

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

ABSTRACT

Objective: the paper presents the results of ranking of the significance of quality of life determinants by University students that are starting professional activities. Research methodology: literature review; elaboration of an AHP decision-making model; two-stage expert selection; significance rankings by experts and a graphical and descriptive presentation of obtained results. Research sample: 14 experts out of almost 200 University students. Research outcome: a decision-making model that aims at maximizing the life satisfaction of future employees as a function of their individual assessments of significance of particular determinants of quality of life. Research implications: a more accurate adaptation to trends on the labor market and creation of new business models. Research limitation: narrowing the group of experts to University students. Value added of the research: better-motivated employees with a satisfactory level of work-life balance will contribute to an increase of societal satisfaction level.

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

1. Introduction

Recent research shows that the modelling of early career decision-making processes of future employees, which encompasses their work-life balance preferences, can enhance their choice of most appropriate professional development strategy. This paper focuses on rankings 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 chapters of the article will contain a review of recent scientific literature on the matter, a brief presentation of objectives of the research, an introduction to research methodology, a model analysis, a presentation of obtained results, discussion of research limitations and a conclusion.

¹ This is a summary of a larger research paper entitled “Encompassing the work-life balance into early career decision-making of future employees through the Analytic Hierarchy Process” presented at AHFE 2017 Conference in Los Angeles, CA, USA on July 17-21, 2017 and published in the Conference Proceedings.

This research was supported by the National Science Centre of Poland (decision No.: DEC 2013/11/D/HS4/04070) within a research project entitled “The Application of Analytic Hierarchy Process for Analyzing Material and Non-material Determinants of Life Quality of Young Europeans” lead by Remigiusz Gawlik, Ph.D. between 2014 and 2017.

2. Literature Review

2.1 Quality of life studies and work-life balance

Quality of life (QoL) and wellbeing studies appeared in the science of Economics rather early, beginning with Smith (1759), who mentioned such QoL determinants as health, wealth and conscience. Learmonth et al. (2015) describe 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) state that QoL is how well people are able to perform daily activities and how they feel about their lives in physical, social, and psychological functioning.

Work-life balance is a part of QoL studies that refers to work-to-leisure time ratio. Balance here means such 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 the individuals, as stated by Hansen (2015).

QoL research in Economics has gained momentum in past decades with works of such researchers as Maslow (1954), Abel-Smith & Townsend (1965) – distribution of welfare, Graafland & Compen (2015) – life satisfaction, Atkinson (1983) – social inequality, Sen – (1979, 1993) – welfare, wellbeing and socio-economic capabilities), Schuessler & Fisher (1985) – QoL theory), Layard (2005) – happiness, Stiglitz, Sen & Fitoussi (2009) – socio-economic development, Alkire & Foster (2011) and Ulman & Šoltés (2015) – poverty measurement, Șerban-Oprescu (2012) and Simkins & Peterson (2016) – QoL sustainability, Chang, Travaglione & O'Neill (2015) – gender studies, Adame, Caplliure & Miquel (2016) and Gawlik & Jacobsen (2016) – work-life balance), Žur (2015) – entrepreneurship and social inequality) Somarriba Arechavala, Zarzosa Espina & Pena Trapero (2015) – QoL measurement) and others.

2.2 Multicriteria decision-making

Multicriteria decision-making (MCDM) is one of the branches of the decision-making theory. The main purpose of MCDM is to support decision-makers (DMs) in facing multi-criteria problems (Sařabun, 2014). The theoretical framework on aiding MCDM processes has been presented in many works (e.g.: Zopoundis & 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, multiobjective decision-making (MODM) methods are used. Discrete problems are being solved using multi-attribute decision-making (MADM) methods, although in scientific literature they are commonly referred to as MCDM.

Ivlev, Vacek & Kneppo (2015) point at such features of MCDM as complexity of decision-making criteria, high degree of DM's responsibility and uncertainty at every stage of decision-making process. The last one is due to often interfering aims of involved or affected parties, their various policies, different economic, social, technical and organizational environment and consequences of taken decisions. This internal and external uncertainty becomes the crucial determinant of MCDM (Durbach & Stewart, 2012) and results in low predictability of final effects of the decision-making.

Teixeira de Almeida et al. (2016) observe that the crucial issue in using MCDM models is the evaluation of weights of criteria (or attributes) in the aggregation procedure. Ben Amor, Jabeur & Martel (2007) support them by stating 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 natures of the evaluations. Another problem appears 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) observe that from a strictly mathematical point of view, all efficient solutions of a MCDM problem are equally optimal. Therefore, the preferences of the DM are crucial to determine which decision alternative is the most preferred solution. This feature gains more importance in multiobjective optimization tasks of MCDM problems.

Taking into account all of the above, the choice of an appropriate MCDM method is of crucial importance in order to assure the highest possible effect of decision-making. Varmazyar, Dehghanbaghi & Afkhami (2016) propose to apply 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 is a simple averaging function, although Pomerol & Barba-Romero (2000) suggest employing Borda and Copeland rules. Whereas Borda selects 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). Nevertheless, a strict application of the Consistency Check within AHP method seems to provide an acceptable quality of final decision as well. Various methods of enhancing MDCM have been discussed by Saabun (2014) and Gawlik (2016). A methodology justification follows.

3. Objectives

The objective of this paper is to open the field for applying the method of Analytic Hierarchy Process (AHP) for modelling socio-economic phenomena – from more accurate adaptation of business decisions to economic trends, through providing better-motivated employees, towards creating new business models.

4. Research Design

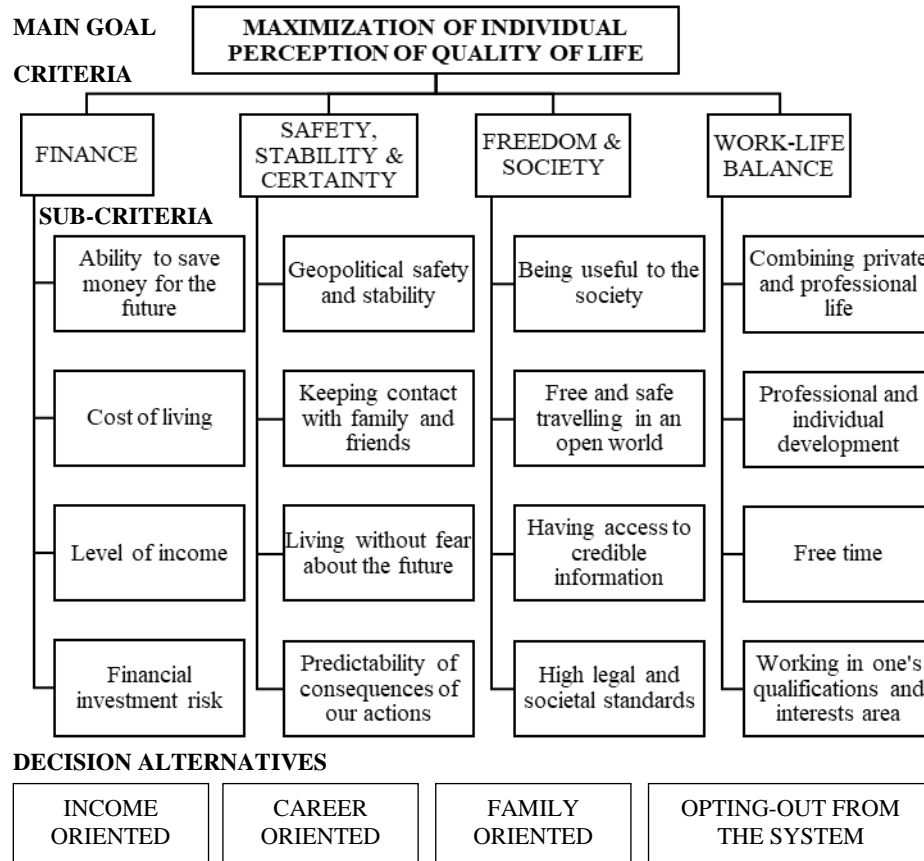
The widely understood research target group are young people (mainly European), who are on the verge of choosing their future paths of professional career and who recognize the relevance of work-life balance for this process.

Due to the specificity of qualitative-quantitative analysis, the presented research consists of five stages: 1) literature review (above); 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).

Ad 2) Applied research methodology bases on the Analytic Hierarchy Process (AHP). It is a method for multicriteria decision-making developed by Saaty (1980). AHP can be considered 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 levels: (i) main goal of the decision-making process; (ii) decision criteria, sub-criteria and their indicators; decision alternatives, that lead to the optimal solution (Saaty, 1996). Although research in Economics is mostly based on quantitative data, the description of socio-economic reality should also encompass qualitative factors. Quantitative indexes provide the 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 accrediting those last ones a digit. Therefore, a credible proof of preference of criterion A over criterion B is obtained. Such mathematical notation allows picking one of decision alternatives as the possibly optimal solution. The above justifies the methodological correctness of AHP application for the construction of a model that encompasses work-life balance into early career decision-making of young people (Fig. 1).

Fig. 1. AHP-based decision-making model for early career decision-making of Youth.



Source: own elaboration based on (Saaty, 1999).

The practical AHP application consists of building a hierarchy of independent criteria. Then pairwise comparisons of alternatives, criteria, sub-criteria and their indicators are being performed (each-with-each, based on the fundamental comparison scale). As a result, the dominant factor from the pair below is being linked with the dominant factor from the pair straight above, which gives us a ranking of importance of different criteria in form of the pair-wise comparison matrix. Finally, a consistency check of obtained comparisons is being performed (Saaty, 1996). A detailed description of AHP method and its application can be found in (Saaty, 1980, 1996, 1999) and Gawlik (2012).

Several critical works on AHP methodology have been published, addressing such problems as lack of theoretical bases for construction of hierarchies, subjectivity of final rankings and a low research repetitiveness (e.g.: Belton & Gear, 1983; Dyer, 1990; Barzilai, 2001). Nevertheless, most of criticism has been convincingly answered in (Saaty, Vargas & Whitaker, 2009).

The set of determinants of quality of life (decision criteria) has been identified and discussed in author's previous research (Gawlik, 2013; Gawlik, Titarenko & Titov, 2015). Their identification, together with work-life balance strategies (decision alternatives) have been obtained with help of a self-administered, web-based questionnaire with single-answer, limited choice answers of qualitative and quantitative nature, followed by direct in-depth interviews.

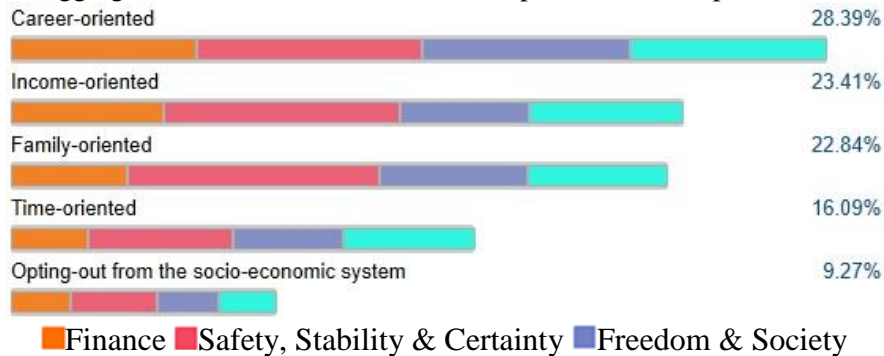
Ad 3) The specificity of AHP methodology allows the limitation of direct evaluators to a smaller number, which is possible due to their high level of expertise in the field of discussed research. Therefore, the two-stage expert selection process consisted of: (i) preliminary selection, based on the assessment of written assignments on candidate's understanding of socio-economic occurrences; (ii) final selection through structured direct individual in-depth interviews with candidates. The final set of evaluators has been composed of 14 carefully chosen international experts from a sample of almost 200 University students. The entire expert selection process has been discussed in (Gawlik, 2016). The judgments of each evaluator has been attributed an equal weight.

Ad 4&5) Research results and their discussion will be presented below.

5. Model Analysis

Fig. 2 shows aggregated research results normalized for all evaluators. They represent preference statements about each pair of decision criteria (all pairwise comparisons accomplished) by every evaluator. Expert significance rankings have been collected via Expert Choice Inc. Comparion™ Suite, academic license. Complete data grids for all evaluations, including the inconsistency report, are available for inspection.

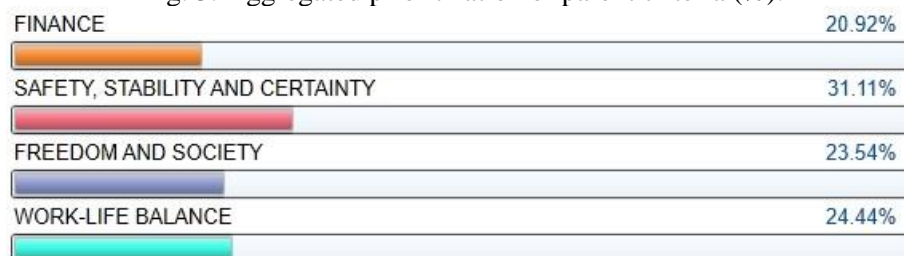
Fig. 2. Aggregated AHP evaluation results with prioritization of parent criteria (%).



Source: results of experts' evaluations from Expert Choice Comparion™ software.

Fig. 2 shows respondents' strongest preference towards a career-oriented life strategy (28.39%). The second preferred life strategy was income-oriented (23.41%), with an almost similar preference for family-oriented one (22.84%). A significantly lower attractiveness has been attributed to time-oriented (16.09%) and opt-out (9.27%) 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, leave the field for the need of independence. Alarming is the wish of almost 10% of Youth to opt-out from the socio-economic system entirely. Colors represent the relevance of respective parent criterion for each life strategy.

Fig. 3. Aggregated prioritization of parent criteria (%).



Source: results of experts' evaluations from Expert Choice Comparion™ software.

Fig. 3 shows the aggregated prioritization of parent criteria in 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 31.11% (out of 100%). Work-life Balance came 2nd (24.44%), Freedom and Society 3rd (23.54%) and Finance 4th (20.92%). These results stand in opposition to those presented on Fig. 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, the wish to combine colliding life strategies, etc. This issue definitely needs further research, as it could also bring light on the unexpectedly high attractiveness of the opt-out strategy.

Table 1 presents local and global prioritizations of decision criteria and sub-criteria.

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%

Source: results of experts' evaluations from Expert Choice Comparion™ software.

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 up to 100%. Here the global priorities sum up to 99.97%, because the inconsistency level of evaluators' answers is above zero and below the tolerated inconsistency level of 10% [49]. The same can be observed on Fig. 3, which sums to 100.01%, which is due to similar reasons.

A consistency check was performed after each round of evaluations, when all pairwise comparisons for one parent criterion have been finalized. An abbreviated consistency report has been presented to evaluators, who were asked to reassess their evaluations each time when the inconsistency of their preference statements was higher than 10% (Consistency Ratio $\geq 0,1$). Due to low consistency, the preference statements of two evaluators out of initial 14 have not been included into final results.

6. Limitations

The main limitation of presented research comes from the narrowing the group of experts to University students. Nevertheless, obtained results are satisfactory enough to extend the composition of experts' sample in future studies by people with non-academic background. Therefore the utility of the model is limited not because of adopted hierarchy of criteria, but because of the choice of experts, which could be improved in future similar research.

7. Conclusions

The outcome of presented research is a decision-making model that aims at maximizing the life satisfaction of future employees as a function of their individual assessments of significance of particular determinants of quality of life. The cognitive value of the research consists of the following: (i) it identifies and helps understanding the relations 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.

To identify the dynamic of changes in preferences, a similar research task should be lead between employers and employees that have already been active on the job market for some time. Further in-depth insight into individual motivations of early career decision-making of young people could prove useful as well, especially for a deeper understanding of attractiveness of the opt-out life strategy.

If the presented model gains attention from its potential users (employees and employers), both sides will profit from growing knowledge on the nature of one of the most important decisions in human life – the choice of career path with accordance to individual preferences on work-life balance. Companies will gain more focused and better-motivated employees, able to follow closer their own development paths, leaving less space for frustration and professional burnouts. A more accurate adaptation to trends on the labor market and creation of new business models are other possible outcomes.

Newman et al. (2015) state 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. This in turn would increase the range of AHP's applicability by decision-making processes that are vital not only for business, but also for entire societies.

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