

ENHANCING THE WORK-LIFE BALANCE THROUGH AHP MODELING OF EARLY CAREER DECISION MAKING¹

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ABSTRACT

The aim of this paper is to present the ranking of quality of life determinants in the evaluation of university students that are starting their professional activities. The research methodology was composed of five levels. First, a review of the scientific literature on the quality of life and work-life balance, as well as on multi-criteria decision-making (MCDM) was performed. Then, an AHP decision-making model for early career decision-making was elaborated. It was followed by a two-stage expert selection process, from which significance rankings for all four parent criteria, 16 sub-criteria and four decision alternatives were obtained. Finally, a graphical and descriptive presentation of the obtained results was presented. The research sample was composed of 14 experts extracted from an initial sample of almost 200 university students. The research findings show that university students who are on the verge of entering so-called “adult life” most likely choose a career-oriented approach. At the same time, they seem to most value the “safety, stability and certainty” parent criterion. The implications of the presented research could help students better adapt to the labor market trends and lead to a higher life satisfaction of future employees. The main research limitation comes from narrowing the group of experts to only university students. The value added by this research is derived from the fact that employees with a satisfactory level of work-life balance will contribute to a general increase in the overall satisfaction level in society.

Keywords: Analytic Hierarchy Process; determinants of quality of life; work-life balance; human resources; decision-making

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1. Introduction

This paper focuses on the ranking of significance of quality of life determinants obtained in a research task targeted at university students that are on the verge of starting their professional activities. The aim of the presented research was to identify which determinants of quality of life play the most important role for university students when choosing their future lifestyle. Lifestyle was understood as the composition of professional and private activities, which constitute one's relation of work-to-leisure ratio, referred to as the work-life balance.

The objective was to incorporate both material and non-material determinants of quality of life into the scope of the research. The individual preferences of the respondents were crucial for understanding the rationale behind young peoples' decision-making. Their inclination towards a certain lifestyle was expressed by choosing one of the decision alternatives, i.e. career-, income- or family-oriented, or a complete opt-out from the socio-economic system (outsider's attitude).

The motivation for the research came from the observation that early career decision-making of young people is often artificial and unstructured. Meanwhile, the inclusion of quality of life determinants into this process could enhance their choice of the most appropriate professional development strategy, taking into account their work-life balance preferences.

The research methodology was composed of a literature review, conceptual, methodological, exploratory and explanatory research. The main research method is the Analytic Hierarchy Process (AHP).

The sections of the article will contain a brief review of recent scientific literature on the matter (Section 2), an introduction to research methodology and sample (Section 3), a presentation and discussion of obtained results (Section 4) and a conclusion (Section 5).

2. Literature review

The literature review will be divided into two sections. The first will deal with quality of life studies and work-life balance from the perspective of economics, and the second will briefly discuss the utility of MCDM methods in economic and managerial applications.

2.1 Quality of life studies and work-life balance

The literature review of this section was carried out on October 18, 2018 in the Web of Science online database. The search on the "TOPIC=quality of life" inquiry, after limitation to four categories (Business, Economics, Management and Operations Research Management Science) returned 11272 results, out of which 4930 have been published in past five years. The selection of quoted literature was performed on a two-way basis: (i) usefulness of the explanation of the quality of life and work-life balance concepts; (ii) finding examples of QoL studies relevant for research in economics and management.

First, the appearance of quality of life (QoL) and well-being studies in economics can be traced back to Smith (1759). This author discussed QoL determinants such as health, wealth and conscience. Learmonth et al. (2015) describes QoL as a global psychological construct that takes into account the weighting or importance individuals place on particular areas of life. Lau et al. (2015) stated that QoL is how well people are able to perform daily activities, and how they feel about the physical, social, and psychological functioning of their lives.

Work-life balance is a part of QoL studies that refers to the work-to-leisure time ratio. Balance is understood as a configuration of time use that maximizes positive emotional and developmental outcomes. It depends on an array of normative, situational, demographic, and psychological factors which defy 'linear' interpretation and complicate traditional statistical analyses (Zuzanek, 2009). Nevertheless, this ratio is crucial for QoL perception by individuals (Hansen, 2015).

QoL research in economics has gained momentum in the past decades with the works of researchers such as Maslow (1954, theory of needs), Abel-Smith & Townsend (1965, distribution of welfare), Atkinson (1983, social inequality), Sen (1985, wellbeing and capabilities), Schuessler and Fisher (1985, QoL theory), Layard (2005, happiness), Șerban-Oprescu (2012, QoL sustainability), Graafland & Compen (2015, life satisfaction), Ulman & Šoltés (2015, poverty measurement), Somarriba Arechavala, Zarzosa Espina & Pena Traperero (2015, QoL measurement), Adame, Caplliure & Miquel (2016, gender studies), Russo, Shteigman & Carmeli (2016, work efficiency), Gawlik & Jacobsen (2016, work-life balance) and others.

2.2 Multicriteria decision-making

The aim of this part of the literature review was to provide an introduction on the utility of MCDM methods in the field of management and economics. The Web of Science online database (accessed on October 19, 2018) returned 1513 answers to the "TOPIC=multicriteria decision making" enquiry, limited to the same four categories (Business, Economics, Management and Operations Research Management Science). 541 of these publications have been published in past five years. The selection of quoted literature was aim-oriented and sought to present the sense and utility of MCDM in a compact way.

MCDM is one field of decision-making theory. The main purpose of MCDM is to support decision-makers when facing multi-criteria problems (Sařabun, 2014). The theoretical framework on aiding MCDM processes has been presented in Zopounidis & Doumpos (2013).

Rezaei (2015) states that MCDM problems are generally divided into two classes with respect to the solution space of the problem: continuous and discrete. To handle continuous problems, multi-objective decision-making (MODM) methods are used. Discrete problems are solved using multi-attribute decision-making (MADM) methods; although, in the scientific literature they are commonly referred to as MCDM.

Ivlev, Vacek & Kneppo (2015) point out the complexity of decision-making criteria, the high degree of the decision maker's responsibility and the uncertainty at every stage of

the decision-making process as specific features of MCDM. The last feature, uncertainty, is often due to interfering aims of involved or affected parties, their various policies, different economic, social, technical and organizational environment and consequences of decisions. This internal and external uncertainty becomes an important determinant of MCDM and results in low predictability of the final effects of the decision-making (Durbach & Stewart, 2012).

Teixeira de Almeida et al. (2016) observed that the crucial issue in using MCDM models is the evaluation of weights of criteria (or attributes) in the aggregation procedure. In AHP, the method applied in the presented research, the problem persists. Ben Amor, Jabeur & Martel (2007) stated that conciliating the results of the pair comparisons according to the criteria could be difficult due to the heterogeneity of the measurement scales and the nature of the evaluations. Another problem arises when the differences between the alternatives are inherently close together or when the number of alternatives increases (Pomerol & Barba-Romero, 2000). Cabello et al. (2014) observed that from a strictly mathematical point of view, all efficient solutions of a MCDM problem are equally optimal. Therefore, the preferences of the decision maker are crucial in determining which decision alternative is the most preferred solution. This feature gains more importance in multi-objective optimization tasks of MCDM problems.

Therefore, the choice of an appropriate MCDM method is of crucial importance in order to assure a possibly optimal effect of decision-making. Varmazyar, Dehghanbaghi & Afkhami (2016) proposed the application of a combination of various MCDM methods as a way to enhance the precision of the final decision. In such cases, the most common aggregation procedure was a simple averaging function, although Pomerol & Barba-Romero (2000) suggested employing Borda and Copeland rules. Whereas Borda selects the highest valued alternatives, Copeland ranks them as the result of the number of pairwise victories minus the number of pairwise defeats between the alternatives (Varmazyar, Dehghanbaghi & Afkhami, 2016). Various methods of enhancing MCDM have been discussed in Sałabun (2014) and Gawlik (2016a).

The main difference of the presented study from others of this kind is the application of an MCDM method, more specifically the AHP, to research career planning with regard to quality of life. The Web of Science search on the enquiry "TOPIC=multicriteria decision making AND quality of life AND career" returned only 1 answer (accessed on March 28, 2019).

Section 3 focuses on the choice of the applied research methodology and its justification.

3. Material and methods

The research was designed in five stages: 1) literature review; 2) conceptual research (elaboration of an AHP decision-making model); 3) methodological research (two-stage expert selection); 4) exploratory research (significance rankings by experts); 5) explanatory research (graphical and descriptive presentation of obtained results).

Although research in economics is mostly based on quantitative data, the description of socio-economic reality should also encompass qualitative factors. Quantitative indexes

provide researchers with comparative knowledge on the analyzed occurrence, whereas the qualitative features explain its context and environment. Therefore, the use of a methodology that allows incorporating qualitative measures into quantitative research is advised. In fact, AHP allows including both quantitative and qualitative criteria into the decision-making process by assigning the qualitative criteria a number. Therefore, a quantification of preference of criterion A over criterion B can be expressed. Such mathematical notation allows the decision maker to pick one of the decision alternatives as the possible optimal solution.

Therefore, AHP was chosen as the research method. Developed by Saaty (1980), the AHP can be used for complex hierarchical decision problems when the optimal solution has to be chosen from a set of alternatives on a subjective basis (Saaty, 1999). The method consists of three steps: (i) formulating the main goal of the decision-making process; (ii) building a hierarchy of decision criteria, sub-criteria and their indicators; (iii) identifying decision alternatives (Saaty, 1996). Saracoglu et al. (2015) provided a compilation of the advantages of the AHP method from various scientific sources: (i) the ability to model daily real life problems with ease and simplicity; (ii) the ability to reflect the reality of the problems in a true and easy manner; (iii) giving experts the ability to express their thoughts in a free, correct and almost perfect manner due to their experience; (iv) giving people with little or no knowledge about decision-making methods the opportunity to understand the method; (v) having simple and easy mathematical calculations, which helps the experts concentrate on the problems rather than the difficult mathematical calculations; (vi) having the pairwise comparisons, which help the experts and decision makers compare each criteria and alternative one by one with respect to the goal and with respect to the alternatives.

The practical AHP application consists of building a hierarchy of independent criteria. Then, pairwise comparisons of alternatives, criteria, sub-criteria and their indicators are performed (each-with-each, based on the fundamental comparison scale). This results in the dominant factor from the pair below being linked with the dominant factor from the pair straight above, which gives a ranking of importance of different criteria in the form of a pairwise comparison matrix. Finally, a consistency check of the obtained comparisons is performed (Saaty, 1996).

Several works that are critical of the AHP methodology have been published and address such problems as the lack of a theoretical basis for the construction of hierarchies (Belton & Gear, 1983), subjectivity of the final rankings (Dyer, 1990) and a low research repetitiveness (Barzilai, 2001). Most of these critical remarks have been answered in a satisfying manner in Saaty, Vargas & Whitaker (2009).

The above discussion justifies the methodological correctness of the AHP application for the construction of a model that encompasses work-life balance into early career decision-making. The elaboration of the model was carried out in three independent phases. First, exploratory research was performed on a group of 31 young people from European countries. It took the form of a two-week long intensive research project composed of in-depth interviews, group discussions and peer assessment sessions, followed by preparation of individual essays. It resulted in the elaboration of the set of criteria and identification of possible work-life balance strategies relevant for early career

decision-making of young people (Gawlik, 2013). Second, a self-administered, web-based questionnaire with single-answers and limited choice answers of a qualitative and quantitative nature was introduced to a sample of almost 1000 young respondents in order to eliminate non-relevant criteria and strategies from the formerly identified set (Gawlik, Titarenko & Titov, 2015). Third, the model was tested on a group of Norwegian students. Additionally, explanatory and exploratory research was carried out in order to identify its possible imperfections (Gawlik & Jacobsen, 2016).

The respondents (experts) were university students who were in the process of commencing their professional activities. The specificity of the AHP methodology allows the limitation of direct evaluators to a smaller number, which is possible due to their high level of expertise in the field. Following the prescriptions of Newman et al. (2015), a two-stage expert selection process consisted of: (i) preliminary selection, based on the assessment of written assignments on the candidate's understanding of socio-economic occurrences; (ii) final selection through structured direct individual in-depth interviews with candidates. The final set of evaluators was composed of 14 carefully chosen international experts from a sample of almost 200 university students. The judgments of each evaluator have been attributed equal weight. The expert selection process was discussed in Gawlik (2016b).

Figure 1 presents the scheme of the constructed model.

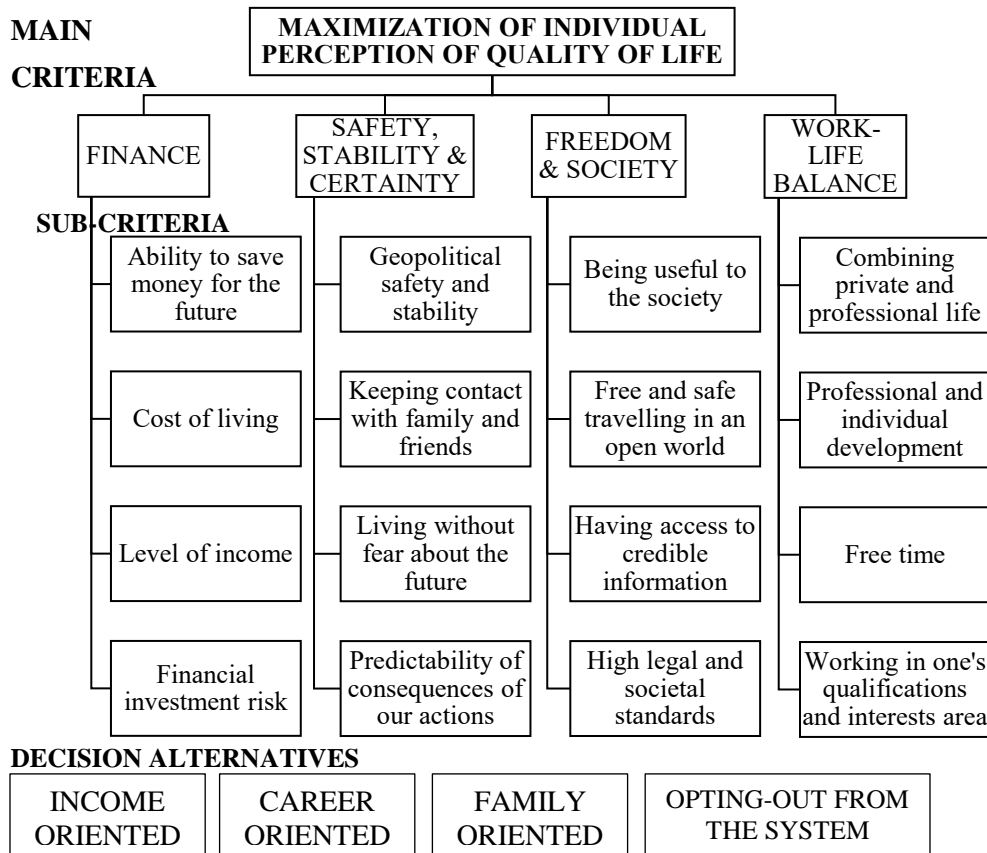


Figure 1 AHP-based decision-making model for early career decision-making of youth

Section 4 presents the obtained research results, whereas Section 5 summarizes them.

4. Results and discussion

Expert significance rankings were collected online with the use of an Expert Choice Inc. Comparison™ Suite academic license. Each evaluator obtained a personalized link via an e-mail message that was sent by the software. Aggregated and normalized research results were presented (Figure 2). The aggregation of individual judgments (AIJ) through the weighted geometric mean method (WGMM) was applied. This was possible because the group structure was homogenous and individual respondents did not show any conflicts of interest (Ossadnik, Schinke & Kaspar, 2016).

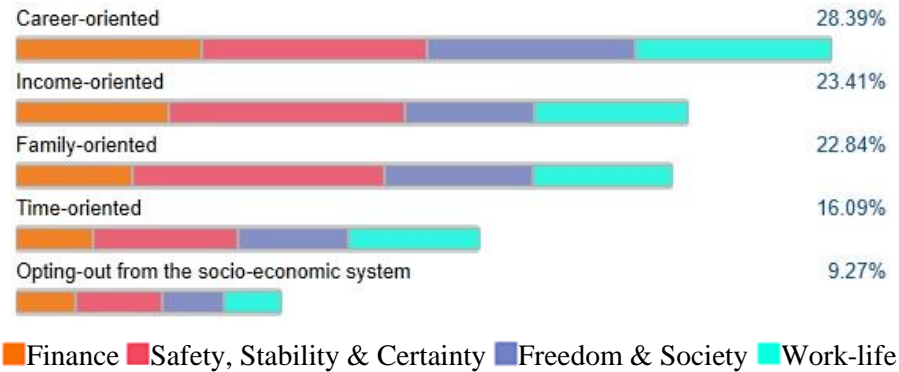


Figure 2 Aggregated AHP evaluation results with prioritization of parent criteria (%)

The results in Figure 2 prove that the assessments of significance of all criteria and sub-criteria of the model (see Figure 1 and Table 1) show the respondents’ strongest preference towards a career-oriented life strategy (28.4%). The second preferred life strategy was income-oriented (23.4%), with an almost similar preference for a family-oriented one (22.8%). A significantly lower attractiveness was attributed to time-oriented (16.1%) and opt-out (9.3%) life strategies. It seems rational that young people on the verge of starting their professional life show a predominant interest in their future career and income. Family values and free time, although still important, are dominated by the need for independence, which is also understandable. Most interesting, is the wish of almost 10% of youth to opt-out entirely from the socio-economic system which apparently does not sufficiently answer their needs and expectations within any of the other four life strategies. The different colors in Figure 2 represent the relevance of respective parent criterion in the assessment of a given life strategy.

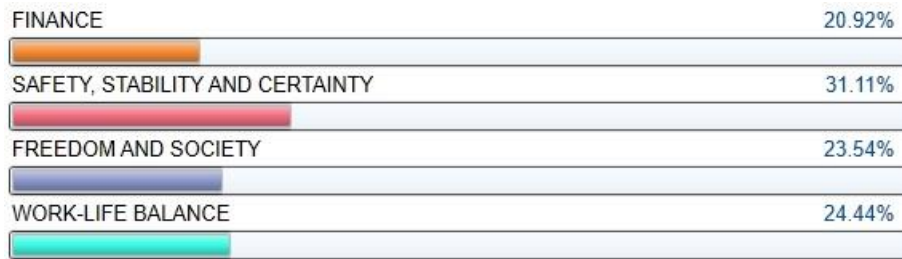


Figure 3 Aggregated prioritization of parent criteria (%)

Figure 3 shows the aggregated prioritization of parent criteria in the obtained responses, i.e. their importance for early-career decision-making of young people. The highest rank has been attributed to the group of criteria named Safety, Stability and Certainty. The respondents perceived its relevance in the maximization of their overall life satisfaction at the level of 31.1% (out of 100%). Work-life balance came second (24.4%), Freedom and Society came in third (23.5%), and Finance ranked fourth (20.9%). These results stand in opposition to those presented on Figure 2. Several explanations are possible, e.g. the difference between internal motivations and those declared publicly by the respondents, the pressure for success from their environment, and the wish to combine colliding life

strategies, etc. This issue definitely needs further research, as it could also shed light on the unexpectedly high attractiveness of the opt-out strategy.

Table 1 presents local and global prioritizations of decision criteria and sub-criteria that are a result of the discussed research project. The local priorities are the ratio-scale weights of a sub-criteria node with respect to the parent criterion. They add up to 100% inside one parent criterion. Global priorities are the ratio-scale weights of any parent criterion with respect to the main goal. Global priorities of all the lowest level sub-criteria sum to 100%.

Table 1
Local and global prioritization of decision criteria and sub-criteria (%)

CRITERIA & Sub-Criteria	Prioritization (%)	
	LOCAL	GLOBAL
FINANCE	25.29%	25.29%
Ability to save money and future retirement pension level	29.46%	7.45%
Cost of living	23.62%	5.97%
Level of income	35.94%	9.09%
Level of risk related to financial investments	10.98%	2.78%
SAFETY, STABILITY AND CERTAINTY	32.38%	32.38%
Geopolitical safety and stability	22.52%	7.29%
Keeping contact with family and friends	28.14%	9.11%
Living without fear about the future	24.44%	7.92%
Predictability of consequences of our actions	24.89%	8.06%
FREEDOM AND SOCIETY	25.10%	25.10%
Being useful to the society	19.38%	4.86%
Free and safe travelling in an open world	22.69%	5.70%
Having access to credible information	15.06%	3.78%
Living accordingly to high legal and societal standards	42.88%	10.76%
WORK-LIFE BALANCE	17.22%	17.22%
Being able to combine private and professional life	28.04%	4.83%
Being able to develop professionally and pursue self-development	30.31%	5.22%
Free time	9.68%	1.67%
Working accordingly to your qualifications and interests	31.96%	5.50%

A consistency check built in to the software was performed after each round of evaluations, when all pairwise comparisons for one parent criterion were finalized. An abbreviated consistency report was presented to the evaluators, who were asked to reassess their evaluations each time the inconsistency of their preference statements was higher than 10% (Consistency Ratio ≥ 0.1). Due to their low consistency, the preference statements of two evaluators out of the initial 14 have not been included in the final results.

5. Conclusion

The outcome of the presented research is an aggregation of evaluation results of quality of life determinants provided by university students who are considering their professional path and future work-life balance. The created decision-making tool can be used for modeling the life satisfaction of future employees as a function of their individual assessments of significance of particular determinants of quality of life. The proposed model can be optimized with regard to its levels, e.g. AHP main goal (maximizing life satisfaction in general), AHP parent criteria and particular sub-criteria and AHP decision alternatives.

The cognitive value of this research arises from three areas: (i) it identifies and helps understand the relationship between social, economic and psychological determinants of early career decisions of future employees; (ii) it supports the recent trend in economic research that forces researchers to reassess traditional rationales of decision-making processes of individuals (i.e. the paradigm of rationality of human behavior); (iii) it promotes an interdisciplinary approach to science, which should result in a more and more frequent inclusion of phenomena traditionally belonging to other scientific disciplines into socio-economic studies.

The main research limitation comes from narrowing the group of experts to university students. In future research, the experts' sample should be extended to people with a non-academic background. Moreover, similar research should be performed with groups of employers and employees that have been active on the job market between 5–10 years, 10–20 years, above 20 years, and up to 5 years before their retirement. A separate research should be devoted to a deeper understanding of the motivations of young people who were attracted to the opt-out life strategy. These research tasks can be performed by other researchers.

The author will concentrate his future research on an in-depth insight into individual motivations of early career decision-making of future employees. It could result in a more accurate adaptation to trends in the labor market. Another interesting question to explore is the reason for the low consistency of evaluations of two of the experts which resulted in excluding them from the final results. This issue will be explored in the author's future research, along with a sensitivity analysis of the expert evaluations that were presented in this paper.

The value added by the presented research comes from the increase of knowledge on the nature of one of the most important decisions in human life – the choice of a career path in accordance with one's individual preferences on work-life balance. Companies will gain more focused and better-motivated employees, who will be able to more closely follow their own development paths, leaving less opportunity for frustration and professional burnout. Moreover, a satisfactory level of work-life balance indirectly contributes to an increase in the overall satisfaction level in society. Newman et al. (2015) supports this by stating that initiatives by organizations to foster enhanced work-life balance would be expected to reap benefits not only to individuals and to organizations, but also to communities. More economists incorporating qualitative studies into their research and applying decision-making models would also add value.

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