to changes
32	Courage	Risk, insecurity, spontaneity, adventure

Source: Author's own work

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Each person has all the above-mentioned needs, but to a varying extent. First, to define the intensity on the scale from 0% to 100%, you fill in an AIA questionnaire.

Next, once the value of the need has been established, AI develops tips for the manager. The app gives hints what actions should be taken towards the employee to improve their effectiveness. The supervisor simply follows the tips from the system and gives feedback whether the recommended tip was useful or not. Thanks to the system of active cooperation between the manager and the application, the AIA application learns on an ongoing basis from the human and their tips become more and more accurate. The system is based on AI and deep learning.

Up until now, managers not only had to observe employees to analyse their individual needs, but also draw conclusions with regard to how to manage them and the whole team. Developing an individual management strategy was not only tiring and time-consuming, but also prone to many potential errors.

An analysis of individual needs conducted by the AIA system is a starting point for creating a tool, the functioning of which boils down to three basic steps:

1. Analysis of individual needs of the manager, employee and team.
2. Analysis with development tips that the manager should apply to improve effectiveness of the employee/team.
3. Feedback from the manager, on the basis of which the system learns how to effectively analyse needs and create a development strategy, it hones the algorithm and develops tips for effective management.

The AIA application gives ready-made tips for the manager in a virtual talk on how to work with the employee. It helps answer the following questions:

- What individual objectives should be set for the employee?
- How to individually communicate with the employee?
- What individual work conditions should be provided for the employee?
- How to individually show recognition to the employee?

The tool is a universal one, which means that the needs analysis can be conducted in many contexts, not only in management through individualisation, but also for example in professional sports, checking the compatibility of needs in relations or studying the probability of committing a crime. The questionnaire should be filled in the same way, the only differences are in the report that is generated and tips from the system. The interdisciplinary character of the method was of crucial importance in the process of effective development of the application: AI achievements are combined with those from social sciences on the reasons for human behaviour.

Research problems that may arise in the future will most likely be related to the analysis of the application's effectiveness. The application uses artificial intelligence together with a deep learning system - the needs analysis and recommendation system is a constantly learning and changing system. When analyzing the effectiveness, determinants will be analyzed, the value of which loses validity over time. This means that they could have been replaced with other, more accurate values defined by artificial intelligence, which makes those analyzed in the research obsolete. Another research challenge will be to clearly define the effectiveness of the application presented here. As it examines the individual needs of a person and prepares individual recommendations, the increase in the effectiveness of a manager, employee or team will also be very individual and difficult to clearly define. An additional question is whether the list of needs proposed here is complete? In the future, it makes sense to verify it and adapt it to the

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changing working and living conditions and environment, and to human life on the Internet.

Conclusions

AIA will help managers by improving employees' efficiency and effective attainment of business objectives. From the very beginning of the application development, it is tested on an ongoing basis by managers managing teams. Their task is to check the functionality of the application as well as assess the usefulness of the tips that are provided to them. In addition, from autumn 2020, the tool is tested by managers and sales teams, which will allow to determine whether the sales effectiveness of sellers has been increased thanks to the use of the tool. The priority is not only to support managers in effective and precise management through individualisation, but also to increase engagement and motivation, and hence effectiveness of employees. The tool can become a binder between the manager and the employee and will use specific tips to develop the strategy for successful management of both the individual and the whole team.

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