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AWADA SALEH

IMPROVING AND ADAPTING THE MANAGEMENT TECHNOLOGIES IN ORDER TO MEET THE NEEDS OF THE LABOR MARKET FOR THE HIGHER EDUCATION FIELD OF ISRAEL

SPECIALTY 521.03 - ECONOMY AND MANAGEMENT IN THE FIELD OF ACTIVITY

Doctoral thesis in the field of Economic Sciences

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Author: _____

CHISINAU, 2023

UNIVERSITATEA LIBERĂ INTERNAȚIONALĂ DIN MOLDOVA

Cu titlu de manuscris

CZU:

AWADA SALEH

ÎMBUNĂTĂȚIREA ȘI ADAPTAREA TEHNOLOGIILOR DE GESTIONARE PENTRU A RĂSPUNDE NECESITĂȚILOR PIEȚEI MUNCII ÎN DOMENIUL ÎNVĂȚĂMÂNTULUI SUPERIOR AL ISRAELULUI

SPECIALITATEA 521.03 - ECONOMIE ŞI MANAGEMENT ÎN DOMENIUL DE ACTIVITATE

Teza de doctor în economie

Conducător ştiinţific: _____ Blagorazumnaia Olga,
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Autor: _____

CHIŞINĂU, 2023

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Improving and adapting the management technologies in order to meet the needs of the labor market for the higher education field of Israel

Awada Saleh, Chishinau, 2023

Specialty: 521.03- Economy and management in the field of activity

Structure of the thesis: introduction, three chapters, general conclusions and recommendations, bibliographical list of 208 titles, 140 pages of basic text, 13 tables, 35 figures and 15 appendixes. The theme of dissertation was implemented in 27 academic articles, published in Moldova, Kazakhstan, Russia, India, Israel.

Key words: adaptation, outsourcing, crowdsourcing, models, methods, management, technologies, education, supply, labor market, demand.

The purpose of the study is to scientifically substantiate the methodological provisions and develop scientific and practical recommendations for the use of management technologies and the mechanisms for adapting them to the needs of the labor market in relation to the field of higher education in Israel.

The objectives of the thesis: describe the key characteristics of the labor market and its interaction with the market for educational services; investigate the unique aspects of the academic labor market as an integral component of the overall labor market in the country; examine the functioning of management technologies within the labor market; provide an overview of the current labor market situation in relation to educational services; assess the mechanisms of outsourcing and social and labor relations in the context of education in Israel; formulate an approach for utilizing crowdsourcing as a promising technology for managing the development of higher education; develop a model for organizing a virtual environment as a new technology in the labor market of future teachers; create a mechanism for adapting management technologies to the needs of the higher education market in Israel.

The scientific novelty and originality consists of development and stages' description of crowdsourcing implementation as management technology in education institution, development and description of model for organizing a virtual educational environment for training of future teachers, algorithm of virtual game use in teaching, models of career growth of a teacher taking into consideration a use of outsourcing and crowdsourcing, mechanism of choice and adaptation of management technologies to the demands of labor market in relation to the field of higher education in Israel.

Resolution of the scientific problem consists of the development of theoretical and practical concepts for building up demands at the labor market in relation to the field of higher education in Israel, confirming the ability to adapt for a set of management technologies' models using outsourcing, crowdsourcing, virtual teaching.

The theoretical significance of the work is the complex methodological approach, which is based on the combination between the theoretical motivation and practical application of the suggested recommendations in issues of management technologies' adaptation in the labor market in relation to the field of higher education in.

The practical value of the work consists of complex analysis of demand and supply factors of talented human resources in the education environment, and the proposed conclusions and recommendations will improve the balance between supply and demand in the labor in relation to the field of higher education in Israel.

The implementation of the scientific outcomes: the scientific researches in the form of conclusions and recommendations were presented at scientific conferences and journals, and they were recognized beneficial for adapting managerial personnel technologies to the needs of the labor market in relation to the field of higher education in Israel.

ADNOTARE

La teza de doctor în științe economice

Îmbunătățirea și adaptarea tehnologiilor de gestionare pentru a răspunde necesităților pieței muncii în domeniul învățământului superior al Israelului

Awada Saleh, Chișinău, 2023

Specialitatea: 521.03 – Economie și Management în domeniul de activitate.

Structura lucrării: întroducere, trei capitole, concluzii și recomandări, bibliografie din 208 de surse, 140 pagini de text de bază, 13 de tabele, 35 figuri, 15 anexe. Tema tezei a fost aprobată în 27 de articole academice, publicate în Republica Moldova, Kazahstan, Federația Rusă, India, Israel.

Cuvintele cheie: adaptare, outsourcing, crowdsourcing, modele, metode, management, tehnologie, educație, ofertă, piața muncii, cerere.

Scopul tezei este de a fundamenta științific prevederile metodologice și de a elabora recomandări științifice și practice pentru utilizarea tehnologiilor de management și a mecanismului de adaptare a acestora la nevoile pieței muncii în raport cu domeniul învățământului superior din Israel.

Obiectivele cercetării: descrierea caracteristicilor cheie ale pieței muncii și a interacțiunei acesteia cu piața serviciilor educaționale; investigarea specificului pieței de muncă academice ca componentă integrantă a pieței forței de muncă în ansamblu din țară; examinarea funcționării tehnologiilor de management pe piața muncii; descrierea situației actuale de pe piața muncii în raport cu serviciile educaționale; analiza pieței de muncă academice din Israel; analiza mecanismului de outsourcing și relațiilor sociale și de muncă în contextul educației din Israel; formarea abordării pentru utilizarea crowdsourcing-ului ca tehnologiei promițătoare pentru gestionarea dezvoltării învățământului superior; dezvoltarea unui model de organizare a mediului virtual ca o tehnologie nouă pe piața muncii a viitorilor profesori; crearea unui mecanism de adaptare a tehnologiilor de management la nevoile pieței învățământului superior din Israel.

Noutatea și originalitatea științifică constă în dezvoltarea și descrierea etapelor implementării crowdsourcing-ului ca tehnologie de management într-o instituție de învățământ, elaborarea și descrierea unui model de organizare a unui mediu educațional virtual pentru pregătirea unui profesor viitor, dezvoltarea unui algoritm pentru utilizarea jocului virtual în proces de studii, modelului de carieră a unui profesor, ținând cont de outsourcing și de crowdsourcing, mecanismul de alegere și adaptare a tehnologiilor de management la cerințele pieței muncii în raport cu sfera învățământului superior din Israel.

Rezultatul obținute care contribuie la soluționarea unei probleme ştiinţifice importante rezidă în dezvoltarea unor concepte teoretice și practice ale formării nevoilor pe piața muncii în domeniul învățământului superior, care confirmă posibilitatea adaptării unui set de modele a tehnologiilor manageriale folosind outsourcing-ul, crowdsourcing-ul, instruire virtuală.

Semnificaţia teoretică a lucrării constă într-o abordare metodologică cuprinzătoare bazată pe o combinație a argumentării teoretice și aplicării practice a recomandărilor propuse în adaptarea tehnologiilor manageriale pe piața muncii în domeniul învățământului superior din Israel. Pozițiile teoretice cunoscute sunt prezentate în publicații pe această temă de oameni de știință israelieni și străini.

Valoarea aplicativă a lucrării constă într-o analiză cuprinzătoare a factorilor ofertei și cererii de personal talentat în mediul educațional, iar concluziile și recomandările propuse vor îmbunătăți echilibrul între ofertă și cerere pe piața muncii în domeniul învățământului superior din Israel.

Implementarea rezultatelor ştiinţifice: cercetarea științifică sub formă de concluzii și recomandări a fost prezentată la conferințe științifice și în reviste și a fost recunoscută ca fiind una utilă pentru adaptarea tehnologiilor manageriale de resurse umane la nevoile pieței muncii în domeniul învățământului superior din Israel.

АННОТАЦИЯ

К диссертационной работе на степень доктора экономических наук

Совершенствование и адаптация управленческих технологий к потребностям рынка труда в сфере высшего образования Израиля

Авада Салех, Кишинэу, 2023

Специальность: 521.03 – Экономика и менеджмент по отраслям

Структура работы: введение, три главы, выводы и рекомендации 208 источников библиографии, 140 страниц основного текста, 13 таблиц, 35 рисунков, 15 приложений. Тема диссертации была апробирована в 27 академических статьях, опубликованных в Молдове, Казахстане, России, Индии, Израиле.

Ключевые слова: адаптация, аутсорсинг, краудсорсинг, модели, методы, управление, технологии, образование, предложение, рынок труда, спрос.

Цель исследования заключается в научном обосновании методологических положений и разработки научно-практических рекомендаций применения управленческих технологий и механизма их адаптации к потребностям рынка труда по отношению к сфере высшего образования Израиля.

Задачи исследования: описать основные характеристики рынка труда и его взаимодействие с рынком образовательных услуг, раскрыть особенности академического рынка труда как составной части рынка труда страны; раскрыть аспекты функционирования управленческих технологий на рынке труда , описать текущую ситуацию на рынке труда по отношению к образовательным услугам, проанализировать академический рынок труда в Израиле, проанализировать механизм аутсорсинга и социально-трудовых отношений применительно к образованию в Израиле, сформировать подход к применению краудсорсинга как перспективной технологии управления развитием высшего образования; разработать модель организации виртуальной среды как новой технологии на рынке труда будущих учителей; разработать механизм адаптации управленческих технологий к потребностям рынка высшего образования Израиля.

Научная новизна и оригинальность состоит в разработке и описании этапов внедрения краудсорсинга как управленческой технологии в образовательном учреждении, разработке и описании модели организации виртуальной образовательной среды для подготовки будущего учителя, алгоритма использования игры виртуального обучения, модели карьерного роста преподавателя с учетом использования аутсорсинга и краудсорсинга, механизма выбора и адаптации технологий управления к потребностям рынка труда по отношению к сфере высшего образования Израиля.

Результат, способствующий решению научной проблемы, заключается в развитии теоретических и практических концепций формирования потребностей на рынке труда по отношению к сфере высшего образовании Израиля, подтверждая возможность адаптации комплекса моделей управленческих технологий с использованием аутсорсинга, краудсорсинга, виртуального обучения.

Теоретическая значимость работы заключается в комплексном методологическом подходе, основанном на сочетании теоретической аргументации и практического применения предложенных рекомендаций в вопросах адаптации управленческих технологий на рынке труда по отношению к сфере высшего образования.

Практическая значимость работы заключается в комплексном анализе факторов спроса и предложения талантливых кадров в образовательной среде, а предложенные выводы и рекомендации позволят улучшить соблюдение баланса между спросом и предложением на рынке труда по отношению к сфере образования в Израиле.

Внедрение научных результатов: научные исследования в виде выводов и рекомендаций были представлены на научных конференциях и в журналах, а также признаны полезными для адаптации управленческих кадровых технологий к потребностям рынка труда по отношению к сфере образования Израиля.

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LIST OF ABBREVIATIONS

IT- information technologies

MT- management technology

NGOs - nongovernmental organizations

NIS- New Israeli Shekel

OECD - Organization for Economic Co-operation and Development

VET - Vocational Education Training

INTRODUCTION

Actuality and importance of research theme. In a rapidly evolving technological landscape, the expectations of employers towards employees undergo swift transformations. The labor market plays a crucial role in determining the contemporary requirements placed on educational services. The labor market is the main entity who determines modern demands towards the education services. The problem of non-agreement between the labor demand and its supply exists in many countries all over the world, since lots of employers are not satisfied with the quality of professional-qualification education, skills, field of specialization of potential employees. Provision of balance between demand and supply of labor forces is a major object of state policy making. The effective interaction between higher education systems and the labor market is one of the mechanisms for solving this problem. This is why it is crucial to examine in depth the tendencies at the labor market and its relations with the education services' market.

Employment at the education services' market should fit the demand of the professionals' labor market segment, which allows to determine the relations between the education system and economic sectors. Interactions between labor and education services' markets is characterized by the following ties: economics' demands- labor market demands- education services' abilities- population demands for certain kinds of education.

In Israel, the problem of interaction between the labor market and the Higher education market is also based on sectors, both geographic and religious- ethnic. Sectors of better and more developed Higher education (like bigger cities, and a non-religious Jewish majority) are stronger in the aspects of competitiveness and attractiveness for investors. There are major differences between the genders, majorities versus minorities, in their abilities to develop economically and to supply high-quality human resources. This is the reason to research in depth labor and education markets and examine their relations and inter-connections in any level.

The labor market is the one to determine requirements and demands to the market of education services, and management technologies of both education and labor market should adapt to these demands, their changes and forecasting for the future. In reaction to changes at the labor market, management technologies for human resources recruitment and training, altogether with their adaptation and constant improvement, become extremely important for education system and its components.

Not any management technology may be effectively used and adapted to the activities of education institutions, since different education institutions have specific dynamic conditions of internal and external environments. Creating an algorithm of choosing management technologies, their adaptation to the activity of education institutions, considering the labor market demands, are actual for this scientific research.

Purpose of research. The purpose of the study is to scientifically substantiate methodological provisions and develop practical recommendations for the use of management technologies and the mechanisms for adapting them to the needs of the labor market in higher education in Israel.

Objectives of research:

- describe the key characteristics of the labor market and its interaction with the market for educational services;
- investigate the unique aspects of the academic labor market as an integral component of the overall labor market in the country;
- examine the functioning of management technologies within the labor market;
- provide an overview of the current labor market situation in relation to educational services;
- assess the mechanisms of outsourcing and social and labor relations in the context of education in Israel;
- formulate an approach for utilizing crowdsourcing as a promising technology for managing the development of higher education;
- develop a model for organizing a virtual environment as a new technology in the labor market of future teachers;
- create a mechanism for adapting management technologies to the needs of the higher education market in Israel.

Hypothesis of research. The proposed management technologies (outsourcing, crowdsourcing, virtual and distance learning) can significantly improve the situation on the academic labor market and help in solving multi-level tasks of higher educational institutions in Israel.

Synthesis of research methodology and justification of chosen research methods. The theoretic base for this research is the combination of classical and modern papers which were used, in the management field. Solving problems in this research is based on using general- scientific methods: system approach, comparative and structural analysis, retro spectral analysis, documents analysis,

synthesis. In addition, some special methods were applied: survey, descriptive statistics-analysis, questionnaires, simultaneous system of equations regression model.

Researches dealing with relations between labor market and education services (Sarid A.A., Newton P.M., et.al.) allow to conclude that there are stable connections between educational institutions and the labor market and, as a result, there is a need to increase a number of graduates who are able to integrate faster into the industrial process.

Developing of new forms of using a labor power - virtual organizations, distant working places and methods of working, leasing and staff outsourcing, which are elaborated in papers of Przybylski A.K., Anderson J., Rainie L., Blagorazumnaya O., allowed to develop an algorithm of forming management technologies and their implementation in educational institutions.

Management Technologies (MT) are researched from the point of view of their implementation effectiveness in the field of management, in order to increase the company activities effectiveness, independently from the narrowness of implementation field of MT. This direction is described in the papers of Pretty J., Smutny P., Prochazka J., Vaculik M.

In this research, Statistical Central Bureau data were used, some analytical materials, published in the local press, scientific-practical conferences materials in the related fields of studies.

Scientific literature review on the problems in the field allows to conclude that the degree of studies in the research field is quite extensive, relating to separate problems of management technologies' implementation in the labor market in relation to education. However, there are theoretical-practical researches missing, striving to improve and adapt the management technologies to the labor market demands in relation to education in Israel.

The scientific novelty and originality consist of:

- development and stages' description of crowdsourcing implementation as management technology in education institution,
- development and description of model for organizing a virtual educational environment for training of future teachers, algorithm of virtual game use in teaching,
- development and description of models of career growth of a teacher taking into consideration a use of outsourcing and crowdsourcing,
- development of mechanism of choice and adaptation of management technologies to the demands of labor market in relation to the field of higher education in Israel.

The novelty of the current thesis should relate to the Covid-19 crisis in the world, which began in 2020 and made existing problems even more acute. Due to the crisis, both the labor and the academic world had to adjust quickly to transition from working within an organization (like plant, factory, academic institution etc.) to working distantly, usually from home. There was no time to prepare to such a quick change, although distant technologies already existed and were partly implemented. After being made to switch to studying and working remotely, many students and even more lecturers in Israel complained about distant mechanisms and their drawbacks, but there were some advantages found, and today Israeli Ministry of Education and academic institutions empower their infrastructure, in order to be more prepared to the new era of digital, distant and virtual learning and teaching. This research describes management technologies (MTs) of implementation of distant learning, virtual learning, outsourcing and crowdsourcing in education and proposes new ways of their implementation in teaching, learning, management of career path of Higher education professionals and Human Resources recruitment.

Abstract of thesis chapters, focusing on the investigations and their need for the achievement of the purpose and the objectives of the research. The thesis consists of an introduction; three chapters; general conclusions and recommendations; bibliographical list of 208 titles, 140 pages of basic text, 13 tables, 35 figures and 15 appendixes.

The first chapter – **Theoretical foundations of the management technologies and their implementation in the labor market in relation to education services** – focuses on the labor market: the essence and the main characteristics of labor market in relation to education, management technologies functioning at the labor market including theoretical and practical aspects, Israel and other countries' features of the academic labor market as an integral part of the country's labor market.

The second chapter – **Analysis of the characteristics of the Israeli labor market in the field of the education services** – describes current situation of the labor market in relation to education services, analysis of the academic labor market in Israel, analysis of the mechanism of outsourcing and social - labor relations in relation to education in Israel.

The third chapter – **Improvement of human resources allocation mechanism of the labor market on the basis of management technology** – describes innovative management technologies and suggests their implementations in the labor market of Israeli education.

The **general conclusions** on the basis of theoretical and practical results are synthesized findings of the investigation, and the appropriate key recommendations are presented for the purposes set out in the researched topic.

1. THEORETICAL FOUNDATIONS OF THE MANAGEMENT TECHNOLOGIES AND THEIR IMPLEMENTATION IN THE LABOR MARKET IN RELATION TO EDUCATION SERVICES

1.1. The main characteristics of labor market and its interaction with education services' market

Labor market, like markets of capitals, commodities, goods and securities is a part of market economy. A labor market is the place where employees (workers) and employers interact with each other. In the labor market, employers compete to hire the best, and the workers compete for the best satisfying job[1]. Higher education services market provides labor market with professional human resources (specialists), which are required by companies, industries and national institutions for effective functioning[2].

This paragraph's main goal is to reveal the content of the labor market, role of education and its impact on the situation at the labor market. Especially, the author is focusing on education role and the labor market of Higher education system workers.

Labor market's object is a labor of hired workers, which is a non-material commodity, which is created by human activity of some kind. Such a labor possesses all the characteristics of value turnover. Labor has a value and therefore may be priced, which is determined by the characteristics of the labor itself altogether with demand and supply for labor. Therefore, hired labor has characteristics which are similar to any other commodity (product), allowing it to play a role of labor market's object.

Main elements of labor market are: labor market subjects (employees, employers, state); economic programs, decisions and legal regulations, made by the subjects (like legislative acts, norms, rules governing the relationship between market entities); market mechanism (demand, supply for labor power, its costs, competitiveness); unemployment and related social payments; market infrastructure (institutions to promote employment, vocational training and retraining of personnel; a network of employment centers, labor exchange etc.).

[1] *The Economic Times. The online magazine for international literature*. Bennett, Coleman & Co. Ltd. India. [quoted 27.12.2019]. ISSN 0013-0389. Available at: https://economictimes.indiatimes.com/definition/labour-market

[2] *Global IoT in Education Markets, 2018-2023: Potential Growth Opportunities for System Integrators & Declining Cost of Connectivity and Connected Devices.* Research and Markets. [quoted 12.02.2020]. Available at: https://www.researchandmarkets.com/research/xmrsr2/global_iot_in?w=12.

Main subjects of the labor market are salaried employees, employers, states. Employer is a potential customer of labor, and a personality is the entity ready to exploit its labor skills. Employers' unions and professional unions of employees are derived from this main subject.

Main components of labor market are demand, as a general requirement of economy for labor power, and supply, which consists of all the hired labor power out of economically active population. The demand for skilled labor in the labor market is typically determined by the quantity and composition of employed individuals in a particular sector, industry, or profession. The shortage of skilled labor within these areas is a significant issue that requires a solution. Moreover, the demand for skilled labor is defined by the professional and qualified structure of the organized and potentially unorganized economy for various sectors' workforce, at both national and regional levels. On the other hand, labor supply is characterized by the availability of working-age population or labor force capable of performing jobs with specific qualifications and educational requirements. This labor supply includes both current employed workforce and new job-seekers who enter the labor market after completing their studies, immigrants, and other individuals engaged in staff turnover.

Modern market economy assumes creation of a system of inter-connected markets, each of which has its own specific function, based on a certain goal and objectives. Among these markets, labor market and education services' market have their own place, they are related to each other on both goal-based and functionality-based domain, and in a sense represent a fundamental platform for any kind of market relations. Labor market goal is to supply labor powers of certain competencies and levels of competencies, in all fields of human activity, which are mostly concentrated on material and nonmaterial production. Education services' market essence is creation and development of competencies and their levels, which are demanded by personality and labor market. Higher education is a significant part of education services' market.

The market for higher education services[3] is a comprehensive network of economic transactions that involve the exchange of educational services. This market comprises institutions that offer a broad range of teaching services, and the teaching process is typically carried out at schools, colleges, universities, and other educational centers[4].

[3] SARID, A. A theory of education. In: *Cambridge Journal of Education*, 2018. Vol. 48 (4), pp. 479-494.ISSN 0305-764X.

[4] *Educational Services Global Market Report 2019*. Research and Markets. [quoted 12.02.2020]. Available at: https://www.researchandmarkets.com/categories/education

The subjects of the educational services market include educational institutions and individuals who provide educational services, as well as large economic entities such as households, firms, and states who demand educational services.

Labor market and its relations with education field have their own characteristics, which are related to the specifics of the education system in general and the specifics of labor in particular. Labor in the field is intellectual effort, it is not regular-hours based, oriented on the human being and forming her knowledge, skills and abilities, intellect, principles and moral values. Market labor subjects are hired employees of education system, who propose their labor power. Their welfare and productivity depend on their ability to successfully sell their labor power, sign a contract, and get a job. The professional training may be a key to such a success.

Interactions between labor market and education services' market have their own specifics, determined by goals and characteristics of their development. Some researchers claim that goals of education, including the higher education, should be pragmatic and answer labor market goals exclusively, so higher education must develop only competencies which are demanded at the labor market[5]. Others, on the contrary, claim that inner goals of higher education and labor market rather contradict than complete each other[6].

A distinctive feature of the modern labor market is tough conditions of functioning (high intensity of information flows, big number of employers, intense competition over advantageous job positions), infrastructures that get more complicated over time. This is the place to form demand for educational services by major economy subjects (households, firms, states), and their supply by educational institutions and private entities. Labor market must provide education services' market with necessary information about preferred job positions and employers' needs, increase in demand for certain professions. Education services' market, in its turn, has to take into consideration demand for professional-qualifications value of labor power from the side of labor market, in order to fulfill this demand by reacting to labor markets' signals, being a regulative tool for balancing labor demand – supply[7].

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[5] NEWTON, P.M., DA SILVA, A., BERRY, S. The Case for Pragmatic Evidence-Based Higher Education: A Useful Way Forward? In: *Front. Educ*. *Frontiers Media SA*. 2020. Vol. 5. ISSN 2504-284X.

[6]ORTIZ, E. A., KALTENBERG, M., JARA-FIGUEROA, C., BORNACELLY, I., HARTMANN, D. *Local labor markets and higher education mismatch*. IDB Working Paper Series IDB-WP-01115. 2020. [quoted 17.08.2022]. Available at: https://publications. iadb. org/publications/english/document/Local-Labor-Markets-and-Higher-Education-Mismatch-What-is-The-Role-of-Public-and-Private-Institutions. pdf

[7] STEWART, C., WALL, A., MARCINIEC, S. Mixed signals: do college graduates have the soft skills that employers want?. In: *Competition forum*. American Society for Competitiveness, 2016. p. 276. ISBN 1545-2581

The following Figure 1.1 schematically presents a labor market and its relation with education institutions in Israel and other countries.

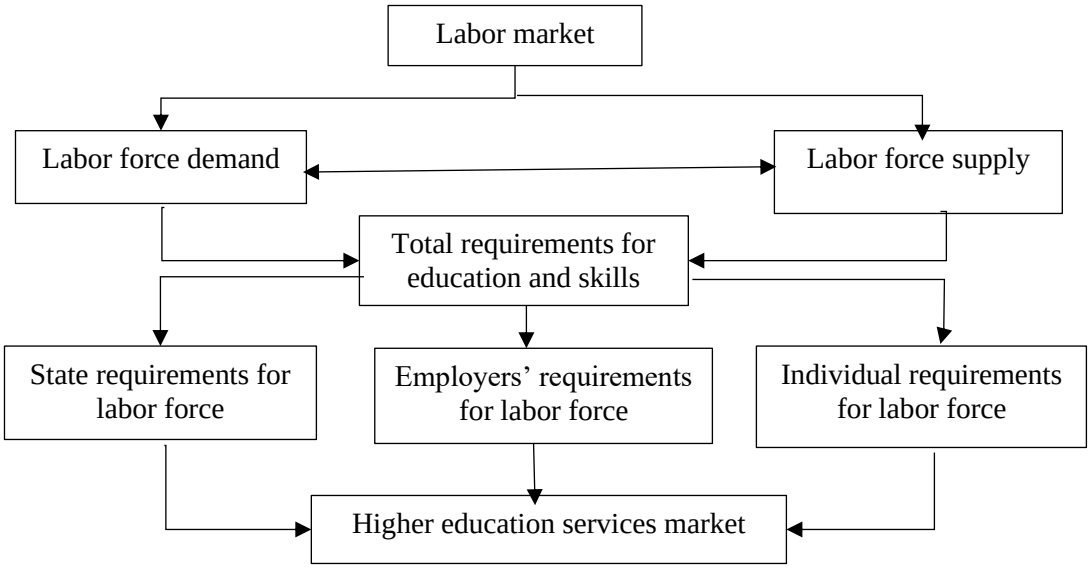

Figure 1.1. Labor market and its relation with Higher education institutions [elaborated by author based on[8]]

To meet the demands of the labor market, firms and organizations often seek educated and trained staff, with additional qualifications desired by potential employees. The education requirements in regional labor markets are often influenced by the subjective needs of the local population, which can impact both the labor and education markets. However, the youth tend to choose their profession based on random or perceived notions of prestige, which may not align with their personal needs or the needs of employers, creating challenges in effective employment. In some cases, there may be an oversupply of potential employees for certain job positions. The goal of ensuring a supply of human resources is a crucial aspect of the socio-economic state of any country. In Israel, as in other countries, some professions may be oversaturated with graduates, while others suffer from a lack of qualified staff[9].

Non-agreement between actions of Higher education institutions', firms and organizations dealing with qualified specialists trainings leads to appearance of disproportions between labor market needs and Higher education graduates. In author's opinion, improve in cooperation between

[8]AWADA, S. The nature of labor market and its main characteristics. In: *Вестник*. Казахстан: Костанайский государственный педагогический институт, 2016, nr.2, p.19-21. ISSN 2310-3353.
[9]SWANSON, R. A. *Foundations of human resource development*. Berrett-Koehler Publishers, 2022. 456 p. ISBN 978-1-57675-075-9.

universities and organizations and firms may significantly impact quality of graduates' trainings, and therefore increase their value at the labor market.

Upon looking at the interactions and mutual relations of labor market and education services' market, the author may reveal the following points of view on this issue:

The first one is a view of Higher education as competencies generator, which will promote better level of wages and status in the labor market. According to this view, Higher education institutions must be oriented on labor market demands only, and reduction of any gaps between graduates' skills and labor market' needs[10]. In author's opinion, modern world is highly mobile and erratic, there are constant scientific-technological innovations, and even Higher education system may fail to catch there too frequent changes, so a certain "gap" will still prevail.

The second point of view on Higher education is its perception as activity which goal is granting individual with ability to choose her profession by her own. This choice is supposed to be based on both material and other values. According to this point of view, main goal of Higher education is self-realization and creativity empowerment. To justify this point of view, we should mention that creative people usually adjust easily to change of job and studying; a balanced personality is stress-tolerant and usually gets along with co-workers; a good specialist is broad-minded which allows her to solve non-standard problems.

The third approach sees education as a political tool to fight poverty, since it helps people get better job position, making their profits higher and their lives better[11]. Public and private organizations, including the World Bank and the regional development banks, seek "a free of poverty world"[12]. Namely, poverty is caused by unemployment; the countries are too poor to provide their poor citizens with food and care just because they are citizens. Proper employment is in need. Thus, anti-poverty efforts can be focused on helping employees and employers find each other more effectively; assistance for people as citizens/residents through publicly-provided broadcasting, and striving for more free movement of labor between countries[13].

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[10] NEWTON, P.M., DA SILVA, A.,BERRY, S. The Case for Pragmatic Evidence-Based Higher Education: A Useful Way Forward? In: *Front. Educ*. *Frontiers Media SA* . 2020. Vol. 5. ISSN 2504-284X.

[11] AGGARWAl, A., KOKKO, A. SEZs and poverty reduction: evidence from Andhra Pradesh, India. *International Journal of Emerging Markets*, 2021. Vol. 17(8). p. 1793-1814. ISSN 1746-8809

[12]AWADA, S. Conceptul de auto-gestionare economica in instituţii. In: *Studii economice*. Chişinău: ULIM, 2015, an.10, nr. 2, p.119-124. ISSN 1857-226X.

[13]BASU, A. K., CHAU, N. H., FIELDS, G. S., KANBUR, R. Job creation in a multi-sector labour market model for developing economies. In: *Oxford Economic Papers*. 2019. vol. 71(1), p. 119-144. ISSN 00307653

As was mentioned above, higher education system influences labor market in many various ways, relating to most of valuable aspects of labor market and its characteristics: employment, level of wages, organization and structure of job positions etc. Higher education may impact labor market through development of academic migration/mobility; empowering importance of international relations for both individual and society; organization of students' practical trainings exchanges etc. Labor market, in its turn, also influences education system, which constantly needs to adjust to it (by enlargement of retraining periods for high-quality specialists, transformation into Life Long Learning programs in education system, development and organization of highly demanded at the labor market education programs).

The interaction between higher education institutions and the labor market is a complex and multi-faceted problem that requires taking into account various factors[14], such as employers' demands and the current employment situation in different fields and regions. This highlights the importance of effective collaboration between higher education institutions and the labor market to ensure that graduates are equipped with the necessary skills and knowledge to succeed in the labor market. It is crucial to keep track of the labor market in order to anticipate the future demand and supply trends of the workforce. This helps in creating a well-planned and suitable educational system that can prepare human resources for the future job market. When this task is carried out accurately, there is a higher chance of graduates being employed in jobs that align with their education and skills, and employers finding the staff they require[15].

The management of the effectiveness of higher education, based on the correlation between the educational offer and the requirements of the labor market, involves several aspects, such as developing the teaching staff, establishing partnerships with employers, and ensuring quality assurance. Teachers must undergo training and stay up-to-date with the latest developments in their respective fields to provide quality education and proper guidance to students based on current labor market needs. Higher education institutions should establish partnerships with employers to provide opportunities for internships, joint programs, and employment. These partnerships will help students gain hands-on experience, develop professional networks, and expand their employability[16]. The

[14]SAVAGE, M., COLGAN, B., CALLAN, T., WALSH, J. R. *Making Work Pay More: Recent Initiatives*. ESRI Budget Perspectives 2015. [quoted 20.09.2022]. Available at: https://www.esri.ie/news/budget-perspectives-2015-conference
[15]FROEB, L. M. et. al. *Managerial economics: a problem solving approach*. Boston: MA, 2016. ISBN 978-1-305-25933-1. OCLC 900237955
[16]MAIER, S. et al. Theory and practice of European co-operative education and training for the support of energy transition. In: *Energy, sustainability and society*, 2019, nr. 9, p. 1-12. ISSN 2192-0567.

quality of higher education should be monitored through various mechanisms, including accreditation, program evaluation, and student feedback, to ensure the relevance of educational programs and their compliance with the needs of the labor market. By effectively managing these aspects, higher education institutions can better align their educational offerings with the demands of the labor market, leading to improved employability of graduates and fulfilling the needs of the workforce.

The Covid-19 pandemic that began in 2020 definitely influenced the whole world economy, since it caused one of the deepest crises over the last decades, which involved a labor market. According to researches, in USA only 5-7 percent of employees used to work remotely before the pandemic, and after the pandemic their ratio grew up to 20-40 percent[17]. Employees' surveys demonstrate that only 22% want to come back and work in offices for a full day of job, whereas 74% wish to work distantly for 2 or more days a week[18].

The employment model has increasingly emphasized flexibility as a key characteristic, particularly since the onset of the Covid-19 crisis. Firstly, distant and partial work experience reduces costs, and secondly, since usually 'flexible' employees earn less than regular position employees and may get all the benefits that regular employees usually receive from their employers (such as maternity leave and sickness vacations). Moreover, when workers can be fired more easily during unfavorable circumstances, the decision to hire new workers becomes more effortless. Consequently, some of the entrepreneurial risk is transferred to employees, making job creation more feasible[19],[20].

Prior to the Covid-19 pandemic, which has since prompted many in the labor market to seek remote work arrangements, Finland had already taken steps to legalize flexible working arrangements. In January 2020, a law was passed in Finland allowing employees to choose their place of work for up to half of their monthly working hours. This law grants employees the right to work from home, a coffee shop, or any other location for up to half of their monthly working hours. Additionally, employees can accumulate additional work hours to use as future vacation time, partial work days, or even to work early in the morning and finish by noon in order to care for children. Essentially, the Finnish government has recognized the growing importance of flexibility in the labor market and aims

[17]*C-SUITE CHALLENGE™ 2021. Leading in a Post-COVID-19 Recovery*. [quoted 22.08.2022]. Available at: https://www.conference-board.org/pdfdownload.cfm?masterProductID=23597

[18]*PwC's US Remote Work Survey*. January 12, 2021. [quoted 14.07.2022]. Available at: https://www.pwc.com/us/en/services/consulting/business-transformation/library/covid-19-us-remote-work-survey.html

[19]SHINAR, A. *The Private Market of Public Work* . Bar-Ilan Law Studies. 2017. Vol. 31(1), p.11-53. ISSN 0334-0716 (Hebrew)

[20] MICHIE, J. Theory, economic policy, and evidence. In: *International Review of Applied Economics.* Taylor \& Francis. 2019, nr.33(6), p.735-736. ISSN 0269-2171

to support workers accordingly[21]. Remote work is a popular employment option for both employers and employees, and even though it is not yet legally recognized in Israel, its popularity is expected to persist beyond the Covid-19 crisis.

The author believes that in addition to flexible employment arrangements, it is important to consider employee motivation and incentives when making decisions about human resources management. Performance-based pay could be a straightforward way to address the issue of motivation, but agency theory[22] presents significant reasons why companies may choose not to use explicit performance-based pay[23] [24]. The ability to solve problems quickly and deal simultaneously with a number of tasks makes employees more competitive in the eyes of their employers.

The disparity in salaries offered by employers to graduates from different academic institutions can be understood through various economic theories. Meritocracy suggests that higher-paid employees have greater potential for productivity, which employers aim to capitalize on. The human capital theory[25] highlights education as a crucial form of capital and suggests that employers differentiate employees based on their education and the institution they graduated from, suggesting that the quality of human capital depends on the institution. However, some criticize this approach, stating that many job positions do not require academic education.

Discrimination can arise due to non-business factors, such as education level, ethnicity, nationality, language, gender, and age. Discrimination is prevalent and can manifest in forms[26] throughout different stages of labor activity, such as during the hiring process, termination, and setting of wages[27]. Eliminating discriminatory practices in the decision-making process at the state level is essential to ensure an efficient labor market.

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[21] *Globes. Labor market: analysis.* Finland presents: this way you will work half of the time from home with the state approval. [quoted 14.05.2020]. Available at: https://www.globes.co.il/news/article.aspx?did=1001306254

[22] BRANDSMA, G. J., ADRIAENSEN, J. The principal–agent model, accountability and democratic legitimacy. In: *The principal agent model and the European Union*. Palgrave Macmillan, Cham, 2017. p. 35-54.

[22] MATĚJKA, M. Target setting in multi-divisional organizations. In: *Journal of Management Accounting*

[23] HART, O. Incomplete contracts and control. In: *American Economic Review*, 2017, nr.107 (7), p.1731-52. ISSN 0002-8282

[24] HILSCHER, J., RAVIV, A. Bank stability and market discipline: The effect of contingent capital on risk taking and default probability. In: *Journal of Corporate Finance*, 2014, nr. 29, p. 542-560. ISSN 0929-1199

[25] MARVEL, M. R., DAVIS, J.L., SPROUL, C. R. Human capital and entrepreneurship research: A critical review and future directions. In: *Entrepreneurship Theory and Practice*, 2016, nr.40 (3), p. 599-626. ISBN 1042-2587.

[26] RICHARDSON-SELF, L., FIELDER, B., EZZY, D. *The aftermath of marriage equality in Australia: Religious freedom and LGBTQ+ non-discrimination*. In: Same-Sex Relationships, Law and Social Change. Routledge, 2020. p. 91-108. ISSN 0429021585.

[27] SCHWENKEN, H. *Intersectional migration regime analysis: Explaining gender-selective labor emigration regulations.* In: Was ist ein Migrationsregime? What Is a Migration Regime? Springer VS, Wiesbaden, 2018. p. 207-224.

The Covid-19 pandemic made Higher education institutions' management face new challenges of moving into virtual teaching and learning and considerably cut all the activities in campus. As a result, a wide variety of problems appeared, related with job positions' reduction and employees' fires, duration of job and wages, psychological health and welfare of lecturers and students. The author thinks that new job conditions at the period of Covid-19 were temporary for Higher education institutions, however these institutions adjusted quickly to the new situation, applied new innovated policy making methods, which proved to be effective.

Modern educational institutions are currently encountering a challenge to seek out means and mechanisms of collaboration that consider the interests and abilities of all parties involved. The primary motivation behind establishing such cooperation lies in the mutual interest to train competent professionals whose skills can fulfill the needs of the contemporary economy. Consequently, institutions can deliver superior education services, cultivate adept human resources, and foster job opportunities for graduates.

Enhanced cooperation among higher education institutions, recruitment agencies, and employers is vital for effective human resources training. Recruitment agencies serve as a mediator between prospective employees and employers, aiming to connect the two parties. Israel has both government and private-run recruitment agencies that have expertise in different employment sectors. Some recruitment agencies may also act as "head hunters" by initiating contact with individuals who are not actively seeking employment and offering them better job opportunities with prospects for career growth.

Figure 1.2 illustrates the interactions among employers, the higher education system, and human resource agencies (which include outsourcing companies, job advertisement websites, specialized publications, among others).

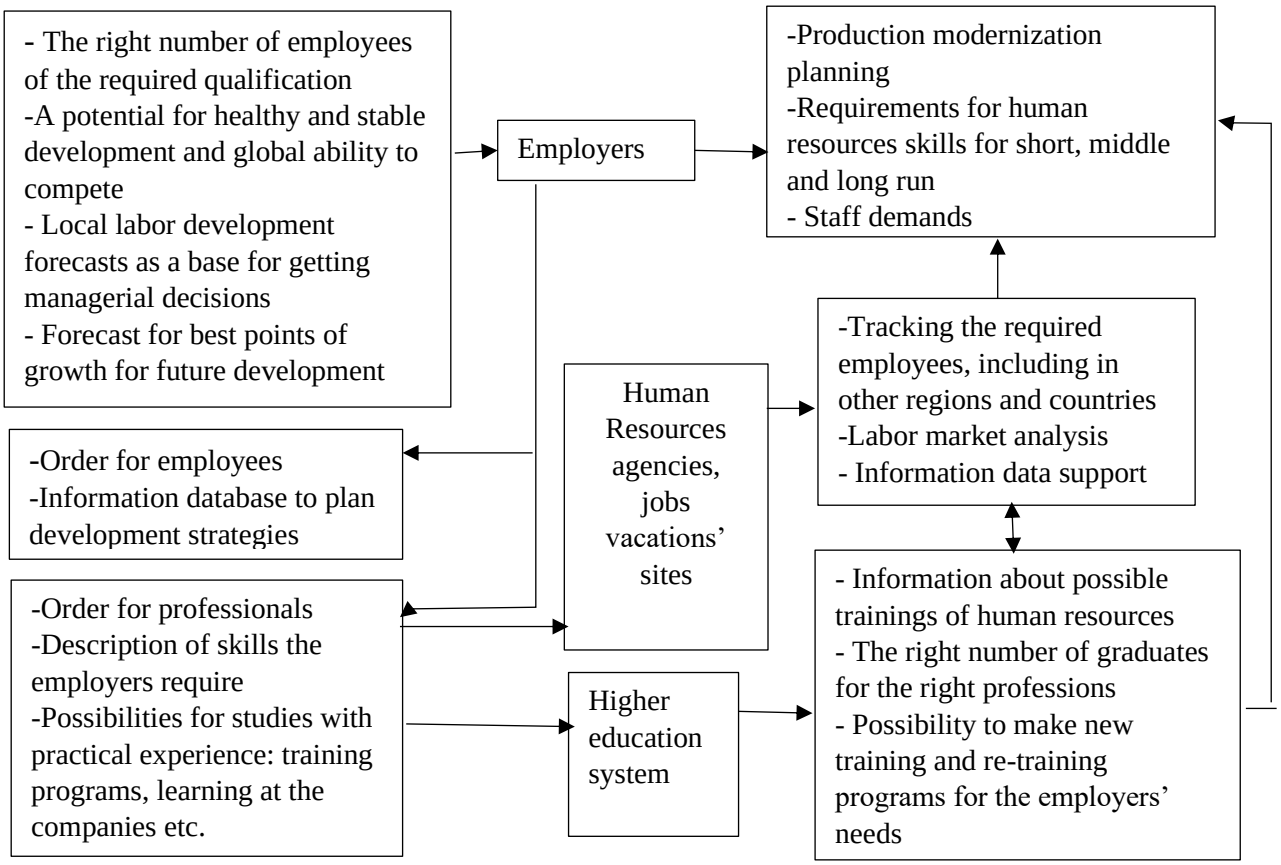

Figure 1.2. Interactions between employers, higher education system, and human resource agencies [elaborated by the author based on[28]]

Figure 1.2 demonstrates the intermediate position of human resource companies between the higher education system and employers. Although employers and employees can directly interact through classified ads, many prefer to use the services of human resource agencies. Employers who have their own human resource agencies can participate in well-coordinated activities such as informing students and graduates about job vacancies, placing the CVs of students and graduates in the agencies' databases, and engaging in forums, seminars, and job fairs organized by higher education institutions. Human resource agencies can also provide training and seminars for students and graduates.

The labor market and the higher education system are closely connected and can benefit each other. Thus, it is crucial for educational institutions to acknowledge and adjust to present and

[28] RAIMO, V., HUANG, I. Y., WEST, E. Education agents and their work with universities on international student recruitment. In: International Higher Education, 2021, nr. 106, p. 5-7. ISSN 0018-1560.

upcoming labor market trends to encourage progress and advancement. This also involves staying up-to-date with modifications and patterns within the education system.

Globalization and advancements in information technology have led to transformations in the social-labor domain. This has led to the complication of labor content and the expansion of labor motives, resulting in more widespread adoption of flexible forms of employment. The contemporary labor force has adopted novel labor preferences, including the capacity to work remotely, the possibility to blend professional development with work, multitasking skills, and the availability of contemporary technologies and internet access. These shifts in labor preferences have a substantial impact on employees' work behavior, which can determine the state of the labor market and employment dynamics.

The author effectively defined the labor market and the role of education services, with a focus on higher education. They also discussed the interactions between employers, the higher education system, and human resources agencies, which can promote mutual understanding and provide high-quality professional training to graduates, ultimately leading to the creation of skilled workers who can find employment efficiently.

1.2. Features of the academic labor market as an integral part of the country's labor market

The current stage is characterized by the reform of higher education in many countries, the introduction of innovations in the educational process. This imposes new requirements on the qualifications and content of labor contracts of university employees and on the development of the academic profession and the academic labor market.

The purpose of this paragraph is to reveal the features of the academic labor market as an integral part of the country's labor market.

The current stage of modernization of the higher education sector sets the task for higher educational institutions to meet the needs of students, enterprises, and organizations in educational services. Higher educational institutions are engaged in the training of personnel, the formation of their professional competencies that are in demand on the labor market. In the context of digitalization and the shorter life cycle of innovations, there is an increased need for academics to develop the necessary research and pedagogical competencies. As a result, university personnel services must make efforts to meet the university's demand for qualified personnel in a timely manner, both through internal recruitment and external strategies in the academic labor market.

The academic labor market refers to the recruitment and placement practices within higher education, including the recruitment, academic employment, and professional development of faculty and staff at colleges and universities. In essence, the academic labor market comprises a set of conditions and mechanisms that facilitate individual and collective transactions, leading to the formation of an academic contract between universities and employees of various academic ranks.

The academic labor market is an integral part of the country's labor market. The interaction between the labor market and academic labor markets is complex and multifaceted. On the one hand, academic labor markets are affected by broader labor market conditions, such as the demand for certain skills and qualifications, and changes in employment laws and regulations. On the other hand, academic labor markets have unique features and dynamics that affect the broader labor market, such as the production of knowledge and research, and the training of future workers. The development of new knowledge, skills, and technologies contributes to economic growth and social progress.

The interaction between the labor market and academic labor markets is particularly relevant in the area of demand for specific fields of study and research. Changes in the labor market may create new demand for workers with certain skills, which can stimulate demand for relevant academic programs and research. Additionally, academic research and knowledge transfer contribute to the acquisition of valuable information by both higher education institutions and enterprises' employees. Moreover, the labor market can provide scientists with the opportunity to apply their knowledge and skills in practice.

The dynamics of supply and demand in academic labor markets can vary across countries and regions. Generally, there is usually a large pool of qualified candidates for academic positions, particularly in the humanities and social sciences. However, the demand for these positions can be relatively low, particularly in countries where funding for higher education is limited. In the US, there is a high demand for academic positions, particularly at top universities, leading to intense competition and difficulty for aspiring researchers to secure permanent positions. In contrast, in some European countries like Germany, the demand for academic positions is relatively low, partly due to the country's decentralized education system that relies heavily on part-time and contract positions instead of permanent ones. This system can make it challenging for researchers to plan their careers and pursue research interests[29]. Part-time work is also common in the academic labor markets of Finland,

[29] ELLIOTT, D., FARNBAUER, M. *Bridging German and US Apprenticeship Models*. 2021. [quoted 2.04.2023]. Available at: https://www.urban.org/sites/default/files/publication/104677/bridging-german-and-us-apprenticeship-models.pdf

particularly for beginning researchers and those working on a project basis, allowing them to combine academic work with other responsibilities like teaching. In developing countries, limited funding and resources for higher education can result in low demand for academic positions, making it difficult for universities to attract and retain top talent, especially in science and engineering fields.

The interaction between labor markets in different countries and academic labor markets depends on various factors, including economic, technological, demographic, public policy, and institutional factors of higher education. The overall state of the economy, such as the unemployment rate, wage growth, and inflation, affects the supply and demand in both the country's labor market and the academic labor market. The demand and supply of academic work also depend on the mission, goals, and strategies of higher education institutions regarding the selection of personnel for various positions, their skills, and qualifications.

The development of digital technologies and automation affects the types of skills and knowledge required for new administrative tools for collecting and accumulating knowledge produced and new commercial mechanisms for paid access to university resources. Changes in the age, gender, and racial composition of the workforce can also affect the demand for academic work and the skills required for academic positions. Changes in public funding of higher education and the functioning of the labor market have a significant impact on the formation and development of the academic labor market.

According to the author, understanding the complexity of the interaction between the labor market and academic labor markets, the dynamics of their development is important for stakeholders seeking to promote the development of a skilled and adaptable workforce.

The relationship between the educational services market and the academic labor market is very close since the former produces the latter. Educational institutions produce and provide educational services, which are then consumed by students. Upon completion of their studies, students enter the academic labor market as potential employees, using the skills and knowledge they acquired during their studies. The academic labor market consists of various employers, such as universities, research institutes, and other organizations that require highly educated and skilled professionals. The demand for such professionals is influenced by factors such as technological advances, changes in the economy, and government policies. The supply of potential employees in the academic labor market depends on the number of graduates who are graduating from educational institutions, their level of qualification, and career preferences.

Thus, the academic labor market is closely connected to the general labor market as academic labor markets are affected by broader labor market conditions such as demand for skills, qualifications and changes in employment laws and regulations. Similarly, the academic labor market is related to the educational services market since educational institutions produce and offer educational services that are then consumed by students who enter the academic labor market as potential employees using the skills and knowledge gained during their studies.

Academic labor market has its own characteristics, which are related to qualitied of education system in general and higher education system in particular (Figure 1.3).

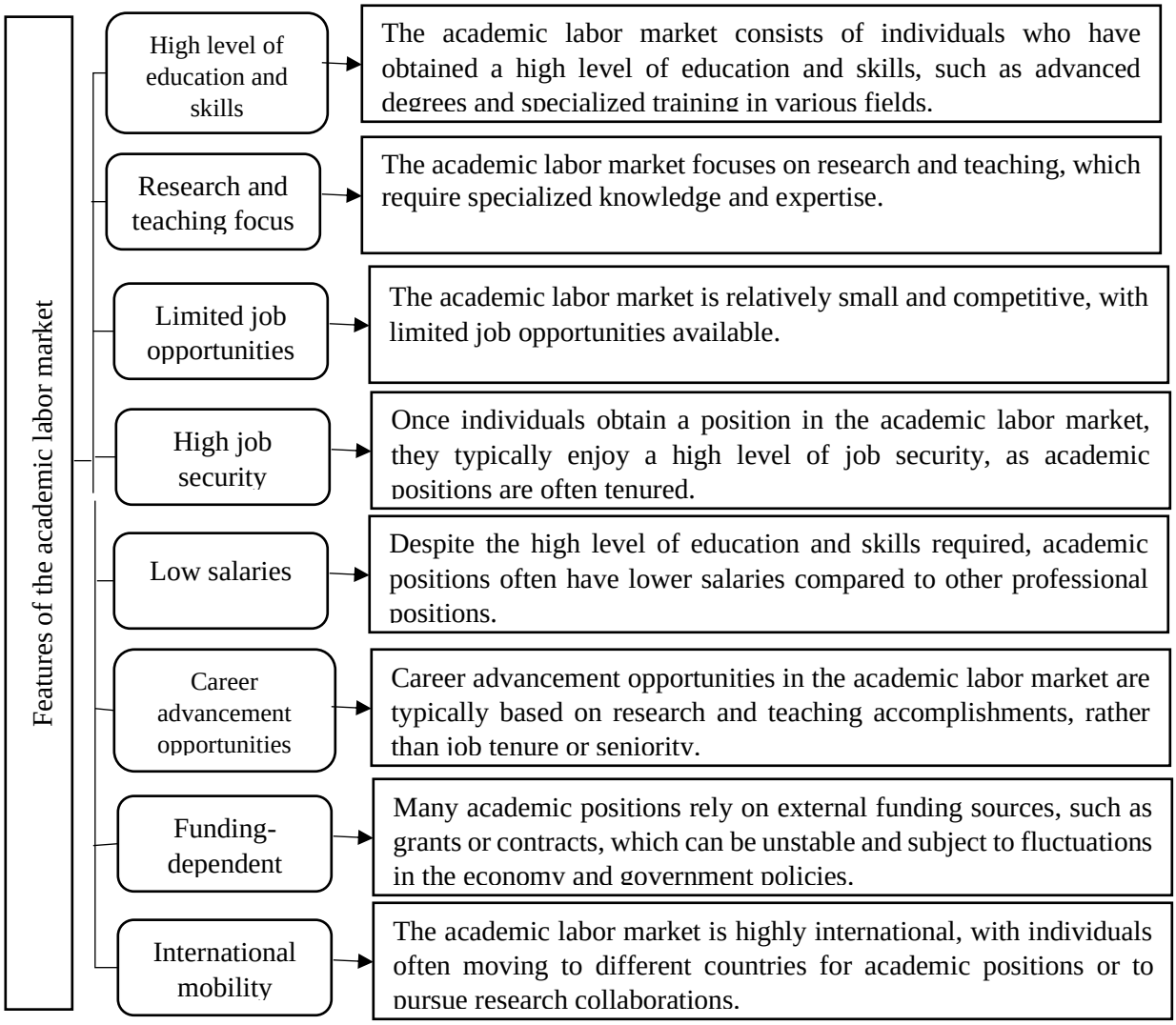

Figure 1.3. Features of the academic labor market [developed by the author based on [30]]

[30] AFONSO, A. Varieties of academic labor markets in Europe. In: *Political science & politics*, 2016. Vol. 49(4), pp. 816-821. ISSN 1049-0965

These include: high level of education and skills, focus on research and teaching, limited job opportunities, high job security, low salaries, career advancement opportunities, funding-dependent, international mobility.

The academic labor market is an important part of the country's labor market, as it contributes to the development of new knowledge, skills, and technologies that drive economic growth and social progress. Consider each of the directions presented in Figure 1.3.

High level of education and skills. The development of the academic labor market is closely related to the evolution of the academic profession[31], the main trends in the development of which at the present stage can be defined as follows: First, there is a change in the career trajectories of employees. An objective reduction in the number of permanent contracts makes it necessary for employees to position themselves independently in foreign labor markets. This leads to the segmentation of the academic community, weakening its unity and the emergence of primary (super professors and researchers) and secondary (teachers who specialize in teaching students) sectors. In the primary sector of the academic labor market, employees enjoy a high degree of academic freedom and broad prospects for mobility, while in the secondary sector, which comprises teachers who specialize in teaching students, the emphasis is on control, accountability, standardization, modulation, and rationalization of responsibilities[32]. The second trend in the development of the academic profession involves the prevalence of full and part-time employment through temporary contracts, which are often governed by internal rules rather than external labor market regulations. This results in variable statuses for workers in universities, enabling the internal labor market to be utilized for personnel needs and retention of employees who do not meet full-time contract requirements, such as elderly employees or those without necessary scientific degrees. Consequently, this trend diversifies academic contract conditions and increases the proportion of temporary employment in the academic labor market.

Academic employment, in terms of its content, forms, and types of intellectual labor, emphasizes the importance of segmentation, which is determined by several criteria. These include the scale of the academic labor market, which characterizes the territorial segments; the nature and

[31] CARVALHO, T. The academic profession in Europe: new tasks and new challenges/The work situation of the academic profession in Europe: findings of a survey in twelve countries. 2014. [quoted 11.04.2023]. Available at: https://www.tandfonline.com/doi/abs/10.1080/21568235.2014.890525?journalCode=rehe20

[32] IVANCHEVA, M., GARVEY, B. Putting the university to work: The subsumption of academic labour in UK's shift to digital higher education. In: *New Technology, Work and Employment*, 2022, nr.37(3), p. 381-397. ISSN 02681072.

effectiveness of academic work, which highlights the clusters of scientific, research, and pedagogical work; the level of qualification and substitutability, which segments the market into the primary (with a high concentration of intellectual, research, and pedagogical competencies of workers) and secondary sectors; and the socio-psychographic criterion, which classifies employees according to academic ranks on the university career ladder. One of the structural elements of the academic labor market is its internal market.

The author explains that the internal labor markets in universities are a result of the historical development of the academic profession, long-established practices of hiring within the institution, and the presence of regulations governing social and labor relations in higher education. The author defines the internal labor markets as a system of formal and informal rules and regulations within an organization that govern the distribution of labor resources, formation of salaries, and the conclusion of academic contracts.

The analysis of the structure of the internal labor market can be represented by a personnel core and periphery, entry/exit ports, as well as channels and mobility clusters. The personnel core is formed by representatives of the highest academic ranks who are characterized by a high concentration of competence and reputation resources, as well as a low degree of staff mobility. The university's task is to secure this category of employees due to the increasing transaction costs of finding substitute labor resources in the external academic market. Moving away from the center of the personnel core, the middle and lower academic ranks are characterized by a less stable position in the intra-organizational system of employment[33], a low share of specific professional competencies, and the need to independently position themselves within or outside the university's internal environment. These sectors of the internal labor market are affected by market mechanisms in the investment strategies of employees in developing their own potential or university strategies for internetization of labor, which aim to retain the most promising employees.

The existence of internal labor markets in the academic sphere is determined by several conditions. Firstly, academic ranks (such as professor emeritus, full professor, associate professor, senior lecturer, lecturer) act as ports of entry/exit to the internal labor market. Secondly, clear and concise regulations for career advancement, characterized by a set of requirements for the position (such as academic degree/title, number of publications, educational and administrative assignments,

[33] DUCHEK, S. Organizational resilience: a capability-based conceptualization. In: *Business Research*, 2020, nr. 13(1), 215-246. ISSN 1873-7978.

citation index) are present. Thirdly, competitive mechanisms are used for filling academic positions. Finally, wages and remuneration[34] are linked to the level of qualification and academic rank.

Focus on research and teaching. The academic job market places a strong emphasis on both research and teaching. While both are important, the relative emphasis on each can vary by institution, discipline, and individual teacher. Some institutions may prioritize research outcomes over teaching effectiveness, while others may place more emphasis on improving teaching. Ultimately, educators must strike a balance between these two areas to succeed in the academic job market.

Limited employment opportunities. Since the academic labor market is relatively small and competitive, employment opportunities are limited. In contrast to the development of market trends, many universities still have strong traditions of training within the university. This focuses the recruiting policy of the university mainly on the use of internal capabilities in meeting the staffing needs.

There are two types of recruiting in the academic labor market: internal and external. Internal recruiting happens when a university or college looks for candidates for academic positions from among its existing employees, such as faculty members, graduate students, and other research staff. This approach may be preferred by the university because it can be a cheaper and faster way to find candidates who are already familiar with the university's culture and standards. External recruiting is a common practice in the academic labor market. It involves universities seeking candidates for academic positions outside of their own organization. This can be achieved by posting vacancies on university websites or job search sites, as well as through networking with the academic community and partnerships with other universities and organizations. Although external recruiting can be more time consuming and expensive than internal recruiting, it can result in a broader range of candidates with diverse backgrounds and expertise. Recruitment criteria for applicants can vary depending on the type of employing institution, taking into account the level of teaching experience required[35]. Both internal and external recruiting approaches are utilized in the academic labor market, and universities can choose to use them based on their specific needs and resources.

High job security. The high job security in the academic labor market refers to the job security that academics enjoy, even during periods of economic downturn. This means that once hired,

[34] ALTBACH, P. et al. Academic Remuneration and Contracts: Global Trends and Realities: Philip G. Altbach, Liz Reisberg, and Iván F. Pacheco. In: *Paying the professoriate,* 2012, p. 14-31. ISBN 978-0415898072.
[35] FERNANDES, J. D. et al. A survey-based analysis of the academic job market. In: *Elife*, 2020, nr.*9*, e54097. [quoted 01.04.2023]. Available at: https://elifesciences.org/articles/54097.pdf

academics can generally look forward to long-term careers with access to benefits such as health insurance, retirement plans, and paid time off. However, many academic positions are contract-based and may not offer long-term stability, making it difficult for researchers to plan their careers and pursue their research interests. To maintain a high level of job security in the academic labor market, institutions of higher education create full-time positions, provide fair pay and benefits, offer opportunities for professional development, and invest in research infrastructure.

Low salary. Academic positions often have lower salaries compared to other professional positions, despite the high level of education and required skills. This can be explained by several factors, including the growth of income and the number of private institutions, where teachers may receive higher salaries compared to their counterparts in public institutions. Additionally, there may be differences in the average salary of teachers in each scientific sector of private and public universities due to the growing spread in the level of financial security per student[36]. In some countries, salaries in academic positions may be lower than in other industries, especially in the humanities and social sciences. These lower salaries can make it harder for universities to attract and retain top talent[37], and it can also make it harder for academics to provide for themselves and their families.

Career Opportunities. Traditionally, degree holders have pursued an academic career by working at universities or research centers. Career opportunities in the academic labor market depend on achievements in research and teaching, as well as university prestige[38], seniority, and other factors[39]. Just having a degree is no longer sufficient to pursue a career in science. The probability of obtaining a permanent job or securing a good position at a university or research center depends not only on holding an academic degree, but also on the candidate's experience, skillset, and portfolio[40]. Employers consider experience to be a key factor, and it's directly linked to the candidate's work in

[36] EHRENBERG, R.G. Studying Ourselves: The Academic Labor Market. In: *National Bureau of Economic Research*, 2022. [quoted 21.03.2023]. Available at: https://www.nber.org/papers/w8965

[37] FLANDER, A., KLEMENČIČ, M., KOČAR, S. *Academic profession in knowledge societies (APIKS) and the conditions of academic work in Slovenia*. Ljubljana: CMEPIUS, 2020. 165 p. ISBN 978-961-6628-65-5

[38] SMEETS, V., WARZYNSKI, F., COUPÉ, T. Does the academic labor market initially allocate new graduates efficiently? In: *Journal of Economic Perspectives*, 2006, nr. 20(3), p. 161-172. ISSN 0895-3309.

[39] HEARN, J., HUSU, L. Age–Gender Relations in the Academic Profession: Putting the Challenges of Early Career Academics Into Context. In: *Gender, Age and Inequality in the Professions*, 2019, p. 193-212. ISBN 9781351052467.

[40] FRØLICH N. et al. *Academic career structures in Europe: perspectives from Norway, Denmark, Sweden, Finland, the Netherlands, Austria and the UK*. Oslo: NIFU, 2018. 166 p. ISBN 978-82-327-0318-0.

various research or educational organizations, preferably not only in their own country but also abroad.

Funding dependency. One of the significant global factors affecting academic employment has been the privatization of higher education, leading to the emergence of a private sector. Furthermore, universities that still receive a high proportion of state funding have begun to develop models of "entrepreneurial universities"[41]. In this model, academics are expected to generate their own income independently and also work towards increasing the university's income through the provision of consulting services, developing relationships with the real sector of the economy, and attracting external grants. The financing per student in higher education, as well as the shift towards individual educational trajectories by students, have created the task for university teachers to cater to the educational needs and research interests of students who choose a curriculum or course. At the same time, institutional prestige has become a significant component of the marketing strategy in the entrepreneurial approach of universities. This is accompanied by the hiring of personnel with high scientific achievements to fill key positions. The position of universities in international rankings is an important criterion for institutional prestige. The structure of indicators in international rankings reflects the content of the reputational resource of universities, as well as academic freedom[42].

International mobility. The international mobility of the educated population is a complex and multifaceted phenomenon that is of great importance for both the "home country" and the "host country." Overall, world science tends to benefit from the active international mobility of scientific personnel, as more scientists are able to participate in the exchange of knowledge and pursue research in the topics and conditions that suit them best[43]. For the global scientific community, the active movement of highly qualified personnel is an important driver of development. However, at the country level, the migration of scientific personnel can either improve or damage a country's scientific and technological potential and its overall prospects for development.

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[41] FERREIRA J.J. et al. (ed.). *Entrepreneurial universities*. Lisbon: Edward Elgar Publishing, 2018. 288 p. ISBN 978 1 78643 245 2.

[42] *Ranking Academic Freedom Globally*. [quoted 22.04.2023]. Available at: https://www.insidehighered.com/news/2020/03/30/new-index-rates-countries-degree-freedom-scholars

[43] MANTAI, L., MARRONE, M. *What 40,000 job adverts say about academic career progression*. In: LSE, 2023. [quoted 10.04.2023]. Available at: https://blogs.lse.ac.uk/impactofsocialsciences/2023/02/13/what-40000-job-adverts-say-about-academic-career-progression/

There are several features that characterize the interaction of internal and external academic labor markets, and understanding them is important for developing policies that optimize academic employment at universities:

1. The increased competition in the academic labor market leads to the gradual replacement of formal rules and regulations with competitive mechanisms for resource distribution, such as jobs, career prospects, and employment guarantees under lifetime contracts in the university's internal labor market. This necessitates the implementation of proactive behavior by academic workers to develop specific competencies that can be offered to the university within the framework of an academic contract.

2. Optimal employment in the domestic labor market is determined by quantitative and qualitative parameters, including the achievement of the planned return on investment for the development of research and reputational potential of the university, which should be ensured by the labor efforts of each employee.

3. Developing external recruiting strategies to fulfill the innovative and educational mission of the university involves reducing internal employment (by letting go of employees with low academic achievements) or retaining internal labor potential while attracting additional funding for academic workers with high academic achievements, reputational resources, and disposable social capital. Bringing in superprofessors from outside (often from abroad) provides an influx of new ideas and professional competencies that enable universities to shorten staff training and development time, as well as cut costs in finding strategic partners and customers.

The interaction between the internal and external academic labor markets is subject to the principle of optimization, which involves coordinating the interests of academic staff and the university[44]. The university's demand for labor resources from the external academic labor market arises due to the lack of the required number of professional competencies in the internal environment to achieve an effective position in university rankings. At the same time, the university can implement strategies to reduce internal employment or supplement its own staff with new employees with high academic achievements, a reputation resource, and social capital at their disposal.

In general, the role of the internal labor market, as well as the relationship between the internal and external academic markets, is determined by two factors. On the one hand, the ability to increase

[44] MUSSELIN, C. Redefinition of the relationships between academics and their university. In: *Higher Education*, 2013, nr.65 (1), p.25 - 37. ISSN 0018-1560.

the scientific reputation of universities at the expense of the internal labor resource, which requires continuous efforts from staff to increase their human capital and an active position in the internal labor market by moving between academic ranks. On the other hand, if the human resources potential of the university is unable to generate and increase the required level of reputation (which is a criterion for receiving state financial support), the university tends to enter external labor markets and attract personnel with the required level of competencies and reputational resources.

Academic labor markets vary from country to country in terms of their structure, employment opportunities, and remuneration. For instance, in the United States, academic jobs are highly competitive and typically require extensive postgraduate education and research experience. In contrast, in Germany and Sweden[45], there is a greater emphasis on the importance of teaching and pedagogical skills, and academic work may require a wider range of competencies.

The pay for academic positions (remuneration) in higher education varies greatly from country to country. For instance, in the United States, salaries for full-time teaching positions can range from $50,000 to over $100,000 per year, depending on the institution and field of study[46]. In contrast, wages for academic positions in many European countries can be lower[47], but they can be supplemented by perks such as free medical care and generous vacations.

In some countries, such as Japan, the academic job market is highly competitive and requires extensive networks or professional connections to enter[48]. In contrast, in other countries, such as Australia and New Zealand, there is a shortage of academic jobs in certain fields, making it challenging for graduates to find suitable employment opportunities.

Despite the differences among countries, academic job markets face many common challenges. These challenges may include issues related to job security, workload, and the need to balance teaching, research, and other responsibilities. Such problems can make it difficult for academics to conduct high-quality research or provide effective teaching. Additionally, there may be concerns about the impact of globalization on academic labor markets, such as the outsourcing of research and

[45] *Careers by country*. [quoted 30.04.2023]. Available at: https://www.eui.eu/programmesandfellowships/academiccareersobservatory/academiccareersbycountry

[46] *Part Time College Professor Salary*. [quoted 30.04.2023]. Available at: https://www.ziprecruiter.com/Salaries/Part-Time-College-Professor-Salary#:~:text=While%20ZipRecruiter%20is%20seeing%20annual,annually%20across%20the%20United%20States.

[47] *Professor salaries from around the world*. [quoted 29.04.2023]. Available at: https://academicpositions.com/career-advice/professor-salaries-from-around-the-world

[48] KOTERA, S., SCHMITTMANN, J. M. *The Japanese Labor Market During the COVID-19 Pandemic*. IMF Work. Paper, 2022. 35 p.

teaching to other countries. Addressing these challenges will be crucial to ensuring that academic labor markets worldwide can continue to attract and retain the best talent and provide high-quality research and education.

Based on the analysis of scientific papers, in this paragraph the author has realized the goal of revealing the features of the academic labor market as a component of the country's labor market. The academic labor market is closely linked to both the general labor market and the educational services market. In terms of the former, the academic labor market is influenced by broader labor market conditions, including the demand for specific qualifications and skills, as well as shifts in employment laws and regulations. Meanwhile, academic institutions provide educational services that equip students with the knowledge and skills necessary to enter the academic labor market as job candidates, highlighting the connection with the educational services market.

The author has highlighted several characteristics of the academic labor market, such as a strong emphasis on education and specialized skills, as well as a focus on research and teaching. Despite limited employment opportunities, job security tends to be high in this field. However, wages can be relatively low compared to other professions, and career advancement opportunities may be limited. In addition, academic institutions are often heavily dependent on funding, which can create additional challenges for those working in the academic labor market.

1.3. Theoretical aspects of management technologies functioning at the labor market

The goal of this paragraph is to define and explore management technologies, their development, types and theoretical bases, and their possible models of functioning at the labor market and its interaction with education market.

Modern economics is mainly based on organization, which is characterized by the fact the management decisions are dominant[49]. These decisions are aimed at finding optimal organization forms and processes on companies functioning[50]. Given the economic environment, managers are compelled to conduct a thorough analysis of organizational resources, including the management technologies that are instrumental in ensuring the company's competitiveness in the market. As a

[49]AWADA, S. Labor market and its management. In: *Studii economice*. Chişinău: ULIM, 2015, an.10, nr. 2, p.104-118. ISSN 1857-226X.

[50]AWADA, S. Types of markets. В: *В науку будущего через формирование интеллекта и профессиональных компетенций:* Сборник научных трудов аспирантов, магистров, студентов/ НОУ ВО Московская академия экономики и права, Тираспольский филиал. Тирасполь: Б. н., 2016, p.151-157. ISBN 978-9975-3146-7-1.

result, management technologies have become a critical component of economists' activities, unlike in the past. This is because contemporary information and socio-economic developments necessitate the classification, collection, summarization, and application of knowledge and experience in addressing management challenges. In simpler terms, management technologies are now seen as a solution to deal with the challenges of the modern market [51]. Incorporating technology into firm management can provide significant competitive advantages and lead to further development. While the term "management technology" is used in literature, there is no consistent definition or clear understanding of its fundamental nature. The main reason for the lack of a systematic description and uniform understanding of the essence of management technology could be attributed to the variety and diversity of management objects and factors[52].

The term "technology" was originally used in the context of industry, but has since expanded to encompass the management of non-material resources. The development of the term "management technology" was a logical progression in this evolution. Technology is intended to alter the characteristics of an object or even transform it into something else. Due to the complexity of people and organizations, there is a justification for categorizing management technologies as a separate group[53]:

- Management technology can be defined in two ways. Firstly, it is a process that involves humans, documents, and technical tools to manage an activity by transforming information[54]. This process includes a mechanism, structure, and series of tasks that occur in time and space. Secondly, management technology is a science that focuses on making the management process more rational by building efficient systems[55]. Management technology as a document- the description of management process, saved on any means of saving information[56].

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[51]BECERRA-FERNANDEZ, I., SABHERWAL, R. *Knowledge Management: Systems and Processes.* London: M.E. Sharpe, 2010. 352 p. ISBN 0-7656-0075-7

[52]UMAM, R., SOMMANAWAT, K. Strategic flexibility, manufacturing flexibility, and firm performance under the presence of an agile supply chain: A case of strategic management in fashion industry. In: *Polish Journal of Management Studies*, 2019, vol. 19. USSN 2081-7452

[53]AWADA, S. Labor market and its management. In: *Studii economice*. Chişinău: ULIM, 2015, an.10, nr. 2, p.104-118. ISSN 1857-226X.

[54]ТРЕТЬЯКОВА, Е.П. *Технологии управления как способ формализации организационных процессов*. В: *Вестник Иркутского государственного технического университета*. 2013, №2(73), с.206-211. ISSN 1814-3520

[55] GUDANOWSKA, A. E. *Modern research trends within technology management in the light of selected publications*. În: Procedia Engineering, 2017, nr. 182, p. 247-254. ISSN 18777058.

[56]AWADA, S. Labor market management. În: *Preocupări contemporane ale ştiinţelor socio-umane. Materialele Conferinţei Ştiinţifice Internaţionale. Ediţia a VI-a. Chişinău, 11-12 decembrie 2015.* Chisinau: ULIM, 2016, p. 17-21. ISBN 978-9975-933-82-7.

- Various practical applications of contemporary scientific methods and tools for making decisions[57]. This refers to a set of methods and processes used in management, as well as the scientific description of management activities, aimed at making decisions and achieving organizational goals, both common and specific.

- Methodological tools used to control and manage business operations[58]. This definition refers to a specific set of actions carried out by those in charge of a management system. It involves gathering information, using special methods and procedures to develop management decisions, and implementing actions to achieve previously established goals.

- The simulation games[59] approach was developed with the understanding that management assignments cannot be separated into individual tasks, as has been done in the development of industrial technologies. The approach of simulation games challenged the idea of breaking down management tasks into separate tasks, which was common in industrial technologies. Instead, it proposed a three-layer scheme for structuring management tasks: the management function, a series of management procedures that implement the specific function, and the management procedures that have various levels of regulation. The study of simulation games has helped to identify several key characteristics of management technologies, including the division of work processes into phases, steps, and stages, the standardization of procedures for carrying out tasks, the synchronization of phases and steps, a focus on achieving specific goals, an emphasis on order and organization, a uniqueness based on the connection between the technology and the values system, goals, and qualifications of the management subject, and a link between management procedures and specific calendar dates.

Serrat[60] contributed to obtain a good grasp of management technologies, a method of finding solutions is suggested. Technologies such as information, logistics, and finance are examples of solution-finding technologies that aid in proper management. Although information technology is not a management technology, it is essential in providing the necessary quality of management decisions and solving problems related to strategy, tactics, and operations.

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[57] DŹWIGOŁ, H. et al. *Research methods and techniques in new management trends: research results*. In: Virtual Economics, 2019, nr. 2(1), p. 31-48. ISSN 2657-4047.

[58] UBAID, A. M., DWEIRI, F. T. *Business process management (BPM): terminologies and methodologies unified*. In: International Journal of System Assurance Engineering and Management, 2020, nr. 11, p. 1046-1064. ISSN 09764348.

[59] SMUTNY, P., PROCHAZKA, J., VACULIK, M. The relationship between managerial skills and managerial effectiveness in a managerial simulation game. In: *Innovar*, 2016, vol. 26(62), pp. 11-22.ISSN 0121-5051.

[60] SERRAT, O. *Knowledge solutions: Tools, methods, and approaches to drive organizational performance*. In: Springer Nature, 2017. 1140 p. ISBN 981100983X.

The utilization of information technologies has significantly expanded the scope of management technologies, increasing the need for them and altering the perception of their essence[61]. The 1990s marked the onset of globalization, where the business sector became inclusive and extensive, established on robust information, technological and economic ties, combined into global structures. Consequently, new organizational forms have emerged, such as virtual, horizontal, and network-based, leading to novel demands for staff management and its tools.

Management technology, like any other technology, should be developed by utilizing the principles and laws governing the subject of management. Thus, management activities must be designed and regulated in accordance with the requirements and expectations of stakeholders, taking into account the competencies of the staff, the advancement of information technology, and the effects of globalization. In doing so, organizations can chart a course toward sustainable success, ensuring that their management practices remain dynamic and responsive to the ever-evolving business landscape.

Management technologies can consider the following [62]:

- Intellectual character of the final products;
- Utilization of both explicit and implicit, visible and hidden tools in dealing with the targets;
- How technologies depend on national and regional mentality, quality of company human resources;
- Variations depending of the results achieved;
- More use of social-psychological instruments structure.

Therefore, a comprehensive approach to control technologies should incorporate all these elements, recognizing that successful management in today's dynamic business environment requires a blend of strategic thinking, adaptability, and a deep understanding of both the tangible and intangible aspects of organizational management.

Considering the aforementioned aspects of building management technologies, the following table outlines the dominant trends and their main features.

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[61] PRAJOGO, D. et al. *The relationships between information management, process management and operational performance: Internal and external contexts*. In: International Journal of Production Economics, 2018, nr. 199, p. 95-103. ISSN 0925-5273.

[62] SMUTNY, P., PROCHAZKA, J., VACULIK, M. *The relationship between managerial skills and managerial effectiveness in a managerial simulation game*. In: Innovar, 2016, vol. 26(62), pp. 11-22. ISSN 0121-5051.

Table 1.1. Stages of development of management technologies [elaborated by author based on[63]]

Number	Dominant tendency	Management technology essence	Main methods and instrument
1	Industrial	Performing actions according to a predetermined algorithm	Compulsion methods and procedures
2	Cybernetic	The implementation process involves following a predetermined algorithm or set of steps	Information technology instruments
3	Humanistic	Humanitarian technologies	Corporate culture instruments
4	Relationships - based	Nets building	Formal compulsion and self-filling agreements
5	Innovational	Technologies and technology creation	Instruments of theory of invention problems solving

To summarize the evolution of management technologies, the term initially referred to a rigid process that dictated the actions of participants. However, over time, this perspective shifted as the focus moved from exploitation and submission to collaboration between owners of complementary resources. The concept of management technology is now widely used in both scientific and business circles, but its application in new fields is still evolving, according to the author's perspective.

The emergence of information technologies has caused the traditional boundaries of industries to become less distinct. The separation into departments within organizations has also become less clear, and traditional industrial staff of offices and production departments have been replaced by small professional groups. Many modern organizations now have "electronic" jobs that are interconnected through computer networks. In the era of globalization, there are more flexible and non-standard forms of employment that are characterized in the following way [64]:

- Flextime with less than a full day's work
- Temporary jobs based on deadlines and volume of work, including project-based work
- Job sharing, where different employees conduct different parts of the work or the same job is shared by different employees
- Remote work, where the job is done outside of the organization, such as at home or in a different location
- Simultaneous work for multiple employers

[63] AWADA, S. Types of markets. В: *В науку будущего через формирование интеллекта и профессиональных компетенций:* Сборник научных трудов аспирантов, магистров, студентов/ НОУ ВО Московская академия экономики и права, Тираспольский филиал. Тирасполь: Б. н., 2016, p.151-157. ISBN 978-9975-3146-7-1.

[64]ТРЕТЬЯКОВА, Е.П. Технологии управления как способ формализации организационных процессов. В: Вестник *Иркутского государственного технического университета*. 2013, №2(73), с.206-211. ISSN 1814-3520

- Self-employment, where the employee produces goods or services on their own, potentially using the internet.

All these forms of employment involve some different levels of risks, since they are not stable and constant, and a state cannot control and regulate such employments.

In a constantly fluctuating job market, organizations require management technologies that can enable them to efficiently manage their staff and make effective decisions regarding the utilization of human resources' potential[65].

Various definitions of "management technology" have been provided in the economic literature, including its characterization as a process, document, tool, and methodology. Like any other technology, management technology should be based on the laws governing the functioning of the management object. The management object, in this case, is the human being who participates in the labor process. The object of management in an organization is material, financial, natural, information, and human resources. Unlike material, financial, or natural resources, individuals possess unique motivations and aspirations for professional growth and self-realization, which significantly influence their behavior in the workplace. The management object, in this case, is the human being who participates in the labor process. HR technologies empower organizations to offer personalized training, feedback, and career development opportunities that cater to individual needs. They also aid in attracting top talent with critical professional skills essential for the organization's long-term success. The modern workplace is continually evolving to accommodate trends like remote work, the gig economy, and flexible scheduling. HR technology plays a pivotal role in adapting to and optimizing these evolving trends. These technologies aim to create a conducive management atmosphere, enhance organizational structure, promote accountability, and align staff behavior with organizational objectives[66].

Modern management technologies of recruitment and adaptation of staff are various and some of them are presented in Table 1.2.

[65]AWADA, S. Markets and their flexibility. In: *Индустриализация основа нового экономического роста государства. Материалы VIII Международной научно-практической конференции, спецвыпуск, 30 ноября 2016*. Казахстан: Костанайский инженерно-экономический университет имени М. Дулатова, 2016, с.192-194. ISBN 1684-9310.

[66]AWADA, S. Social management: different aspects. În: *Asigurarea viabilitifii economico-manageriale pentru dezvoltarea durabill a economiei regionale in conditiile integrlrii in UE: materialele conferinfei științifice internationale Balti: 16-17 septembrie 2016.* Iași: PIM, 2017, p.127-130. ISBN 978-606-13-3642-5.

Table 1.2. Types of staff technologies of recruitment and training [elaborated by author based on[67] [68]]

	Technology types	Contents
Staff recruitment	Recruiting	A system of events of search, choice and recruitment of employees, answering requirements
	Direct search	A nexus of events of involvement of specialists with required qualifications in the process of recruitment
	Preliminaring	Attraction of young and promising specialists
	Smartstaffing	Use of the same employees by different organizations through special internet exchanges, using cloud technologies
Staff training	Buddying	Guiding at the same hierarchical level
	Shadowing	New employee becomes a "shadow" of experienced specialist
	Secondment	Staff exchange between companies in order to acquire new skills and knowledge
	E-learning	Learning is mostly conducted using modern IT technologies when teacher and pupils are far away from each other
	Virtual education	Teaching within virtual reality for improving the acquired skills

In any one of the fields of human resources technologies' implementations mentioned in 1.2 table (recruitment of personnel, its rotation, training etc.), there are various human resources technologies, which sphere of action is wide.

Staff recruitment deals with providing the required number of employees of required quality to certain job positions. Traditional methods of looking for staff (interview, qualification exams, staff rotation etc.) may be characterized as passive, since they mostly relate to people who look for a job actively. Upon lack of high-quality staff at the labor market, traditional methods become low-effective, require high expenditures of time and money at the organization. Therefore, a challenge of looking for and adapting new management technologies arises. In the author's mind, the choice of management technologies should be made with consideration of organization's goals, problems and opportunities.

Let us present some staff technologies of recruitment and training of employees.

[67] NIKOLAOU, I. What is the Role of Technology in Recruitment and Selection? In: *The Spanish journal of psychology*, 2021, nr. 24, c. e2. DOI: https://doi.org/10.1017/SJP.2021.6

[68] TIKHONOV, A. I. The use of networking in staff recruitment: recommendations and referral programs. In: *Amazonia Investiga*, 2019, nr. 8(19), c. 521-528. ISSN 2322-6307.

Recruiting is a system of events of search, choice and recruitment of employees, answering requirements of organization[69]. The organization focuses on specialists who look for a job.

Direct search of staff is a nexus of events of involvement of specialists with required qualifications who basically did not plan to change their place of job (poaching to specialists from competitors)[70]. In modern practices, there are two main directions of direct search of staff: exclusive search and headhunting. These methods help to "poach" interesting potential employees (top-managers and rare specialists) from one company to another. Exclusive search usually relates to a specialist of a certain qualification. "Headhunting" means poaching a certain specialist, which is preferred by her client company. Those are usually employees who are able to build up a team, namely, top-managers; they are valuable for a company, their relations are important.

Looking for employees in social networks is thought of a modern method of recruitment[71]. Adds about new job positions on Internet in forms of video are aimed at potential employees of certain ages, which allows employer to find a needed group according certain request.

Smart staffing is currently one of the most innovative and popular technologies of staff recruitment[72]. It is based on common use of the same employees by different organizations through special internet exchanges, using cloud technologies. According to this technology, a company reports on the exchange that there are some non-used working hours available, which may be used by other organizations. This method allows to avoid time wastes of employees and their effective time-planning.

Staff training management develops building up of conditions for improvement of professional qualities and experience of employee[73]. Budding is a method of training, based on providing each other with information for creating a sincere feedback connection. Secondment may be both internal

[69] BLACK, J. S., VAN ESCH, P. AI-enabled recruiting: What is it and how should a manager use it? In: *Business Horizons*, 2020, nr. 63(2), p. 215-226. ISSN 0007-6813.
[70] ALBRECHT, S. L. et al. Employee engagement, human resource management practices and competitive advantage: An integrated approach. In: *Journal of organizational effectiveness: People and performance*, 2015, nr. 2(1), p. 7-35. ISSN 2051-6614.
[71] NIKOLAOU, I. Social networking web sites in job search and employee recruitment. In: *International Journal of Selection and Assessment*, 2014, nr. 22(2), p. 179-189. ISSN 1468-2389.
[72] BROUGHAM, D., HAAR, J. Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees' perceptions of our future workplace. In: *Journal of Management & Organization*, 2018, nr. 24(2), p. 239-257. ISSN 18393527.
[73] OLIMOVICH, D. I., TEMIRKULOVICH, U. J., BAKHODIROVNA, M. M. Mechanisms of improving staff training. In: *Academy*, 2020, nr. 2 (53), p. 20-21. ISSN 0001-4273.

(when organization departments exchange employees) and external, when employees work for organizations of other fields of activity (business, policy making, schools, little local companies etc.)

E-learning may be related to studying on distance (distant learning) and may be used in training at the job place in case an organization possesses its own internet site, chat, forum where its employees may get automatic solutions during their job[74]. Use of virtual reality technologies (VR) allows to recruit and adapt employees by creating a virtual environment in order to check out their professional skills and competencies. A virtual environment allows demonstration of complicated processes visually, especially when oral explanation is quite difficult.

The use of personnel technologies such as online job postings, applicant tracking systems, and virtual interviews has become increasingly common in the selection and hiring of employees in higher education. These technologies allow for a more streamlined and efficient hiring process, as well as providing access to a wider pool of candidates. Additionally, training and development programs for employees can also benefit from the use of technology, such as online courses and virtual workshops. These technologies can provide more flexible and accessible training opportunities for employees, helping to improve their skills and job performance.

In author's opinion, comprehension of actual tendencies in the field of staff management development and their implementation in the field provides higher characteristics of employees' quality and better and quicker reaction to ever-changing requirements of the market and the clients.

The following staff technologies of decentralization of special functions to human resource agencies: outplacement (assistance in employment of hired employees)[75], outsourcing (transferring human resource recruitment functions to a mediator), out staffing (moving part of personnel to the staff of human resources agency)[76], leasing of staff (from a human resources agency for a predefined period of time)[77], assessment (evaluation of employees' competencies)[78].

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[74] BATALLA-BUSQUETS, J.M., PACHECO-BERNAL, C. On-the-job e-learning: Workers' attitudes and perceptions. In: *International Review of Research in Open and Distributed Learning,* 2013, vol.14(1), p. 40-64. ISSN 14923831.

[75] BAR-ISAAC, H., JEWITT, I., LEAVER, C. *Outplacement, Training, and Recruitment: A model of adverse selection with general skills and match specific components.* 2019. Available at: https://www.bc.edu/content/dam/bc1/schools/mcas/economics/pdf/seminars/swp0000.pdf

[76] ZUO, L., SHESTAK, V., VLASOVA, S., ISLAMOV, A. Efficiency of Outsourcing and Outstaffing Mechanisms Based on MOOCs in the Market of Entrepreneurial Education Services. *International Journal of Emerging Technologies in Learning (iJET)*. 2021, vol. *16*(2), pp. 135-148. ISSN 1863-0383

[77] MERRILL, T. W. The economics of leasing. *Journal of Legal Analysis*. 2020, vol. 12, pp. 221-272. ISSN 2161-7201

[78] MULLIS, I. V. S., MARTIN M. O., TIMSS. 2019 *Assessment Frameworks*. – International Association for the Evaluation of Educational Achievement. Herengracht 487, Amsterdam, 1017 BT, The Netherlands, 2017.ISBN 1889938416

Contemporary management technologies and practices are shaped by a variety of factors, including the needs and expectations of the workforce, unique characteristics of the organization, globalization, and the availability of various technologies. Consequently, the current understanding of technologies is continually evolving. The conventional model of an employer-employee relationship, in which one party gives direction and the other obeys, is slowly being replaced by partnerships in which each party supplies resources to the other to make up for any deficiencies. These types of relationships are referred to as indirect employment contracts that involve employee recruitment and human resources agencies acting as intermediaries between the employee and the customer [79].

According to the economics literature, out-technologies are classified as a form of external labor force and can be divided into two categories: technologies related to specialized functions, where certain functions and business processes are outsourced to external organizations instead of specific employees; and technologies related to staff supply, such as out-staffing and staff leasing[80].

Outsourcing or consulting services in the education system are needed to address the following challenges[81]:

- Establishing an education system that is based on monitoring the needs and demands of market players in the medium and long term;
- Developing specific recommendations to improve and optimize certain educational services, providing additional services such as catering and copying services for students, and adjusting marketing elements based on labor market demands;
- Establishing stable connections between educational institutions and the labor market, which would increase the number of graduates and help them integrate faster into the workforce (i.e. solving the problem of preparing young professionals);
- Providing practical skills to graduates.

The emergence of new forms of labor utilization such as virtual organizations, remote work, staff leasing, and outsourcing, is becoming increasingly popular in educational institutions. These

[79]YAM, J., SKORBURG, J. A. From human resources to human rights: Impact assessments for hiring algorithms. Ethics and Information Technology, 2021, vol. 23 (4), pp. 611-623. ISSN 1572-8439

[80]BLAGORAZUMNAIA, O., AWADA, S. Managerial out-technologies on the labor market. In: *Universitas Europaea: towards a knowledge-based society through europeanisation and globalisation. International scientific conference 13-20 octomber 2017.* Chisinev: ULIM, 2018, p.72-76. ISBN 978-9975-3168-7-3

[81]BLAGORAZUNMNAYA, O., AWADA, S. The directions of outsource services implementations in the education system of Israel. In: *The modern paradigms in development of the national and world economy.* The international scientific conference 01-02 November 2019. Kishinev: Moldova State University, 2019, p. 364-370. ISBN 978-9975-149-73-0.

changes necessitate the development of new approaches to reforming social-labor relations in education. The author believes that regulating social-labor relations in Higher education under conditions of outsourcing requires special consideration due to the unique characteristics of the industry.

Outsourcing in education refers to a system of exchanging knowledge, skills, and competencies between educational institutions and external organizations based on the diversification of roles and functions. Through outsourcing, certain authorities and responsibilities are transferred from higher education institutions to other companies.

The primary motives for adopting outsourcing in Higher education institutions are to lower expenses and save time, and to focus their attention on important aspects of managing the educational institution and improving the quality of education provided to students [82] [83]. Outsourcing is therefore an effective tool of resources' use saving, allowing Higher education institutions to deal with their major goals.

Israel, Moldova, Romania, and other countries' universities have been using outsourcing for various purposes. For example, they rent out their buildings and rooms to external companies, hire external staff for different types of work, and delegate functions such as human resources management, financial support for students, university staff salary payment, and accounting to outside companies. Experts in outsourcing suggest that about 90% of universities in the USA use outsourcing as a cost-cutting measure[84].

In many developed countries, the collaboration between the government and private sectors is known as the "new technology of economic development" and is aimed at achieving common economic and social objectives. To ensure successful cooperation, a set of rigorous principles must be established to guide interactions between the two sides and to protect the interests of both parties[85].

Outsourcing is a form of cooperation between the government and private sector that involves delegating some of the government's functions to social institutions to improve the management of

[82]VITASEK, K. *The Vested Outsourcing Manual. A Guide for Creating Successful Business and Outsourcing Agreements.* (1st ed.). New York: Palgrave Macmillan. 2011. 395 p. ISBN 978-0-230-11268-1

[83]WEKULLO, C. S. Outsourcing in higher education: the known and unknown about the practice. In: *Journal of Higher Education Policy and Management*. 2017, vol.39 (4), pp. 453-468.ISSN 1360-080X.

[84]BLAGORAZUNMNAYA, O., AWADA, S. The directions of outsource services implementations in the education system of Israel. In: *The modern paradigms in development of the national and world economy*. The international scientific conference 01-02 November 2019. Kishinev: Moldova State University, 2019, p. 364-370. ISBN 978-9975-149-73-0.

[85] WEKULLO, C. S. Outsourcing in higher education: the known and unknown about the practice. In: Journal of Higher Education Policy and Management. 2017, vol.39 (4), pp. 453-468.ISSN 1360-080X.

state property and public services. It is considered an effective way of cooperation because the private sector takes full responsibility for the work or services provided, while the government funds them. Through competitive bidding, the best outsourced performer is selected. Outsourcing also reduces the government's need to carry out activities in areas where it lacks specialization.

Some experts suggest that outsourcing should be considered as a solution to management and administrative problems. However, before making a decision about outsourcing, the institution's management should carefully evaluate all options for cost reduction and the potential consequences of outsourcing. Factors such as direct and indirect costs, the impact on the institution's staff and their status, the quality of services provided by the outsourcing company, legal and ethical considerations, potential conflicts of interest, and the institution's history and traditions, as well as control over the outsourced activities, priorities, and effectiveness, should be taken into account[86].

For policymakers to enhance a country's development and utilize innovative methods, they must consider the necessary changes to be made in the education sector. The quality of education, overall competitiveness of the education system, and the success of its graduates are crucial elements for any country globally[87].

If it is discovered that the current management practices of educational institutions are not producing adequately qualified professionals according to employer standards, it could become a national issue. To resolve such a problem, immediate action may be required to modernize higher education and explore new organizational and legal methods of collaboration between higher education institutions, government bodies, and the business sector[88].

An academic institution is a multifaceted entity consisting of various components. The main focus of educational institutions should be on educating and training future professionals, while additional tasks can be delegated to private individuals or entrepreneurs through outsourcing (Figure 1.4).

[86]BLAGORAZUNMNAYA, O., AWADA, S. The directions of outsource services implementations in the education system of Israel. In: *The modern paradigms in development of the national and world economy*. The international scientific conference 01-02 November 2019. Kishinev: Moldova State University, 2019, p. 364-370. ISBN 978-9975-149-73-0.
[87]WEKULLO, C. S. Outsourcing in higher education: the known and unknown about the practice. In: *Journal of Higher Education Policy and Management*. 2017, vol.39 (4), pp. 453-468.ISSN 1360-080X.
[88]VITASEK, K. *The Vested Outsourcing Manual. A Guide for Creating Successful Business and Outsourcing Agreements.* (1st ed.). New York: Palgrave Macmillan. 2011. 395 p. ISBN 978-0-230-11268-1

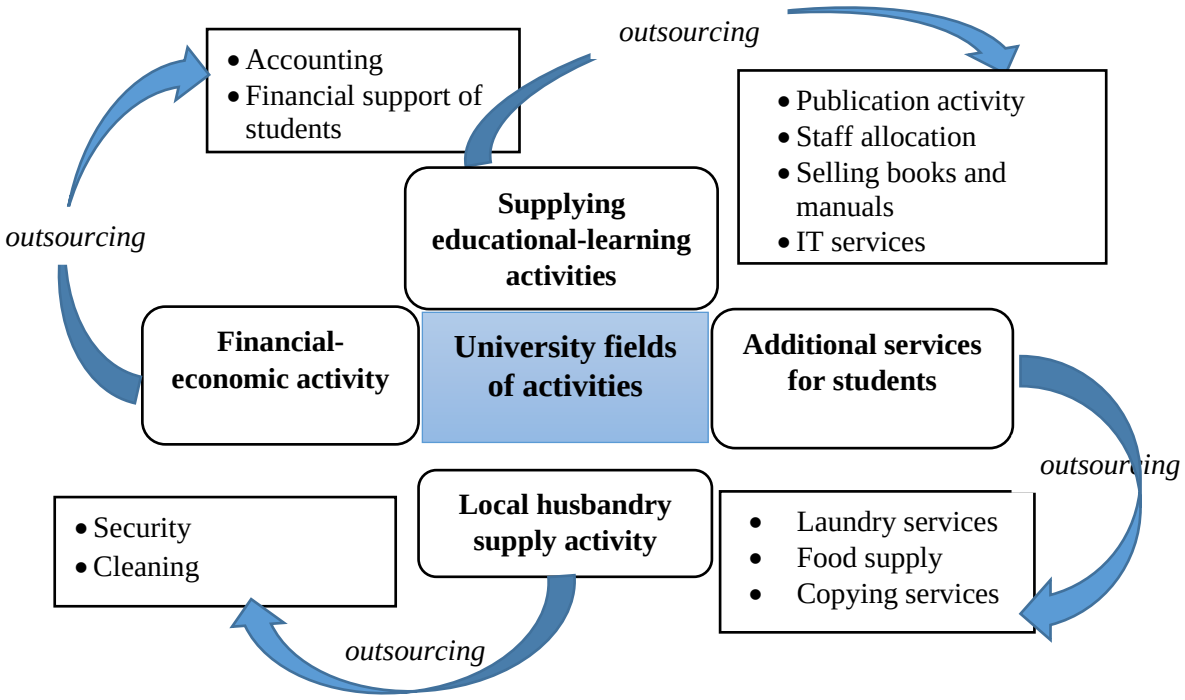

Figure 1.4. Fields of activity of educational institutions using outsourcing [elaborated by author based on[89]]

Education institutions have secondary functions that include selling books and manuals, food services, cleaning of buildings, and other maintenance activities. Recently, there has been a trend towards outsourcing additional functions to private contractors, such as human resources management, employee salary payment, financial support for students, and management of beneficiary funds.

Many functions of an educational institution can be outsourced to external organizations, such as:

• Technical support for buildings: since an institution is typically located in a building, it requires staff to maintain and clean it, ensure its safety, and provide food services.

• Marketing and service provision: hiring an external organization to handle marketing can help reduce costs for departments within the institution.

• Additional educational services: an institution can outsource professionals for a limited period of time to offer additional services, such as language instruction or coaching.

[89]BLAGORAZUNMNAYA, O., AWADA, S. The directions of outsource services implementations in the education system of Israel. In: *The modern paradigms in development of the national and world economy*. The international scientific conference 01-02 November 2019. Kishinev: Moldova State University, 2019, p. 364-370. ISBN 978-9975-149-73-0.

• Part-time lecturers and substitutes: external employees can be hired to substitute for teachers who are sick, on vacation, or otherwise absent.

Certain functions of higher education institutions can be outsourced to third-party providers, including maintenance and repair services, cleaning services, food and beverage services, security services, and administrative and support services such as IT support, financial services, and human resources. However, outsourcing of academic functions, such as teaching and research, is less common and often controversial due to concerns about quality control and academic freedom.

Crowdsourcing is one of forms of outsourcing corporate management. The emergence of the internet, social networks and information technologies in the global economy and social environment has led to the development of a modern management technology known as crowdsourcing. The term "crowdsourcing" was first introduced by writer Jeff Howe and journal editor Mark Robinson in 2006[90]. Whereas in the outsourcing the job is delegated to outside workers for a certain fee, crowdsourcing assumes minimal expenses or no expenses at all, since all the job is done by professionals-amateurs[91].

Crowdsourcing is a management approach that involves distributing tasks among a large number of people, both inside and outside an organization, to enhance decision-making, accomplish complex tasks, and develop new projects and initiatives. It is commonly used to gather feedback from consumers on the development of new products or services, allowing them to participate in discussions about future offerings and suggest improvements to existing ones.

Crowdsourcing involves an organization, methodology, and resources that are dedicated to solving specific developmental problems based on given conditions. The model of crowdsourcing is aimed at addressing interconnected issues such as collecting and analyzing data, generating and developing constructive ideas, obtaining feedback on documentation projects, and building a pool of independent experts.

The fundamental principle of crowdsourcing is that a group of individuals possesses more knowledge than an individual alone, but the critical aspect is to create the appropriate circumstances to utilize this knowledge effectively[92]. In contrast to an unstructured forum where participants can

[90]HOWE, J. The Rise of Crowdsourcing. In: *Wired*. 2006, nr. 14(06). [quoted 11.02.2021]. ISSN 1078-3148. Available at: http://www.wired.com/wired/archive/14.06/crowds.html. ISSN 1078-314

[91]BRABHAM, D. C. Crowdsourcing as a Model for Problem Solving an Introduction and Cases. In: *Convergence*. 2008, nr. 14 (1), pp.75–90. ISSN 1354-8565

[92]BUETTNER, R. Getting a Job via Career-oriented Social Networking Sites: The Weakness of Ties. In: *49th Annual Hawaii International Conference on System Sciences*. Kauai, Hawaii: IEEE.2016. ISBN 978-1-4799-7367-5.

freely express their opinions without any guidelines, crowdsourcing is a methodical and structured approach to engaging with active internet users[93]. Israel is utilizing crowdsourcing in researching the movements of molecules in the field of nanotechnology [94], in medicine[95]. The nano-technology project in Israel required a vast amount of computing power, which was achieved by utilizing the World Community Grid. This platform allowed 150,000 volunteers from around the world to contribute the computational power of their personal computers to the project. The simulation would have taken 40,000 years to complete on a single computer, but with crowdsourcing, it was completed much faster[96].

The "Patients like me" project originated from the experience of a family member who was diagnosed with a serious illness called ALS. The family searched for ways to improve her quality of life, which inspired the creation of a website that allows individuals to share their experiences with the illness and learn from others. This project is a notable example of utilizing crowdsourcing in the field of medicine, as it aims to organize patient narratives and establish a systematic approach to answering the question of how to achieve the best possible outcome for the disease[97]. The prediction for the future is that medicine will move away from traditional clinics and their role will become less significant. Clinics will need to become more adaptable, versatile, and incorporate more media and technology.

Education systems are starting to adopt crowdsourcing. Some applications of crowdsourcing in education include conducting market research to solve educational problems and creating shared databases that can be accessed by both students and teachers. Wikipedia is a well-known example of crowdsourcing in action, where participants from all over the world contribute to constantly enrich the information available on the platform.

In conditions of dynamic development of economic systems, new technologies and tools of staff recruitment are created. Modern methods of search for staff open up new opportunities for

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[93]ESTELLÉS-AROLAS, E., GONZÁLEZ-LADRÓN-DE-GUEVARA, F. Towards an Integrated Crowdsourcing Definition. In: *Journal of Information Science*, 2012, nr.38 (2), pp. 189–200. ISSN 01655515

[94]*Tel-Aviv University*. TAU/Tsinghua University Project Uses Crowdsourced Computing to Improve Water Filtration. 2015. [quoted 09.02.2019]. Available at: https://english.tau.ac.il/impact/water_filtration

[95]*Patients like me*. Living better starts here. [quoted 2.04.2020]. Available at: https://www.patientslikeme.com/?format=html

[96]*Tel-Aviv University*. TAU/Tsinghua University Project Uses Crowdsourced Computing to Improve Water Filtration. 2015. [quoted 09.02.2019]. Available at: https://english.tau.ac.il/impact/water_filtration

[97]*Patients like me*. Living better starts here. [quoted 2.04.2020]. Available at: https://www.patientslikeme.com/?format=html

employers, making their job easier, reduce costs and times. Major advantage of modern technologies of staff recruitment is their speed.

Today's management technologies face different challenges compared to the past. Previously, the work environment was stable, and employees would work at the same job for many years, with job responsibilities remaining constant over time. However, with globalization, the job market has become more dynamic, and job definitions, employers, companies, and duties are constantly changing. Therefore, new and adapted management technologies need to be researched in order to address challenges in the modern labor market.

1.4. Conclusions for chapter 1

1. Based on theoretical studies and analyses of approaches to the interaction of the labor market and the market of educational services, the author reveals a feature of the educational market: the presence of bilateral links between the interdependent markets. The labor market and higher education system are interrelated, with impacts in several aspects of the labor market such as employment, job structure, and wage levels. Likewise, the education system is also affected by the labor market, and requires constant adjustments to meet the demand for highly qualified professionals through learning programs and development of in-demand educational programs. Understanding these relationships is necessary to identify the features of the process of providing educational services.

2. The author considers the relationship between employers, the higher education system and recruitment agencies as an intermediary. Mutual interest in the recruitment of professional personnel, competence in relation to the requirements of the modern economy will provide universities with a high quality of educational services, qualifications of personnel and employment of graduates.

3. The features of the academic labor market impose new requirements on the qualifications and content of labor contracts between universities and employees of various academic ranks, such as professors, lecturers, and researchers. Full-time and part-time employment, determined by temporary contracts, will make it possible to use the possibilities of the internal labor market in meeting the need for personnel.

4. The author suggests that the relationship between the internal and external academic markets can enhance the scientific reputation of universities. This can be achieved through continuous professional development of internal staff or by recruiting external candidates with high academic achievements. Additionally, creating a competitive mechanism within the internal labor market,

offering career prospects and employment guarantees, and implementing effective recruiting strategies can attract individuals with innovative ideas.

5. The author found that academic labor markets differ significantly from country to country. In some countries, such as the United States, academic jobs are highly competitive and require extensive postgraduate education and research experience, with a focus on research output. In other countries, such as Germany and Sweden, there is more emphasis on the importance of teaching and pedagogical skills, and academic work may require a wider range of competencies. Moreover, the pay in higher education varies greatly from country to country, with differences in salary and benefits.

6. The study of various types of management technologies that are used in the labor market raised the question of their application in higher education. Existing management technologies should be improved and adapted in higher education institutions, taking into account the needs, expectations, and qualities of the staff. The utilization of HR technologies, such as online job postings, candidate tracking systems, and virtual interviews, can lead to a more intelligent and efficient recruitment process while providing access to a broader range of candidates. Furthermore, employee learning and development technologies, including online courses and virtual seminars, can offer more adaptable and accessible learning opportunities for employees, which can improve their skills and productivity.

7. Creating conditions for flexible employment in the labor market and the development of new forms of labor force use (remote jobs and working methods, virtual organizations, outsourcing of personnel, etc.) are gradually becoming more and more in demand in educational institutions and require the development of new approaches to their application. The author has discussed the reasons for outsourcing in universities and defined it as an effective form of cooperation between the state and the private sector. Various higher education functions have been identified that can be delegated to third parties, such as support and administrative services (maintenance, IT support, marketing and financial services, and human resource management services).

8. Crowdsourcing is one of the effective means of generating public ideas based on the productive cooperation of stakeholders. The use of crowdsourcing technologies in the system of higher education will allow creating organizational mechanisms for the implementation of social projects, influencing the improvement of the quality of educational services, and accumulating ideas from many subjects of educational relations.

2. ANALYSIS OF THE CHARACTERISTICS OF THE ISRAELI LABOR MARKET IN THE FIELD OF THE EDUCATION SERVICES

2.1. Current situation of the labor market in relation to education services

The Israeli labor market is experiencing a dynamic growth, particularly in the field of educational services. The demand for qualified professionals in the education sector is on the rise, driven by factors such as population growth and evolving educational needs. As a result, the current situation in the Israeli labor market presents both opportunities and challenges for those involved in providing educational services.

From 2003 to 2019, there is a stable increase of employment at the labor market of Israel[98]. Following the COVID-19 pandemic, the process of recovery in employment levels began in the second half of 2021 and ended in 2022. The average unemployment rate in OECD countries is 6.7%, while in Israel in 2022 it will not exceed 5.2%[99] (Figure 2.1).

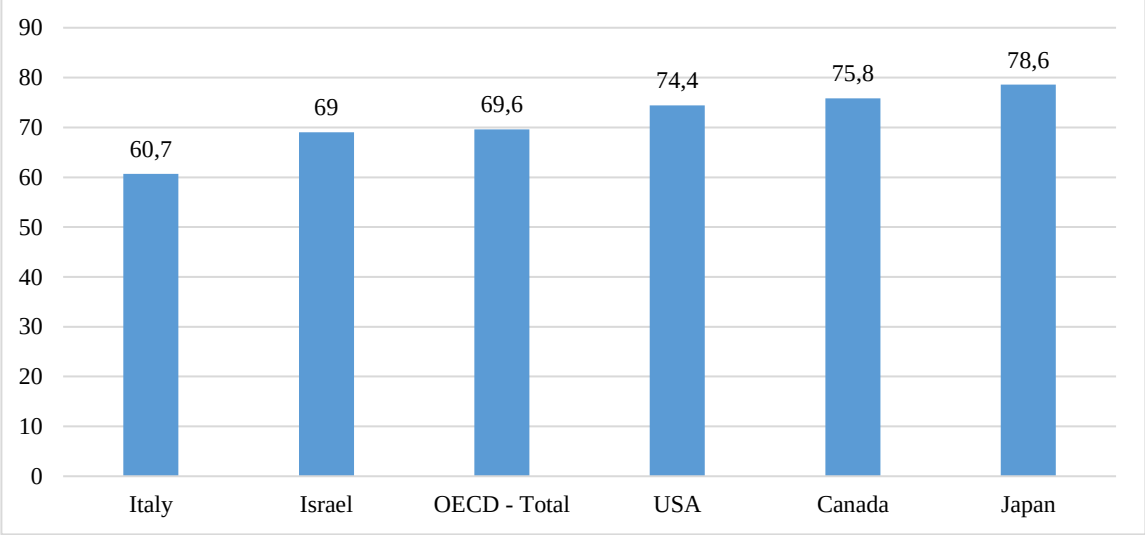

Figure 2.1. Employment level in different countries in 2022[100]

Israeli success is even more significant when we talk about the long-term unemployment, of period more than a year. In 2022, in Israel the percent of unemployed gets to 3.65% out of the total labor power, whereas in OECD about 5.6% of citizens look for a job. Only Japan and USA are better in this parameter than Israel. In 2022, after the Covid-19 crisis, the unemployment in Israel is low

[98] FUCHS, H., WEISS, A. *Israel's labor market: An overview*. Jerusalem: Taub Center for Social Policy Studies in Israel, 2018. 20 p. [quoted on 17.10.2022]. Available at: https://www.taubcenter.org.il/wp-content/uploads/2020/12/labormarketoverview2018en.pdf

[99] *OECD data*. Employment rate . [quoted on 27.03.2023]. Available at: https://data.oecd.org/emp/employment-rate.htm

[100] Ibidem. *OECD data*. Employment rate. [quoted on 27.03.2023]. Available at: https://data.oecd.org/emp/employment-rate.htm

again, as presented in the following chart. As can be seen from Figure 2.2, Israeli unemployment rate is lower than Europe Union countries' one.

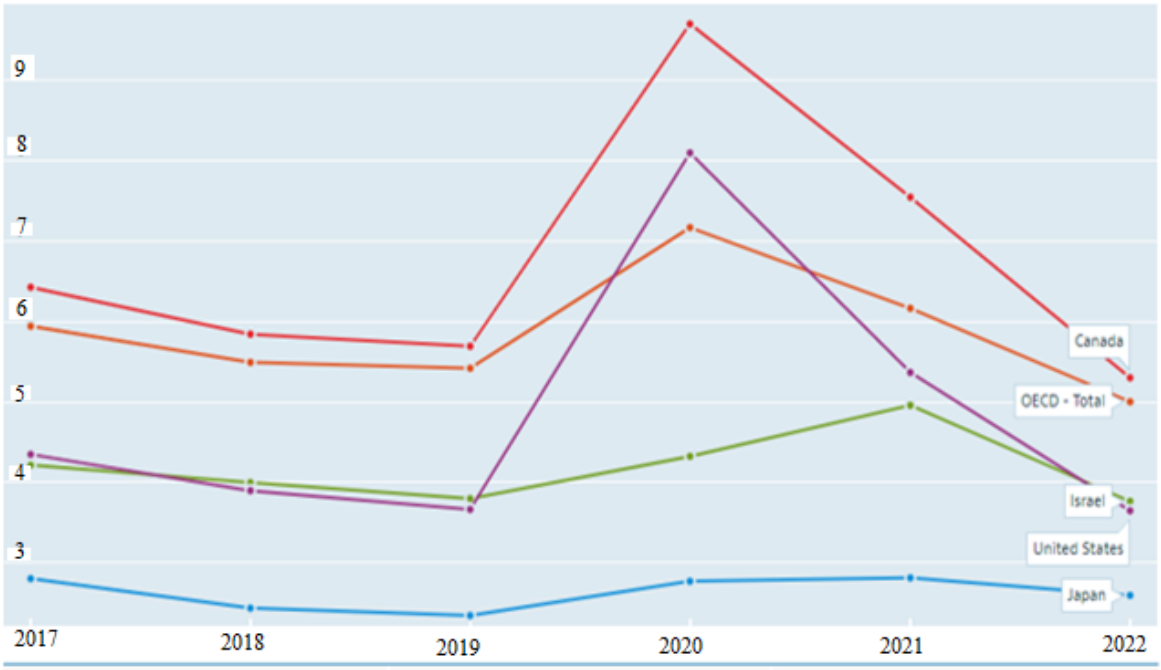

Figure 2.2. Unemployment level in different countries. Total, % of labor force, 2017 – 2022[101]

However, situation in Israel looks less brilliant when someone neglects the general data and looks deeper at the social aspects of the labor market. For example, there is a distinct difference between males' and females' salaries in Israel. On average, a male's salary is 24.3% higher than the one of a female, the average difference in the OECD countries is 11.9%, the smallest one belongs to Belgium – 1.2%[102].

In 2022 the rate of employment of women in the Jewish non-orthodox sector was 85%, Arab sector- 41%, Jewish orthodox sector- 80%[103]. The market grew its demands towards women: for example, often a higher education is required. During the Covid-19 crisis, the employment rate of male and female employees reduces, but it recovered after the crisis. Jewish orthodox sector women employment even became higher than before and is very close to the one of Jewish non-orthodox sector women. Among men, the employment of Orthodox Jews is still low[104].

[101] *OECD data*. Unemployment rate. [quoted 2.04.2023]. https://data.oecd.org/unemp/unemployment-rate.htm
[102]*OECD data*. Gender wage gap employees, Percentage, 2022 or latest available. [quoted 2.04.2023]. https://data.oecd.org/earnwage/gender-wage-gap.htm
[103]DABAWI, M., EPSTEIN, G., WEISS, A. *Labor Market Overview*. Available at: www.taubcenter.org.il/wp-content/uploads/2022/12/Labor-Market-Overview-HEB-2022.pdf (Hebrew)
[104]Ibidem. DABAWI, M., EPSTEIN, G., WEISS, A. *Labor Market Overview*. Available at: www.taubcenter.org.il/wp-content/uploads/2022/12/Labor-Market-Overview-HEB-2022.pdf (Hebrew)

Education has a crucial role for society development and sustainable economic growth of the country, since the education level in society and the attitude to scientific potential of the nation are the most important factors of a country's competitiveness at the international market. Education in Israel is compulsory between age 5 and 18, with free education provided between age 3 and 18. Some 90% of Israeli youth have at least upper secondary qualifications; a rate higher than the OECD average of 82%. The majority of secondary education students (60%) enroll in general academic upper secondary education, one third opt for technological program, and 3% opt for industrial schools or apprenticeship pathways.

Since the majority of higher education students are aged 20-24, the absolute value of this age's student number should influence the demand of the education system. The Israeli education sector's part of economics increased very significantly, thanks to state budgeting[105], [106] (Figure 2.3 and Appendix 1).

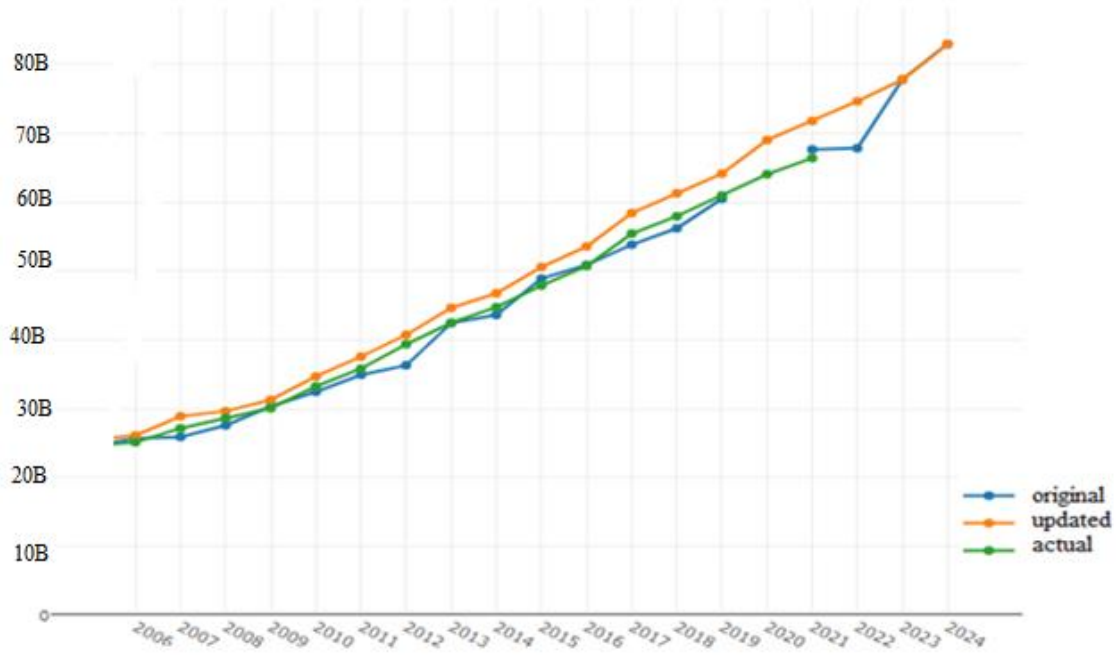

Figure 2.3. Ministry of education budget, in milliard of NIS[107]

[105]*Economic data of Ministry of education 2015-2016*. [quoted 27.03.2019]. Available at: http://meyda.education.gov.il/files/MinhalCalcala/uvdot_venetunim_kalkali_2015_2016.pdf (Hebrew)
[106]*Ministry of Education*. [quoted on 29.11.2022]. Available at: https://next.obudget.org/i/budget/0020/2024?theme=budgetkey (Hebrew)
[107]*Ministry of Education*. [quoted on 29.11.2022]. Available at: https://next.obudget.org/i/budget/0020/2024?theme=budgetkey (Hebrew)

Ministry of Education budget of Israel grew from 21 milliard in 2000 to 67 milliard in 2022 (which is more than 3 times bigger). Table 2.1 presents Education Ministry budget by salary and other costs in percentage.

Table 2.1. Education Ministry budget by salary and other costs in percentage[108]

Year	Salary, %	Services, products and other costs, %
2014	89.9	10.1
2015	88.6	11.4
2017	90.3	9.7
2019	90.1	9.9
2021	91.4	8.6
2022	91.5	8.5

Salary is the important part of the Education Ministry budget. The main part of the budgets allocations is dedicated to teachers, local authority workers and the Ministry workers' salaries.

A teacher's salary grew on average in 2% each year, when its growth rate is higher among young teachers than among older ones.

In 2013-2014 the national expenditure on education was about 7.9% of the GDP (Gross Domestic Product), in 2016 it was 6.9%, and in 2021 it grew up to 8%[109] compared to the 5.3% in the OECD countries[110].

Committee for planning and budgeting (CPB) participates in financing 29 institution, 21 academic colleges are financed by Ministry of Education, and 15 colleges are not supported by the state. National expenditure on higher education increased in 164% (in the fixed prices) from 1990 till 2013, and after that kept increasing but in a lower rate. Since the number of students grew up dramatically, an expenditure per student decreased till 2009 but after that increased again (maybe, one of the reasons is the new contract with senior staff committee). In the values of product percent, the expenditures decreased a little but then came back to their original level at the beginning of 1990-s. The subsidies in colleges are much lower than the ones in the universities[111].

Figures 2.4 and 2.5 present a national expenditure on education over years.

[108]*Ministry of Education*. [quoted 29.11.2021]. Available at: https://next.obudget.org/i/budget/0020/2022 (Hebrew)
[109]*Central Bureau of Statistics*. [quoted 27.03.2023]. Available at: https://www.cbs.gov.il/en/mediarelease/pages/2022/national-expenditure-on-education-in-2020-2021.aspx
[110] *The World Bank*. Government expenditure on education, total (% of GDP) - OECD members. [quoted 6.04.2023] Available at: https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS?locations=OE
[111]KATZ, O. *Surplus of higher education in Israel*. Kohelet Forum. Policy paper 36. 2017. 82 p. ISBN 978-965-7674-43-7

Figure 2.4. National expenditure on education in Israel, total (%of GDP)[112]

The data presented in the figure indicates that national spending on education in 2014 was higher than in previous years. Between 2014 and 2018, there was little change in spending. However, there has been a noticeable increase in spending from 2018 to 2020. The largest amount of spending on education was observed in 2021.

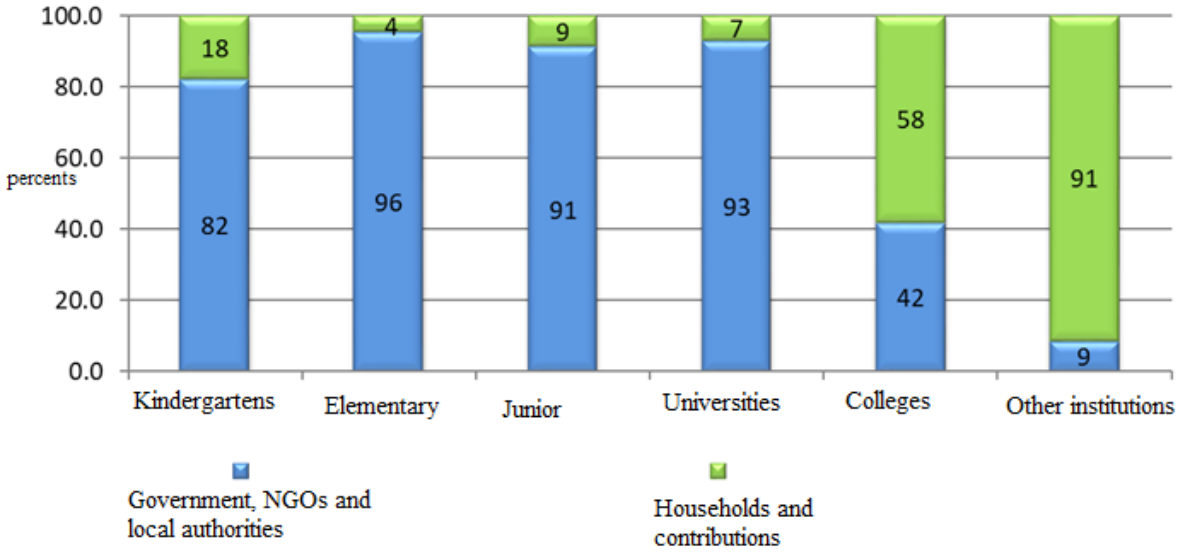

Figure 2.5. Education expenditures funding in 2020 by types[113]

Human resource is central part in higher education budgeting, and it is about 65%-70% of the total expenditure. Positions number in budgeted colleges gradually got higher starting from about 2,000 in 2001 and getting to about 3,600 in 2017. In all the higher education institutions, in 2016 there

[112]*Trading Economics*. Israel - Public Spending On Education, Total (% Of GDP). [quoted 6.04.2023] Available at: https://tradingeconomics.com/israel/public-spending-on-education-total-percent-of-gdp-wb-data.html

[113]*Central Bureau of Statistics*. National Expenditure on Education in 2019-2020. Available at: https://www.cbs.gov.il/en/mediarelease/pages/2021/national-expenditure-education-2019-2020.aspx

were 8,000 employees, from which 4,585 are senior academic staff, 2,142 are junior academic staff, and the rest are external teachers and teaching fellows[114]. In 2021 academic year, academic staff of universities consisted of 24,369 members, out of whom 11,762 are junior academic staff, 3,740 are external staff and 8,867 are senior academic staff. Also, about 69% of all the staff belong to universities, and in subsidized colleges there are more senior than junior staff but maximal number of external teachers[115].

Average education of Israeli citizens grew up dramatically during two last decades, under influence of academic institutions supply which increases significantly. Since 1980 till 2021, the number of students of BA degree in academic institutions increased from 43,000 to 208,461, which is 485% increase in 40 years[116].

From its beginning, the financing model of the Planning and Financing Committee was divided into two components: the teaching component, dealing with the number of students and teaching costs, and the research component dealing with the number of doctoral students, publication number and research grants of any kind. In the beginning of the 90-s, pricing examining was done in the Tel-Aviv and Jerusalem universities, and the model was updated accordingly. Figure 2.6 describes the distribution of Planning and Financing Committee budgeting for Higher education institutions in Israel, in 2021.

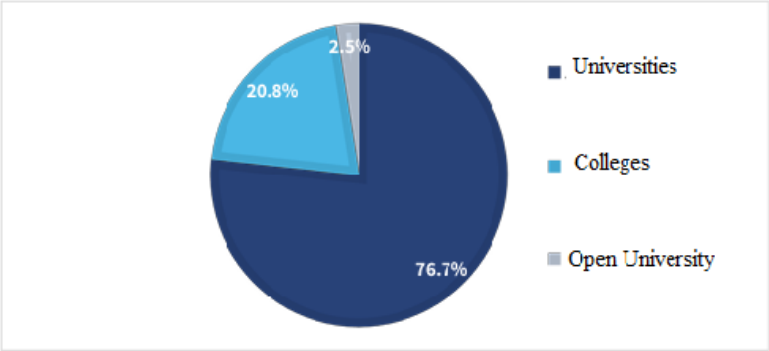

Figure 2.6. Distribution of Planning and Financing Committee budgeting for Higher education institutions in Israel, in 2021 academic year[117]

[114]KATZ, O. *Surplus of higher education in Israel*. Kohelet Forum. Policy paper 36. 2017. 82 p. ISBN 978-965-7674-43-7 (Hebrew)

[115] KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

[116]Ibidem. KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

[117]Ibidem. KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

Generally, since 2019 till 2021 the distribution of Financing Committee budgeting for Higher education did not change much- the part of universities' funding decreases in 0.6 percent, whereas the part of colleges budgeting increased in 0.6 percent, respectively.

Figure 2.7 presents general incomes of 5 biggest Israeli colleges from Planning and Financing Committee, tuition fees and donations in 2021 year.

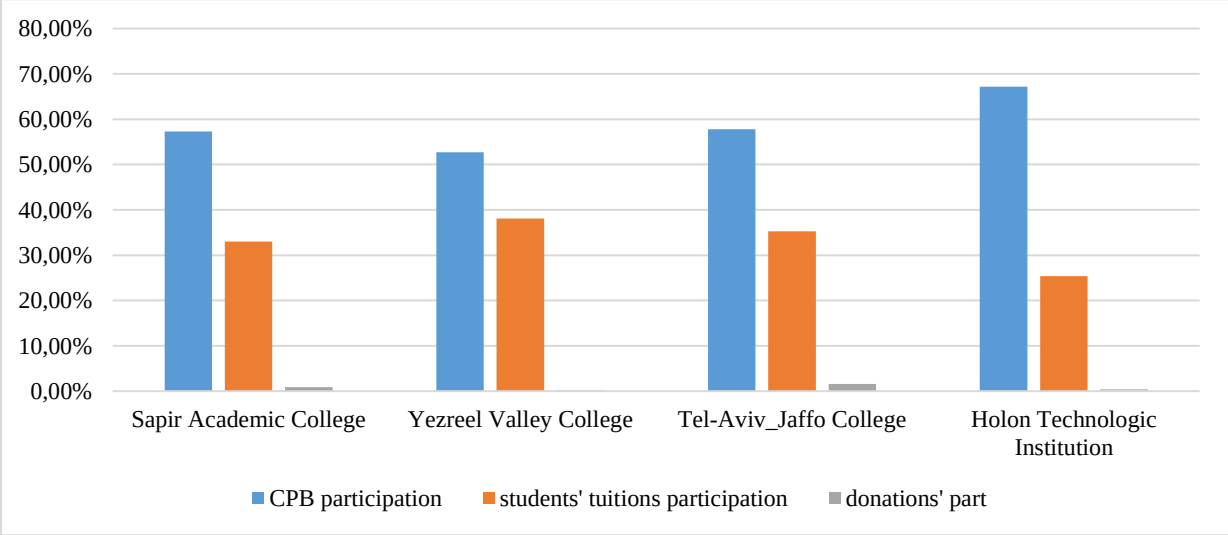

Figure 2.7. General incomes of 5 Israeli colleges in 2021, in percent [elaborated by the authors based on[118]]

In universities, the financing of teaching and research component by the Planning and Financing Committee are more or less equal, whereas in colleges the teaching component is the major one and the research component is negligible. Incomes from tuition fees of students are about 12% from the universities budget, comparing it to about 32% from the subsidized colleges' budget. Others incomes include contributions, presents, and generally in colleges they are bigger than in universities. In the 2015-2016 year of studies the budget of Planning and Financing Committee was 10.4 milliard.

Higher education budget increased since 2015 till 2022 by 25.7% whereas the general state budget increased by 37%, so that the part of Higher education budgeting reduced from 3% in 2015 to 2.7% in 2022. In 1980 about 95.3% of students used to study in universities, and in 2021 only 32.1% of BA degree students belonged to universities, about 18.1% studied in Open University (partial-time learning), 25% - in subsidized colleges, 16%- in private colleges. Most popular fields of studies in

[118] KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

2021 are business and management, in which the increase in students' number was 237.5% during 10 years, and the second field in medicine-related professions.

To understand the quantitative tendencies in the employment changes, it is important to know the labor salary[119]. The two tables in Appendix 2 present salaries for full positions professors and full-time teachers in universities in Israel, according to their erosion, tenure additions, promotion percent, respectively.

Based on the statistical data of the last decade, the author examined the current Israeli policies in relation to budgeting for education and concluded that in the last decade of the 20-th and the 21-th century, the Israeli population became much more educated than before, including both years of studies and the number of educated citizens. Unfortunately, there are too many academic degree graduates who did not find a job suitable to their education level. Also, the human capital and labor effectivity are not high according to international tests. Although the high education was highly expanded in order to decrease the inequality between different population groups and give more possibilities to the poor ones, it did not happen yet, the gaps still exist[120]. Since the last decade of the 20-th and the 21-th century, the demand to academic positions grew up much less than the increase in supply of the academic degree graduates. Those graduates usually work out of the academia, get a low salary, especially the young ones.

Any society will develop towards economic progress and social stability only when using effectively its scientific-educational potential.

Higher education system in Israel consists of different kinds of educational institutions. We can say that Israeli education system was founded in the 20-s of the 20-th century, when Technion in Haifa (1924) and Hebrew University of Jerusalem (1925) were established and opened for the students. Population growth and economic and social development brought to increasing interest in higher education among youth[121]. From 1949 till 1976, 6 new universities were established in Israeli: Weizmann Institute (1949), Bar-Ilan University (1955), Tel-Aviv University (1956), Haifa University (1963), Ben-Gurion University (1969), and Israeli Open University (OUI) (1976), having a special

[119]*Council for Higher education*. University senior staff salaries tables. [Quoted 20.04.2019]. Available at: https://che.org.il/wp-content/uploads/2020/01/

[120]AWADA, S., HAJAJRA, M. Inequality at the higher education and labor market of Israel. In: *EcoSoEn*. 2018, An.1, nr.3, pp. 137-142. ISSN 2587-344X

[121]AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. B: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661.

position in this list. Israeli Open University uses to realize principles of availability and high quality. As opposed to usual education institution, OUI doesn't demand a matriculation diploma or admission exams. OUI is the only university in Israel that publishes study books and works on distance. OUI branches are distributed all over the country of Israel, supplying the possibility to get an academic degree to residents of all the regions of Israel[122].

Higher education grew up very significantly. The growing number of immigrants to Israel brought Israeli higher education system to a need to widen and enlarge its activities. These processes caused to establishment of educational institutions of different kinds. Their purpose is to give alternative solutions to education availability problem all over the country. By the law, all the degrees from universities and other education institutions are equal. The universities have to accept to MA and PhD degrees all the BA graduates from all the institutions.

In the academic year of 2016-2017 there were 63 institutions in Israel: 8 research universities, the Open University, 20 budgeted academic colleges, 13 unbudgeted academic colleges and 2 pedagogical academic colleges. In the academic year of 2018/2019, there were 62 academic institutions in Israel and 316,400 students (including 48,000 of the students who studies in the Open University, the distant University).[123] After two years of decline, the number of BA students finally grew up in about 1,750, which is about 3.4% higher than the previous academic year. In universities the increase was about 2.4%, in budgeted colleges- 2.1%, and in non-budgeted colleges- about 13.8%. Only education non-budgeted colleges suffered from decrease of 4.5%. Academic year of 2021/2022 began with 59 academic institutions, a total of 351,500 students[124]. The total number of colleges increased three times from 1990 till 2017[125], then decreased a little. Universities number, however, did not change at all[126].

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[122]KATZ, O. *Surplus of higher education in Israel*. Kohelet Forum. Policy paper 36. 2017. 82 p. ISBN 978-965-7674-43-7 (Hebrew)

[123]*CBS (Central Bureau of Statistic*). Higher education in Israel. Some data for 2018/2019 academic year. 2019. [quoted 2.10.2019]. Available at: https://www.cbs.gov.il/he/mediarelease/pages/2019 (Hebrew)

[124]*CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

[125]AWADA, S., BLAGORAZUNMNAYA, O., SIROTA J. Contemporary labor market of higher education in Israel. B: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661.

[126] *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

The number of universities' students did not grow up significantly, whereas number of college students did increase greatly, especially during last 5 years[127] (Appendix 3). Israeli higher education is built in three degrees manner: BA (the first degree), MA (second degree), PhD (third degree, doctor). Table 2.2 presents a number of students of the three degrees in different institutions over years.

Table 2.2. Number of students in Israel of the three degrees over years [128]

	1990	2000	2010	2015	2017	2018	2019	2021
Total	89,060	199,240	283,850	307,300	307,780	305,940	308,320	286,705
BA degree	68,250	159,560	221,810	235,300	232,510	230,895	232,365	208,461
MA degree	16,100	31,340	50,270	59,700	62,960	62,655	63,180	66,387
PhD	3,910	6,650	10,570	10,890	11,000	11,350	11,720	11,857
Diploma	800	1,690	1,200	1,410	1,310	1,040	1,055	1,100

According to the data of the Israeli CBS[129], in the period of 1990- 2008 a percent of higher education students grew up two times (if in 1980-90 the number of students was 80,748, in 2007-2008 is was already 220,000). In the year of 2018, total number of students is about 300,000. In 2022, it is 286,705, as presented in Table 2.2. In 2021, there was an abnormal increase in number of new students in Israeli. Possibly, its cause was the Covid-19 crisis and higher unemployment it caused, especially among youth, making academic institutions more flexible and available for students, like distant leaning, and also less chances to get abroad. Thus, the lockdowns and temporary unemployment changed the whole perception of competitiveness between working and studying in academic institutions. The following figure presents a share of higher education graduates among 25-64 years old citizens. The following Figure 2.8 shows that proportion of higher education graduates in Israel in 50%, which is equal to the one of USA, higher than OECD average and lower than the one of Luxembourg and Canada.

[127] *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

[128] KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

[129] *CBS (Central Bureau of Statistic*). Higher education in Israel. Some data for 2018/2019 academic year. 2019. [quoted 2.10.2019]. Available at: https://www.cbs.gov.il/he/mediarelease/pages/2019 (Hebrew)

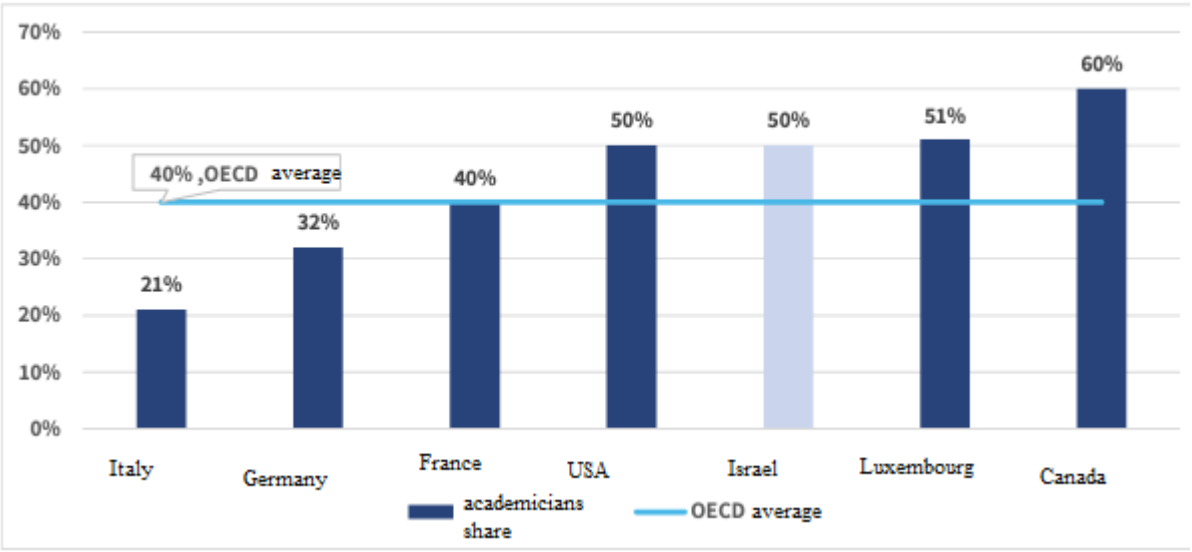

Figure 2.8. Share of Higher education graduates among 25-64 years old citizens, updated to 2021[130]

Israeli science has impressive successes, mainly thanks to human capital in local academic institutions. However, Israeli achievements are lower than those of similar countries from demographic and physical points of view. Israel has potential is science fields[131]. Although Israel invests more in absolute values in research and development, in comparison to OECD countries it invests relatively less as a part of its GDP, which hurts Israel's positions in the international science arena.

International ratings data of Israeli higher education during the last years is very impressive. Three Israeli higher education institutions (Jewish University of Jerusalem, Tel-Aviv University and Technion of Haifa) have an honorable place in the 100 best universities in the world[132] (for more details, see Appendix 4).

The following Figure 2.9 presents national investment in academic research and development in 1980-2020 as percent of GDP, for OECD countries:

[130]KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

[131] *Science report of Israel 2022*. Jerusalem: The Israel Academy of Science and Humanity. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://www.academy.ac.il/SystemFiles2015/SciReport2022_Full.pdf (Hebrew)

[132]*Essential Science Indicators*. Thomson Reuters, ISI Web of Science, 2013. [quoted 18.06.2018]. Available at: https://clarivate.com/webofsciencegroup/solutions/essential-science-indicators/

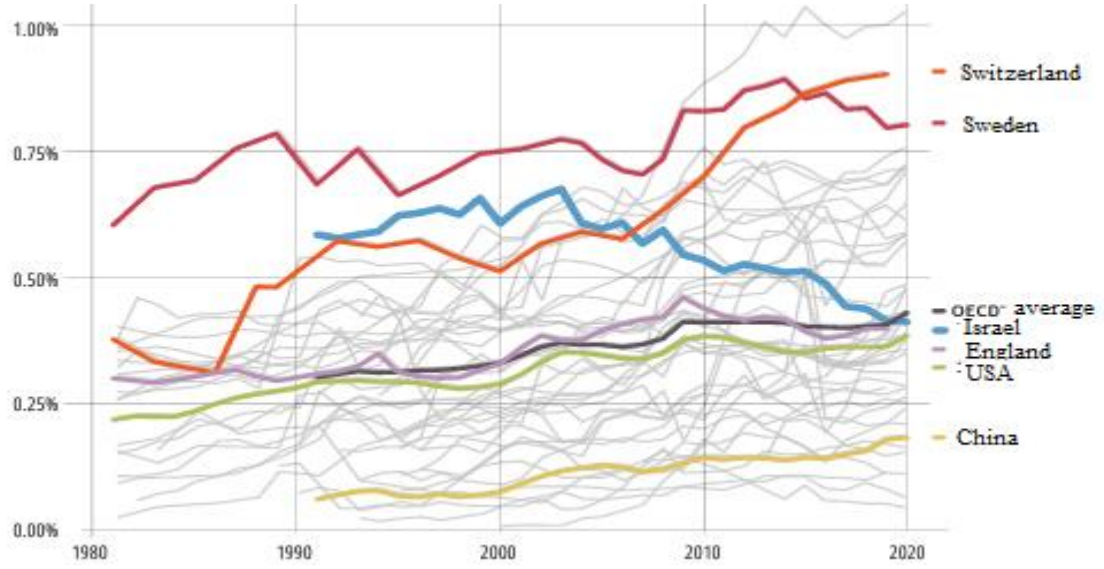

Figure 2.9. National investment in academic research and development in 1980-2020 as percent of GDP, for OECD countries[133]

The Arab sector in Israel is quite different from the Jewish majority. The gap in the knowledge level begins already in a high school: in 2004 only 82% of Arab young men and women aged 17 kept on visiting a school, when in the Jewish sector this number is 92%. At the same time, the number of Arab students of high education institutions is rapidly growing. In 1991, after graduating a school, only 10.7% of Arabs got accepted in higher education. In 2002, their proportion grew up to 18.8%[134]. In 2021/22, the proportion of Arabs in BA degree was 20%[135].

In the beginning of 90-s, there were 5,000 Arab students in all the higher education institutions in Israel. In 2005 this number was three times bigger. Moreover, the most outstanding results were noticed in the Arab females sector. Lots of academic colleges were open at the periphery region at this time, which made the higher academic education much more available, especially for women at the Arab sector[136]. A proportion of high education young graduates, by population group is presented in Appendix 5.

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[133] *Science report of Israel 2022*. Jerusalem: The Israel Academy of Science and Humanity. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://www.academy.ac.il/SystemFiles2015/SciReport2022_Full.pdf (Hebrew)

[134]KRIL, Z., GEVA, A., ALONI Z. *Not all the degrees are born equal – Investigation of education premium to the salary, as a function of a field of studies*. 2016. Ministry of Finance, Economic department paper 52. [quoted 07.02.2019]. Available at: http://mof.gov.il/ChiefEcon/EconomyAndResearch/ArticlesSet/Article_27122016.pdf (Hebrew)

[135]*CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

[136]AWADA, S. Israeli education market. In: *Вестник*. Казахстан: Костанайский государственный педагогический институт, 2016, №4, p.3-7. ISBN 1684-9310.

Proportion of Arabs aged 20-24 is about 20% of the Israeli population of this age, and Table 2.3 presents the growth of all the degrees' Arab students. Between 2016/2017 and 2021/2022 a percentage of Arab students grew up in all the disciplines: in BA degree – from 16.3% to 20%, in MA degree- from 13% to 17%, and in PhD- from 6.2% to 8.3%, respectively[137]. In 2021/2022, a number of Orthodox students in Higher education institutions was 4.3%, in BA degree – 4.8% and 6.9% of all the new students. In 2021/2022, 26.4% of the BA students were from rich sectors of the population, among MA students this percentage is higher (31.8%), and among PhD student it is higher (42.7%)[138].

Table 2.3. Percentage of Arabs in the BA, MA and PhD students' population over years[139]

Degree/year	BA	MA	PhD
2016/17	16.3	13.0	6.2
2017/18	17.2	13.9	6.6
2018/19	18.1	14.6	7.0
2019/20	19.2	14.6	7.2
2020/21	19.2	15.5	8.0
2021/22	20.0	17.0	8.3

The program of Higher education committee to get higher education more available to minorities is definitely successive, since the proportion of Arabs in the Israeli BA degree students' population of 2021/22 it close to Arabs' part in the Israeli population (25%) (Appendix 6). Fields of study preferable by Arabs are mostly teaching and pro-medical professions[140].

Figure 2.10 presents a ratio between students number to academic staff members number in Israeli universities over years.

[137]*CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

[138]Ibidem. *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

[139]Ibidem. *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

[140]Ibidem. *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023].http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

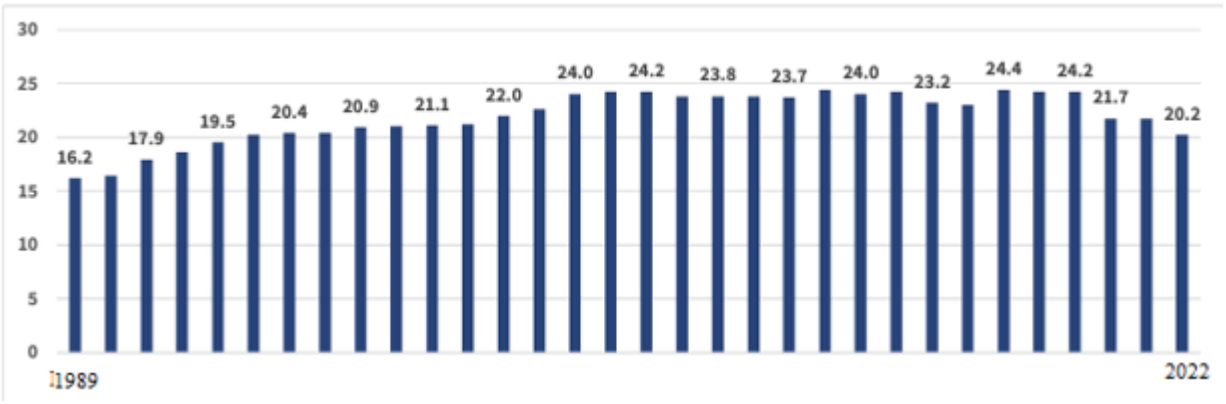

Figure 2.10. Ratio between students number to academic staff members number in Israeli universities over years[141]

As we may see from Figure 2.10, the ratio of students to staff was 16.2 in 1989 and grew up over years, however lately it decreased a little to 20.2. This is a little higher than the goal of 17.8 which was defined by the Council of Higher education of Israel.

A number of senior full position employees in colleges over years is presented in Appendix 7[142].

The following figure describes changes in number of senior academic staff member in Israeli universities and colleges, between 2015 and 2021, in percent.

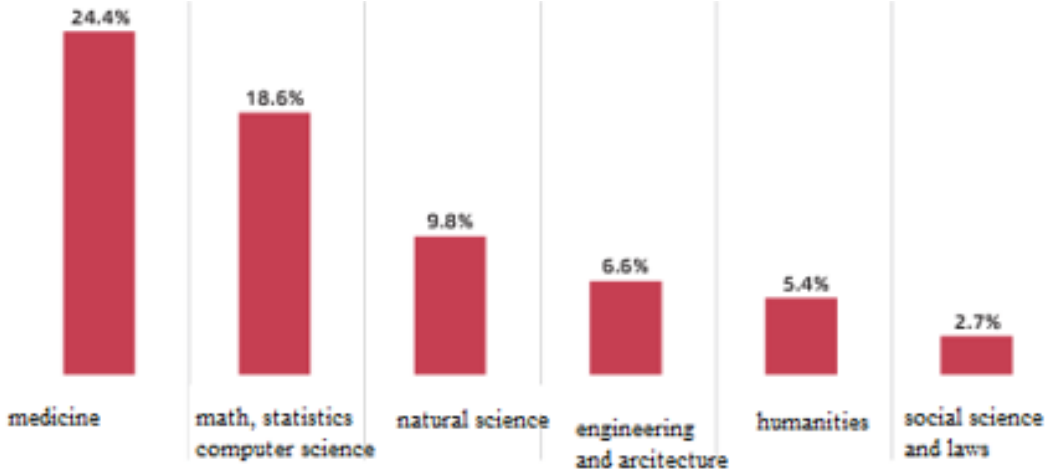

Figure 2.11. Changes in number of senior academic staff member in Israeli universities and colleges, between 2015 and 2021, in percent[143]

[141]KOPRAC, N. *Higher education in Israel*. Knesset document. 2022. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://fs.knesset.gov.il/24/Committees/24_cs_bg_1595047.pdf

[142] ZILBERSHATZ, Y. *Higher education system in Israel- current situation and vision.* Council for Higher education in Israel. Planning and Budgeting Committee. 2016. 24 p. (Hebrew)

[143] *Science report of Israel 2022*. Jerusalem: The Israel Academy of Science and Humanity. Available at: efaidnbmnnnibpcajpcglclefindmkaj/https://www.academy.ac.il/SystemFiles2015/SciReport2022_Full.pdf (Hebrew)

As Figure 2.11 presents, the highest increase in senior staff numbers was in the field of medicine (increase of 24%), math, statistics and computer sciences are on the second place (19%). These changes are a direct reaction to changes in the labor market in demands for certain professions.

Employees number and job position salary are two most important and interrelated characteristics of labor market. Although in the education services sector the government regulates the both in an active manner, demand for labor is a decreasing function of the salary, as in any other labor market. The labor supply, meaning readiness and motivation to work in any given field, it complies with the market laws. The state does define the scales of human resource preparation for the education system but the decision to engage in this sector is personal and the individuals take it by their own and government's influence is indirect. The independent individuals form the total supply at the labor market, taking into account advantages and perspectives at the field, when this sector is one of the possibilities.

Eventually, the tendencies at the market are expressed as a result of complex and many-sided interactions of state regulations and labor market powers. Labor is the central production resource at the educational services sector. This labor has its special quality, which is not only am income of a formal qualification. The quantitative parameters of this labor are not less important than the qualitative ones, since the students must be supplied by enough teachers and other services. The quantitative parameters are a number of employees and employment structure in the education institutions. Too many students per one teacher or too few students both signal that education quality is at risk.

During the last few years, the higher education system has encountered some problems. One of them is that since the 1970s, the Israeli population has doubled, yet there have been no significant developments in higher education and research institutions, unlike the already established Technion, Weizmann Institution, and Tel Aviv University. Many colleges were built, and this is legitimate[144]. There is an improvement in quality of researches in Israel, relatively to OECD countries. In teaching, however, the number of academic staff members to soul reduced. If in the 1970-s this number was similar to the American one, today in America this ratio grew up, and in Israel it moved down,

[144]BEN DAVID, D., KIMHI, A. *An Overview of Israel's Education System and its Impact*. Shoresh Institution for Socioeconomic Research. 2017, 72 p. [quoted 16.07.2019]. Available at: http://shoresh.institute/research-paper-eng-Ben-David-Kimhi-EducOverview.pdf

suggesting that Higher education in Israel is neglected somewhere at the highest levels. A number of university students per soul in the population reduced in 60%, and the country was not ready enough to use the Hitech wave of the 1980-s fully. In author's opinion, the government does not pay enough attention to the Higher education, and this has to change. The solution should begin much earlier, in the primary school education – more children should get a better education from the beginning. At the personal level, the poverty will be reduced, and at the general one the economic powers of the country will enlarge. More highly qualified academic staff should be employed, in both teaching and science.

Israel is considered one of the most educated counties, as was mentioned earlier, however a number of students in Israel got lower for some time and increased back due to Covid-19 crisis due to some basic changes in perception of competitiveness between employment and studies.

Employment in Israeli education field is forming under the following basic factors:

Firstly, it is the potential number of students which defines the demand to education services. The characteristic is called the main one taken into consideration when building education institutions curricula. Secondly, it is the previous employment level in the sector which has a significant inertia. Firing education staff could cause political and economic costs. Thirdly, it is the economic development level, which defines the alternative employment choice and financial potential of any sector and region (including its budget limitations). Fourthly, it is the possibility of donations for regional budgets, which softens the budget limitations. Fifthly, it is the labor demand capacity in the educational services sector. If we measure it by pedagogical field's graduates' percent among all the graduates, it could affect the salary level in the sector negatively.

Israeli science is known to achieve a lot in recent years, which is expressed in honorable prices Israeli researchers get, and donations and scholarships they earn at the international level, and valuable publications with a high number of quotations. Still, Israel gets lower level of scientific achievements than similar countries in OECD (with similar population size), like Singapore, Sweden, Denmark. This is a sign of possible potential of Israel, as relatively small country, in the fields of scientific.

Although absolute values of Israeli investments in research and development grew up in last 20 years, the share of these investments of out GDP are lower than the ones of most OECD countries. So, from leading country Israel moved to be a "middle" one. In author's opinion, since there is a growing competition in the world in the fields of science, growing number of senior academic staff and demand for scholarships, a big increase in science investment may be crucial for Israel, in order to save a leading place of Israel in the world and even get better.

Israeli population is more educated than OECD countries' one, but still only half of PhD degree graduates are integrated in the academic staff, which point out a great potential of over qualification existing in the labor market of Israel. Attracting more students to Higher education should with more possibilities to employ them should be one of the primary goals of Israeli Ministry of Education in particular, and the whole government in general.

In recent years, medicine, exact sciences and mature sciences are developing fast, especially math and computer sciences, which is reflected also in increase in number of academic staff members in these fields. At the same time, there is only a moderate increase and even reduction in social sciences and humanities. In author' opinion, it should not be the reason to cancel out these studies, which may be a huge loss in the future. A proper balance should be found instead in order to promote scientific activities in the fields which are not the most popular today. They must not be neglected.

To summarize, education system in Israel is constantly growing. This process reflects the dynamic development of Israeli society and its growing need to get a higher education. At the same time, such a rapid growth of education institutions number implies a need of constant improving control method over education quality, which is the responsibility domain of the Ministry of Education.

2.2. Analysis of the academic labor market in Israel

The analysis of the academic labor market includes a variety of factors such as job openings, job qualifications, supply and demand, salary expectations, and career development opportunities. It also takes into consideration the qualifications and skills of potential candidates, as well as the needs of employers and educational institutions. In addition, the analysis may also examine the impact of government policies, economic trends, and technological advances on the academic labor market.

The interaction between factors of supply and demand shapes the landscape for higher education teaching staff in Israel, with the aim of ensuring a qualified and capable workforce to meet the educational needs of the country's students. In Israel, the supply and demand for higher education teaching staff are influenced by several key factors. The primary drivers of demand for lecturers in higher education stem from population growth and the specific demands for particular professions within the field. As more students enter higher education, there is an increasing need for qualified educators who meet growing academic demands. However, the retirement of working teachers increases the demand for new teachers. The expansion of academic programs and the creation of new educational institutions also increase the demand for higher education teachers. On the supply side,

the number of individuals pursuing advanced degrees and qualifications in the field of higher education significantly affects the pool of potential teachers. Main factors of supply are salary, job conditions, satisfaction from job and appreciation by the management[145].

Before analyzing the results of the study on assessing the factors of influence on the Israeli academic labor market, let us consider the problems of higher education in Moldova and Israel and its relationship with the labor market. The following table presents various challenges and problems of higher education system and its relations with labor market, for both Israel and Moldova.

Table 2.4. Problems of higher education in Moldova and Israel and relations with the labor market [146]

Problems	Moldova	Israel
Higher education matters even if not really needed for a job	VV*	VV
Variety of academic institutions competing for students	VV	VV
Availability in order to survive, on expense of quality	VV	V**
Non-balanced labor market	VV	VV
Practical education is not developed enough	VV	VV
Bologna process	yes	no
Human Resources management required for better planning	VV	VV

*VV - strongly manifested; ** V- clearly manifested

The table compares the current state of the higher education system in Moldova and Israel, highlighting the problems faced by both countries. Both Moldova and Israel strongly manifest the problem of higher education being considered important even if it is not necessarily needed for a job. The availability of education at the expense of quality is also a strongly manifested problem in both countries. Additionally, both countries have a non-balanced labor market and lack practical education. Moldova has implemented the Bologna process, while Israel has not. Both countries recognize the importance of human resources management for better planning. An analysis of the table shows that both Moldova and Israel face similar challenges in their higher education systems.

[145] BEN DAVID, D., KIMHI, A. *An Overview of Israel's Education System and its Impact*. Shoresh Institution for Socioeconomic Research. 2017, 72 p. [quoted 16.07.2019]. Available: http://shoresh.institute/research-paper-eng-Ben-David-Kimhi-EducOverview.pdf

[146] AWADA, S. Analysis of higher education labor market and its problems in Moldova and Israel. In: *Journal „ECONOMICA"*, 2022, nr.2 (120), ISSN 1810-9136.

In the Moldova Republic of the 21-st century, most of the population is still convinced that Higher education is a must for a successful person[147]. Individuals seek to enhance their social status by pursuing higher education, believing in its capacity to secure improved employment prospects and social conditions. Some professions still face an employer demand for higher education qualifications, even when it may not be necessary. The labor market in Moldova amplifies these aspirations, whereby even basic positions like that of a salesperson now require educational credentials. This perspective aligns with the prevailing attitude observed in Israel as well. This is the first challenge in the table above. Do really the employees need higher education for any position?

Regrettably, it is common for young individuals in Moldova to obtain higher education diplomas but subsequently migrate to other countries in search of better opportunities, leading to a shortage of qualified professionals within the country. This results in a loss of talent and a shortage of qualified professionals in the domestic labor market.

There is a plenty of Higher education institutions, as presented in the following figure. Some reduction in recent years may be explained by unifications of some academic institutions.

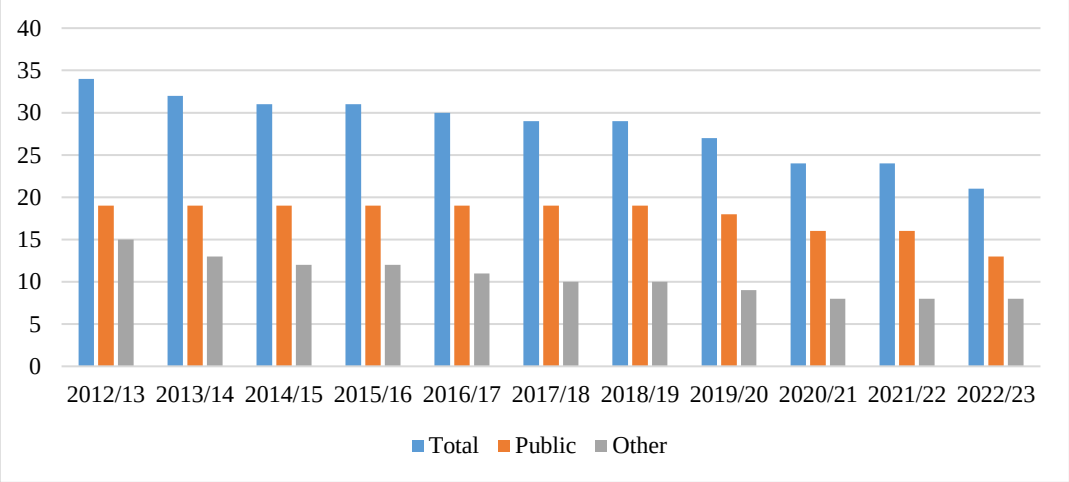

Figure 2.12. Number of Higher education institutions in Moldova by forms of ownership and years [developed by the author based on[148] [149]]

[147] МУНТЯНУ, А., КОРДУНЯНУ, И. Реалии и перспективы высшего образования в республике Молдова. [quoted 03.02.2021]. Available:https://ibn.idsi.md/sites/default/files/imag_file/238-242_0.pdf

[148] AWADA, S. Comparison of Israel and Moldova of higher education labor market and its challenges. In: *Journal of Research on Trade, Management and Economic Development*, 2022, Volume 9, nr. 2(18), p.89-98. ISSN:2345-1424

[149] *The National Bureau of Statistics*. The activity of higher education institutions in the academic year 2022/23. [quoted 22.02.2023]. Available at: https://statistica.gov.md/ru/deyatelnost-vyssix-ucebnyx-zavedenii-v-202223-ucebnom-godu-9454_60176.html

There is a broad range of options available when it comes to choosing educational institutions, including both public and private institutions within the country, as well as a diverse array of choices abroad. As was described in paragraph 2.1, in Israel there is also a plenty of academic institutions. School graduates do not always know exactly what they want to study, and the variety of academic institutions may confuse them. This is a second challenge mentioned in the table above.

In recent years, higher education in Moldova has faced several problems. One of the main problems was the decline in state funding for universities, which led to a decrease in the quality of education and scientific research, and an increase in paid education[150]. Another issue was the brain drain of talented students and professors who left the country in search of better opportunities abroad.

During last years, number of students of academic institutions of Moldova keeps reducing.

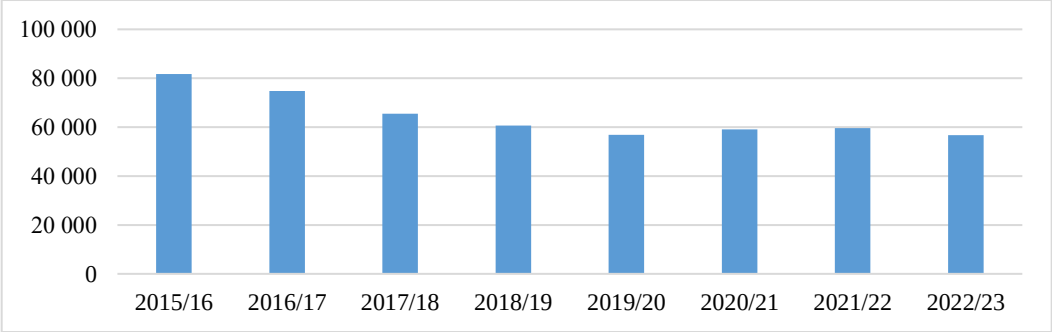

Figure 2.13. Number of students in Higher education institutions of Moldova during 2017-2023 [developed by the author based on[151] [152]]

Since 2017/18 till 2022/23 the number of students of Moldova reduced in 31%. In the beginning of 2022/23 academic year, there were 56.7 thousands of students in higher education institutions of Moldova, which is 4.8% lower than a year before. 62.7% of all the students studied in full-time from of education, the rest- in distant learning[153].

Many young people in Moldova choose to pursue degrees in fields that are not in high demand in the labor market. For example, they may choose to study humanities or social sciences instead of

[150]MOSHNYAGA, V. G., TURKO, T. I. Moldovan higher education: status and problems. 2020. [quoted 22.02.2023]. Available at: https://elib.bsu.by/bitstream/123456789/253632/1/63-67.pdf

[151] AWADA, S. Comparison of Israel and Moldova of higher education labor market and its challenges. In: *Journal of Research on Trade, Management and Economic Development*, 2022, Volume 9, nr. 2(18), p.89-98. ISSN:2345-1424

[152] *The National Bureau of Statistics*. The activity of higher education institutions in the academic year 2022/23. [quoted 22.02.2023]. Available at: https://statistica.gov.md/ru/deyatelnost-vyssix-ucebnyx-zavedenii-v-202223-ucebnom-godu-9454_60176.html

[153] Ibidem. *The National Bureau of Statistics*. The activity of higher education institutions in the academic year 2022/23. [quoted 22.02.2023]. Available at: https://statistica.gov.md/ru/deyatelnost-vyssix-ucebnyx-zavedenii-v-202223-ucebnom-godu-9454_60176.html

fields such as engineering or technology that are in higher demand. This can lead to an oversupply of graduates in certain fields and a shortage of qualified professionals in others. The globalization of education also leads to an outflow of Moldovan students from the country. In Israel, the youth seem to be more pragmatic and updated more about potentially profitable professions[154]. As a results, humanity faculties often reduce their activities and close for good, which may be a loss in a long-run perspective.

To address these challenges, the Moldovan government has implemented various reforms in higher education. One of the main reforms was the introduction of a new funding mechanism based on performance indicators, which aimed to increase the quality of education and research. Another initiative was the establishment of partnerships between universities and the private sector to promote innovation and entrepreneurship. Moreover, the government has also launched programs to attract Moldovan students studying abroad to return to the country and contribute to its development. The implementation of the Bologna process, which aims to standardize higher education across Europe, has also been a priority for the government to ensure the relevance of education to the labor market.

The state is responsible for its higher education system, since it determines future development of the country. In May of 2005, the Moldavian government decided to transit into new education standards of Bologna convention countries[155]. That is why today Moldova government is dealing with reforms in its education system[156], taking care of being able to meet international standards, in the framework of the Bologna process. Right now, the Republic of Moldova is investing in state and normative base development in order to promote innovation in education system of the Republic of Moldova according to Bologna process goals; some progress was achieved in Moldova participation in European educational programs; Higher education institutions' programs were altered and developed to realize Bologna process in Moldova; there are more cooperation between academic institutions of Moldova, USA, Germany, France dealing with different approaches of productive international cooperation. However, still the lack of state funding and severe competition for students makes Moldova universities and college compromise by supplying lower level of training and

[154] KATZ, O. *Surplus of higher education in Israel*. Kohelet Forum. Policy paper 36. 2017. 82 p. ISBN 978-965-7674-43-7 (Hebrew)

[155] *Tempus*. Реализация Болонского процесса в странах Tempus (2009/2010). [quoted 21.09.2019]. Available: http://publications.europa.eu/resource/cellar/2a5535f5-bd4d-4eb1-b9da-25c01a776455.0001.03/DOC_2

[156] COMAN, C., BOTEI, M., VALEYEVA, J., SARGU, L. Education in Three Countries: The Russian Federation, The Republic of Moldova and Romania. Bulletin of the Transilvania University of Braşov. *Series VII: Social Sciences• Law.* 2020, pp. 25-34. ISSN 2066-771X.

accepting students with lower abilities. While Israel has not formally joined the Bologna convention, its higher education sector has begun to foster collaborations and partnerships with other countries.

Various stakeholders in Moldova, including government officials, business leaders, and educators, have raised concerns regarding the alignment of the education system with the requirements of the labor market and the country's economic development. For example, the World Bank has highlighted the need for Moldova to improve the quality of its education system and align it more closely with the needs of the labor market[157]. The Moldovan government has also acknowledged the need for reforms in this area and has taken steps to address some of the challenges, such as implementing new curricula and working with employers to identify the skills that are in demand.

In recent years, Moldova has made progress in improving the quality and relevance of higher education, but there is still room for improvement. The government and universities need to continue their efforts to address the challenges and ensure that higher education meets the needs of the country's economy and society.

Israel has been making strides in improving the quality and relevance of its higher education system. However, practical education in Israel is not sufficiently developed. There are not enough plumbers, technicians and other professionals who may work with their hands. Vocational education is thought of non-prestigious one, which is a big loss for the consumers and the economy as a whole. The country has been working on developing practical education and emphasizing human resources management for better planning. To systematize and evaluate the factors of influence on the Israeli academic labor market, a survey study was carried out by author and colleagues. Assumptions:

1. There will be found significant differences in salary levels between men and women, Arab and Jewish sectors, in the favor of males and Jews.

2. Women find it more difficult than men to find a job, especially in the Arab sector.

3. The main reasons of difficulties in finding a job are a low salary and bad conditions.

4. Most of the employees find their jobs through friends, especially in the minority (Arab) sector.

5. Men find a job faster and easier than women, especially in the Arab sample.

6. Women are generally more satisfied with their job than men.

[157] KUPETS, O., LEVIN, V., SMOLYAR, Y. *Supply of skills in Moldova: Findings from the Moldova Skills Measurement Survey (MSMS)*. In: The World Bank, 2019, nr. 140126, p. 1-63.

7. Most of the respondents did complete qualification improvement courses and plan to keep studying and improving their skills.

8. The main reason of general satisfaction is salary.

The author distributed a questionnaire in the sample of College lecturers, and the data was analyzed using an SPSS statistical tool (this questionnaire is presented in Appendix 8).

The sample consists of 56 College lecturers working in Israel, 25 of them are females, and the other 31 are males. 28 are Jews and 28 are Arabs. Most of the respondents (26) are aged 51-60, 17 are 31-40 years old, 9 are older than 60, and only 4 are younger than 30. The majority (36 respondents) have MA University degree, 11 are PhD graduates, 9 have BA degree. Most of the respondents (41) report a middle salary, 11- high salary, 4- low salary (more details can be seen in Appendix 9). As presented in Appendix 10, there are high positive correlations ($p\_value<0.05$) between age, education and experience for the chosen sample.

This research consisted of usage of elements of data analysis, such as: Pie charts and histograms, box-plot diagrams, the regression model, Spearman and Pearson correlation coefficients.

The distribution of salary levels within Jews, Arabs and two gender subgroups is presented in Appendix 11 (Figure 11.1)[158]. The percent of low salary is the same in all the groups (1.79%), according to their own reports. As is known and mentioned in previous sub-chapter, the problem of gender gaps in salary does exist in Israel. In the Arab group, there are almost no differences in middle and high salary distribution between males and females. In the Jews sample, the percentage of women with high salary is lower. The T-test comparing mean salary between females and males does not show any significant difference between them ($p\_value>0.05$). The same results hold in the Jews and Arab samples: there is no significant difference between the mean salary of males and females.

So, assumption 1 is not confirmed: we do not find a higher salary levels in Jews and males groups than others. It is important to point out that this conclusion is based on self-report of the sample, which is not big enough to make general market conclusions. The author did point out that the problem of inequality of salaries exists in Israel.

How often did the respondents change their job? The females sub-group is quite similar in both nation sub-groups- half the women did not change their job at all. The majority of males in both groups did change the job a few times (Appendix 11). We can see that women change their job less

[158] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

than men, about a half of them did not change the job at all. There are no significant differences between Jews and Arabs. The Jews find it easier to find a job than Arabs, especially women (Appendix 11).

Assumption 2 is not confirmed: it is not easier for men to find a job. In the Jews sample, women find a job much easier than men, in the Arab sample there are no differences between men and women. Generally, Jews find the job easier then Arabs, and this part of assumption 2 is confirmed (Appendix 11).

The box-plot diagrams in Appendix 11 present the easiness of finding a job and looking time distribution among Jews and Arabs and the two gender sub-samples. Generally, males claim it was easier to find a job, but women generally found it faster. Half of all the women found it very quickly (no time), half of all the men report it took some time. No differences were found between Jews and Arabs. 47% of Jewish men point the job conditions as the main reason for difficulties of finding a job, 31% of them claim it is a low salary, and 21% claim the main problem is unemployment. 33% of Jewish women claim the job conditions is the main reason for difficulties of finding a job, 33% claim it is a low salary, and 33% claim it is unemployment. 50% of Arab men point the job conditions as the main reason for difficulties of finding a job, 25% of them claim it is a low salary, and 25% claim the main problem is unemployment. 31.3 % of Arab women claim the job conditions is the main reason for difficulties of finding a job, 31.3% claim it is a low salary, and 43.8% claim it is unemployment. Generally, assumption 3 is confirmed: the main reasons of the difficulties to find a job are low salary and bad job conditions, Arab women also point out that the unemployment is the main reason.

The bar chart in Appendix 11 presents the way the job was found among Jews and Arabs and the two gender sub-samples: most of Arabs and Jew women found the job by their own, the second source of job and the first one among Jew males is friends who helped. Human Resources Company is on the third place.

Assumption 4 is confirmed only for male Jews: they claim the main source of finding a job was through friends, while others tend to claim they find it by their own.

The reasons of the fact that the job does not fit the qualification are presented in bar charts in Appendix 11. Most of the respondents say they are overqualified for their current job, the second reason they do not fulfill all the potential at the current job. Most of the respondents feel they could contribute more at another job position, they are not fully used at the current one. About 68% of the

male Jews believe there is a chance of professional growth at the current job, 78% graduated a training course and 100% plan to study more (courses or maybe other professions). 89% of the female Jews believe there is a chance of professional growth at the current job, 77% graduated a training course and 100% plan to study more (courses or maybe other professions). About 75% of the male Arabs believe there is a chance of professional growth at the current job, 66.7% graduated a training course and 100% plan to study more (courses or maybe other professions). 75% of the female Arabs believe there is a chance of professional growth at the current job, 66.7% graduated a training course and 100% plan to study more (courses or maybe other professions). All of the respondents plan to study more and improve their knowledge and skills (which confirms assumption 7). The Jew women are the most optimistic ones about the possible chance of professional growth at the current position, Jew men are the less optimistic ones.

Frequencies of satisfaction by colleagues at the current job place are presented in Appendix 11.

Women are more satisfied with their co-workers, especially in the Arab sample. Men are less satisfied with their co-workers, especially in the Jews sample. Jewish men are the less satisfied by a leader than others (Appendix 11). The following histograms (Figure 2.14) present the frequencies of satisfaction by appreciation by the management.

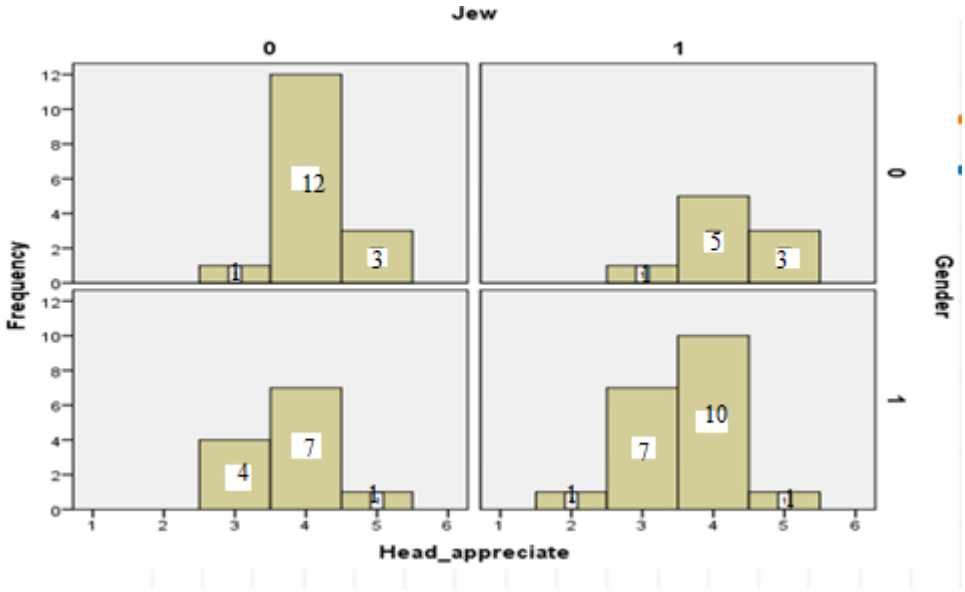

Figure 2.14. Frequencies of appreciation by the head of organization [developed by author based on[159]]

[159] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

In the Jews sample, women feel more appreciated than men, in the Arab sample, men feel more appreciated than women.

The following histograms (Figure 2.15) present the frequencies of the statement “My talents are used at the current job”.

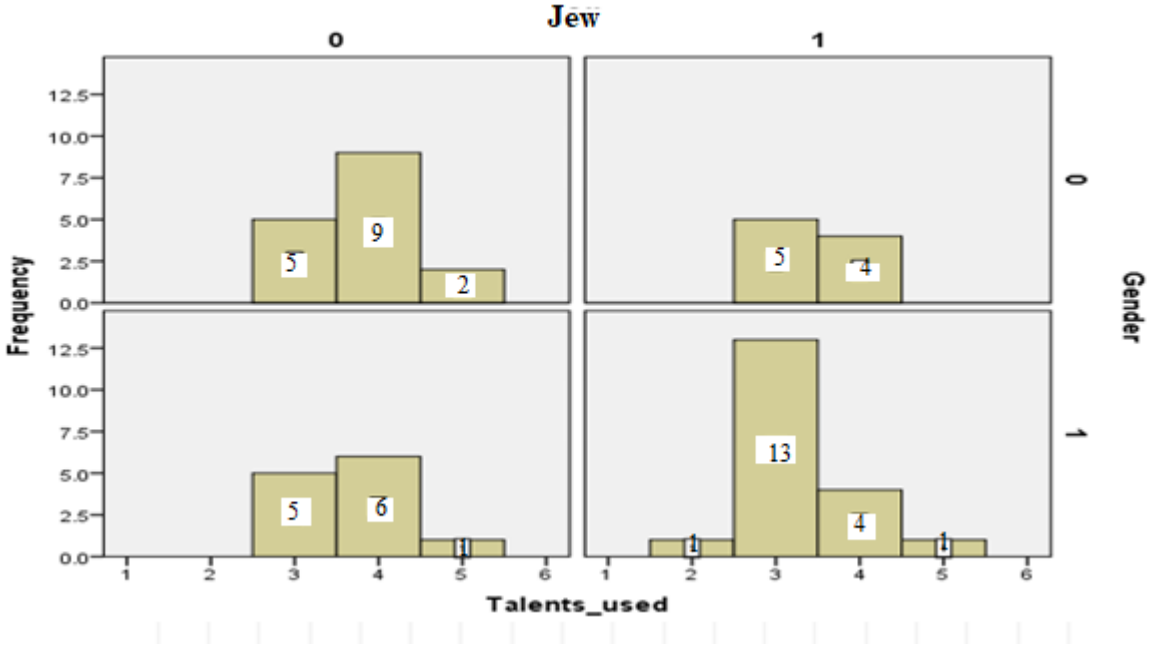

Figure 2.15. Frequencies of agreement to the statement: “My talents are used at the current job” [developed by author based on[160]]

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Jew males are the most disagreeing with this statement, they feel they do not use their talents enough. Arab women believe “Generally, the administrative rules at the current job are fair” is true more than other respondents (Appendix 11).

The following histograms (Figure 2.16) present the frequencies satisfaction by the current job place management:

[160] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

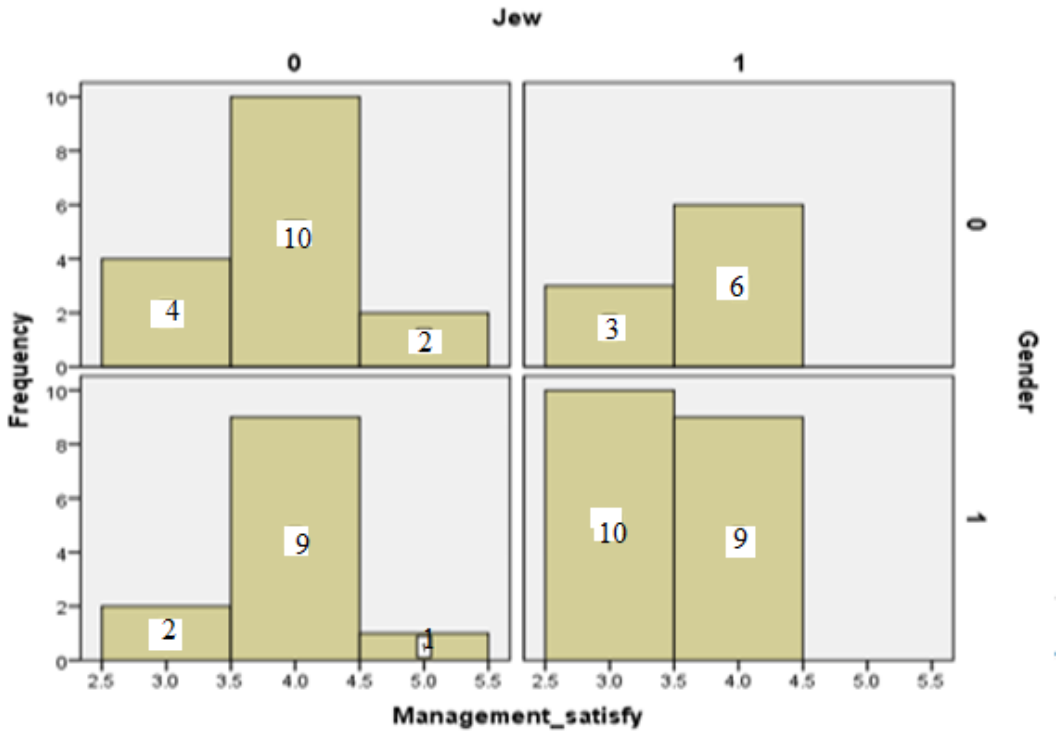

Figure 2.16. Frequencies of satisfaction by the management [developed by author based on[161]]

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Arabs are generally more satisfied than Jews by their management. Jews males are especially not happy with the management.

The histograms in Appendix 11 present the frequencies of satisfaction of the equipment control at the current job. Male Jews are especially unhappy about the equipment control. Also, there are histograms in Appendix 11 that present the frequencies of satisfaction with the availability of needed resources at the current job. Men are less satisfied than women, Jews are less satisfied than Arabs.

The following histograms (Figure 2.17) present the frequencies of satisfaction with salary at the current job. In the Arab sample, women are less satisfied than men. In the Jews sample, the distribution is about the same:

[161] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

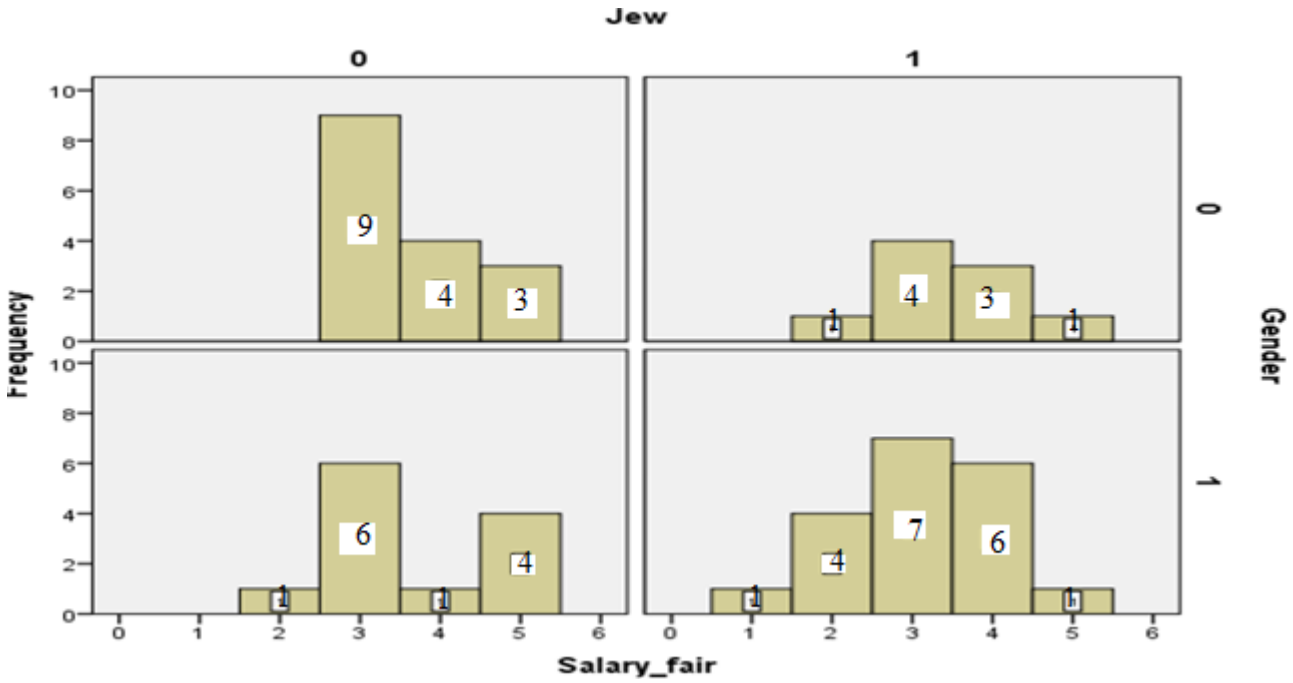

Figure 2.17. Frequencies of satisfaction by salary fairness [developed by author based on[162]]

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

It is worthy to note that in Israel today, financial situation of some universities is bad. Tel Aviv University closed 10 faculty tracks, but the salaries of senior lecturers are still high, so the position of a senior lecturer in any University in Israel is still very attractive.

To become a senior University lecturer in Israel, one should graduate her BA degree at the relevant faculty with good and preferably excellent grades[163]. The subsequent progression typically involves pursuing MA and PhD studies and acquiring a position of a teaching assistant. During this time, graduate students are expected to publish scientific articles and strive for excellence scholarships. It is both common and prestigious for individuals to complete post-doctoral studies abroad and subsequently return to Israel to continue their teaching career, initially as a teaching assistant and later as a lecturer. However, it is important to note that attaining seniority and a higher salary level typically requires a minimum of five years of experience, and failure to achieve this may result in termination. Consequently, Higher education employees may find themselves without a permanent job around the age of 35 or 40 if they do not secure a senior lecturer position. Generally,

[162] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

[163] *Studies in Israel*. Conditions for acceptance to a lecturer's position- how can you be a lecturer in university or college? [quoted 2.04.2020]. Available: https://www.universities-colleges.org.il/P43736/ (Hebrew)

seniority is granted approximately 10-12 years after the lecturer's initial appointment as a teaching assistant.

Senior staff lecturers' gross salary gets to 20-25 thousands NIS a month for a professor degree. A professor who gets an administrative appointment in the University, like the University president, can have a gross salary of about 50 thousands NIS a month[164]. The remuneration for college lecturers is generally lower, averaging around 15-20 thousand NIS per month. Senior lecturers are entitled to a Sabbatical year once every seven years, during which they receive approximately 80% of their salary without having to work. Additionally, they have access to research funds and scholarships amounting to several thousand NIS per year, as well as funding opportunities for participating in research programs. While the job itself can be demanding, it is important to note that lecturers typically work for only 30 weeks per year. Senior lecturers specializing in economics and business management may also have the opportunity to work as consultants for startup companies and earn supplementary income. Figure 2.18 represents schematically the career path of Israeli Higher education employee.

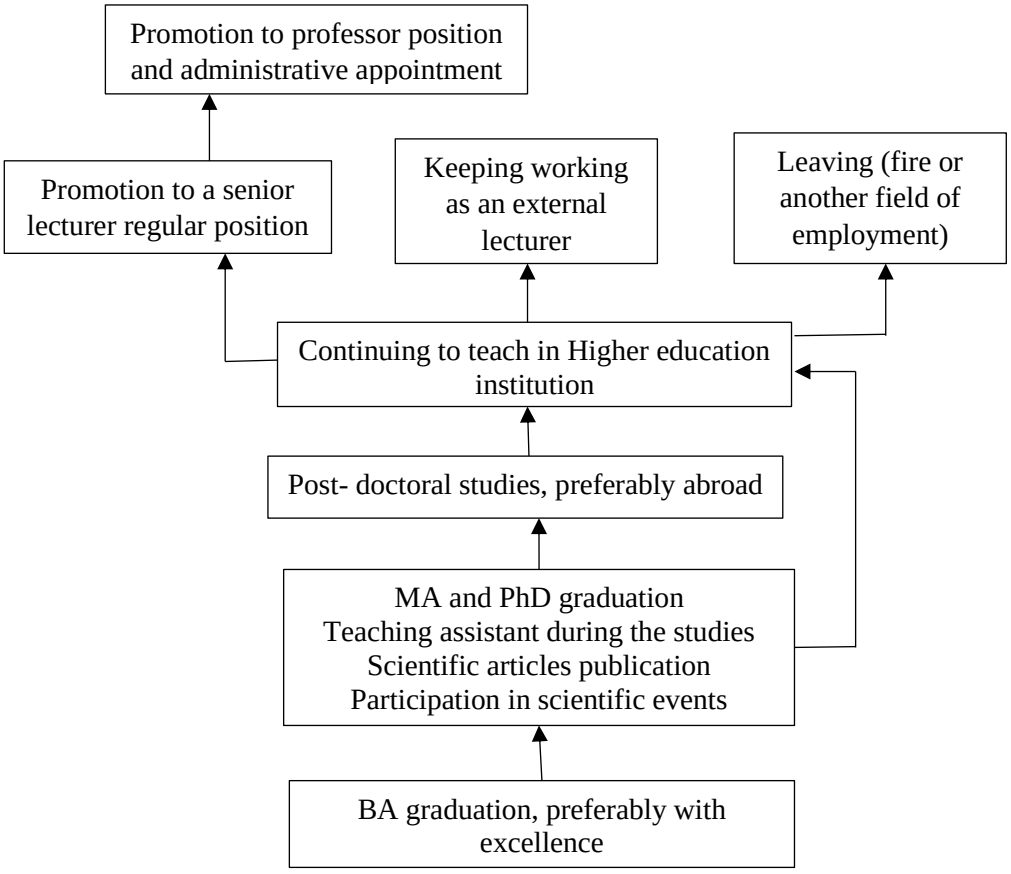

Figure 2.18. The career path of Israeli Higher education employee [developed by author]

[164]*Haaretz*. I want to be a lecturer too. [quoted 2.04.2020]. Available: https://www.haaretz.co.il/misc/1.1509856 (Hebrew)

Special funding schemes were available in the 1990s in Israel to facilitate the integration of scientists from the former Soviet Union. These programs provided opportunities for them to join Higher education institutions as scientific and teaching assistants for a designated period of three years[165].

The following histograms (Figure 2.19) present the frequencies of general satisfaction with the current job.

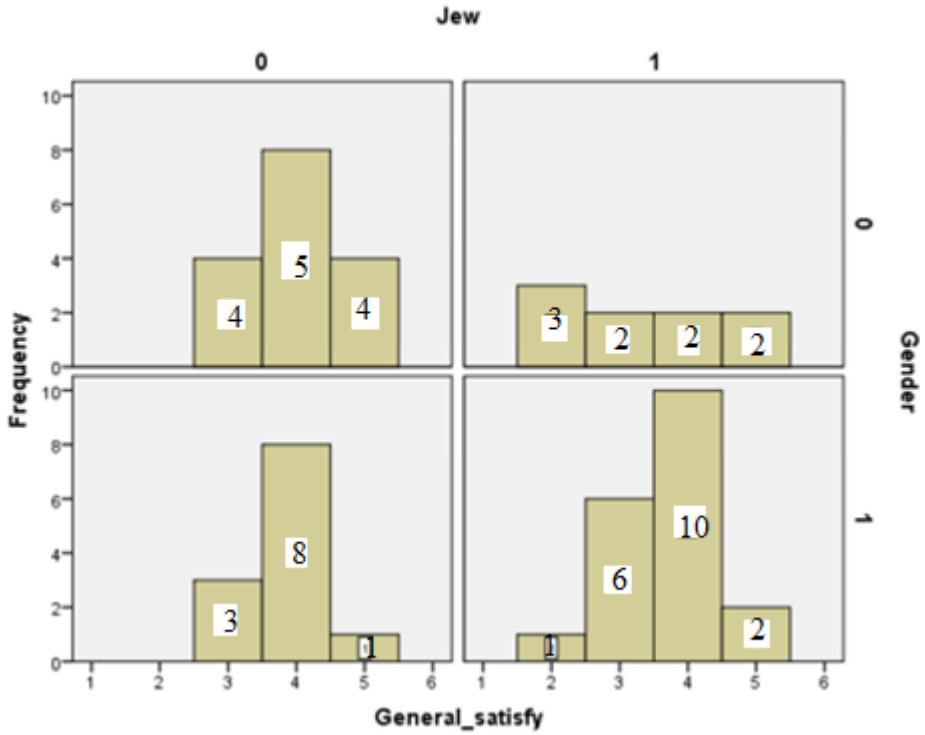

Figure 2.19. Frequencies of general satisfaction with the current job [developed by author based on[166]]

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Within the Arab sample, the distribution of males and females is about the same. In the Jews sample, males are more satisfied than women.

Assumption 6 is not confirmed: women are more satisfied with the colleagues and others components of the job position, but generally their satisfaction is lower.

[165]*The service and government information website*. Absorption in science. Scientists hiring. [quoted 2.04.2020]. Available: https://www.gov.il/he/departments/topics/absorption_in_science_employers (Hebrew)

[166] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

Assumption 8 is confirmed: high positive correlation of 0.376 (p_value<0.05) was found between the salary fairness in the eyes of the employees and the general satisfaction from the current job. The second high correlation of 0.379 (p_value<0.05) was found between the appreciation of the employee by the management and the general satisfaction of the job. The correlation table is presented in Appendix 12. General satisfaction from the current job place is also highly significantly correlated with how much the talents are used, how much the head appreciates the respondent, and with the salary. Talents variable is highly positively correlated with lots of variables, especially salary, how much the leader appreciates, and how much there is a chance to control the learning process.

Reasons to become a teacher are presented in Appendix 11 (Figure 11.12)[167]. Most of the respondents claim the reason to become a teacher is personal, a prestige of the profession is the second reason. Parents could be a force for some Arab respondents to become a teacher, but not for the Jews. No one pointed out a salary as a reason to become a teacher. Love for children is rarely the main reason to choose a profession of teacher.

The pie charts in Appendix 11 (Figure 11.14) describe the important characteristics for a future teacher. Most of men say it is responsibility, most of Jewish women claim it is a communicability, and most of Arab women claim the most important is love for children[168].

The pie charts in Appendix 11 (Figure 11.15) describe the important characteristics for a future manager. Most of the respondents claim that the communication matters, men also claim it is decisiveness, women also point out it is adaptation.

Based on the correlations results (Appendix 12), a system of two regression equations was built. The linear regression model is expressed in research as a mathematical method for the analysis and location of parameters of the relationship between the independent X variable (mobility of higher education students) to the dependent Y factor (the reasons for the mobility of Israeli higher education students). Assuming the relationship between them is linear, meaning $Y = aX + b$.

Simultaneous equation models are statistical equations in which the dependent variables may depend also on other dependent variables, rather than just independent variables. In economics, this

[167] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

[168] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

might be a consequence of a number of simultaneous equilibriums. For instance, in the simple model of supply and demand, price and quantity are jointly determined.

In the process of building the model, much more possible explanation variables were used including the possible difference between Arabs and Jews and the genders. But they were taken out of the model since were not significant. Here is the optimal model:

TALENTS_USED=0.503517101908*LEADER_SATISFY+0.451376066122*LEARNING_CONTROL (2.1)

GENERAL_SATISFY=2.05074626866+0.480597014925*TALENTS_USED (2.2)

The more the leader satisfies the respondent and the more there is a control overt learning process, the more respondents agree their talents are used. The more the talents are used, the higher is the general satisfaction from the current job.

In a schematic way, the simultaneous regression model is presented in Figure 2.20.

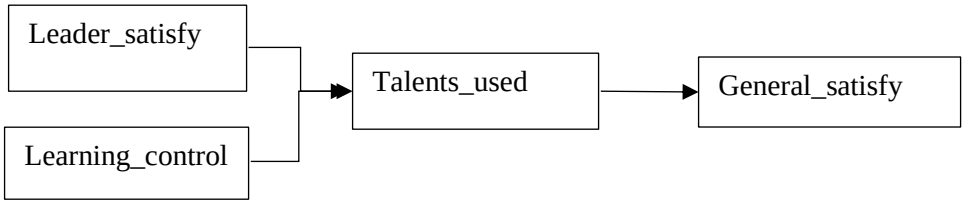

Figure 2.20. Schematic representation of the simultaneous regression model [elaborated by author based on [169]]

The output of the model is presented in Appendix 13. The coefficient of determination, denoted as R^2, is a statistical measure that indicates the proportion of variance in a dependent variable that can be explained by the independent variable(s). In the case of $R^2 = 50.5\%$, it means that approximately 50.5% of the variance in the dependent variable is explained by the independent variable(s), while the remaining 49.5% of the variance is due to other factors not accounted for in the model. Similarly, if $R^2 = 15.1\%$, it means that approximately 15.1% of the variance in the dependent variable is explained by the independent variable(s), while the remaining 84.9% of the variance is due to other factors not accounted for in the model. In both cases, the coefficients of determination indicate a moderate level of relationship between the dependent and independent variables, as there is still a significant amount of unexplained variance. The higher the R^2 value, the stronger the relationship

[169] AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

between the variables. Low values of R^2 may be a consequence of quite small samples, however the results are still significant according to T-tests on regression coefficients.

Possible problems revealed at the labor market of college lecturers. There were no salary differences between men and women, Arabs or Jews, according to the respondents' self-report. The author did find out there are inequalities in payment in Israel, both between genders and between different sub-populations. The survey reveals that definitely, there is an inequality in the opportunities: females in the Arab sector witness there is an unemployment, they find it more difficult to find a job, and upon finding it – do not change it for a better one. The last claim is right for females in the Jewish sector also. Women are less ready to take a risk and change a job, maybe because they have less opportunities. Women are more communicative and are satisfied with their colleagues, but the general satisfaction which is mostly affected by the salary, salary fairness and appreciation by the head of organization are not higher at the females' sample. Almost all the respondents are ready to study more (even another profession) and have been through different kinds of qualifications improvements. Almost all of the respondents (but one) think they are overqualified for their current position and their potential is not fulfilled. Most of the respondents, however, believe they can advance at their current job, the less optimistic group are Arab women.

The author's study revealed similar challenges in higher education, such as the importance and accessibility of higher education, the need for close interaction with businesses for student internships, and human resource planning in education, in both Moldova and Israel. The governments of both countries are making efforts to address these issues in order to enhance the quality of higher education.

2.3. Analysis of the mechanism of outsourcing and social - labor relations in relation to education in Israel

One of the most important features of modern economic development is intensive spreading of forms of employment like outsourcing, out staffing and staff leasing (out technologies). These technologies' influence on labor market functioning and labor relations development is constantly growing, and the use of them helps in solving problems dealing with hiring and firing of workers, labor conflicts etc.

The following figure describes the outsourcing percentages of the countries who are the leaders of outsourcing (Figure 2.21).

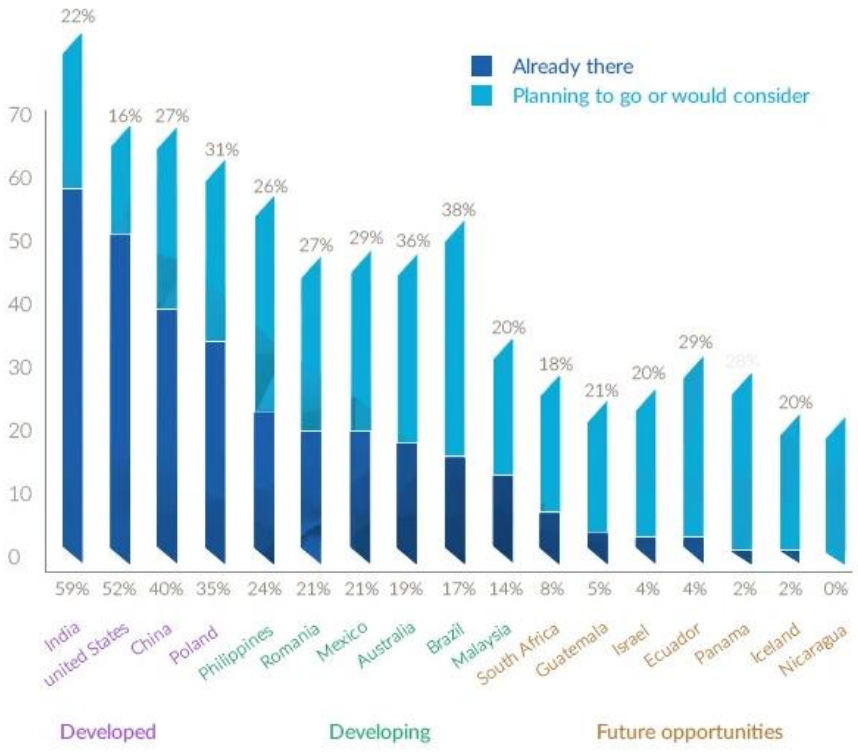

Figure 2.21. Countries outsourcing leaders[170]

Today, India is a leader in outsourcing. Software development and BPO services are the most demanded outsourcing services in India. China is a major competitor of India in the field of global outsourcing and is very active in this domain. The other strong player in the outsourcing market is the Philippines, whose rate of growth got to 46%. This countries' outsourcing grows so fast thanks to its cheap and highly skilled labor, flexibility and multi-languages environment. The Philippines maintains call centers for other big countries, like US, making it cheap, available and customer-oriented.

Most popular activity fields which are generally outsourced are food industry (67%), selling books and other materials (41%), charity foundations management (41%), legal services (21%). IT outsourcing spending is supposed to show a 22% increase from 2019 to 2023. Business process outsourcing (BPO) spending has increased 19% between 2019 and 2023. The HR outsourcing market is supposed to be $19.38 billion in 2023[171]. According to surveys in USA, about 75% of the administrative managers are ready to give almost all the administrative functions to other firms. In

[170] *Outsourcing to India. A global need for outsourcing*. BackOffice PRO. [quoted 12.01.2022]. Available at: https://www.backofficepro.com/white-paper/outsourcing-to-india/

[171] *Time doctor*.13 interesting outsourcing trends from 2022 to watch in 2023. [quoted 18.04.2023].Available at: https://www.timedoctor.com/blog/outsourcing-trends/

USA, outsourcing services are done by Professional Employer Organizations (PEO), there are about 700 PEO companies in USA. In 2005, 80% of all the little and middle-sized companies in US decided to use outsourcing services, and the number of laws dealing with outsourcing employers and outsourcing employees grows, providing keeping on all the sides' interests[172].The number of independent (outsourcing) workers in the US increased by 34% from 2020 to 2021. Of the 51.1 million Americans working independently, 17 million are full-time outsourcers. Skilled workers are going freelance in record numbers. 51% of workers in USA with postgraduate degrees perform some kind of freelance work — many in the skilled services category. Skilled services include computer programming, marketing, IT services and business consulting. Interest in freelancing has shot up since the beginning of the COVID-19 pandemic[173]. Kelly Services, Manpower, Adecco Global, Coleman Services Ins, Ventra Employment, UNISTAFF- the names of international companies in the field of outsourcing.

During the last years, the governing subjects of Israeli economics use the outsource method more widely, in order to increase their effectiveness. Israel, known throughout the world as the "Startup Nation", is home to many highly educated American professionals who have been educated in the U.S. By outsourcing to Israel, one can save significantly on hiring costs while benefiting from the skills and expertise of Israel-based employees[174].

Israel government expenditures on hiring workers from the outside is not much different from the general world tendencies – that's what can be learnt from the OECD reports[175], [176]. The following figure presents expenditures on general governmental outsourcing as a percentage of GDP, in 2020 or later (if available).

[172]*Outsourcing portal international*. What is outstaffing and how to benefit from it? Ukraine. 2018. [quoted 18.03.2019]. Available at: http://www.outsourcingportal.eu/en/what-is-outstaffing-how-to-benefit-from-it

[173]HOWARTH, J. *47 New Outsourcing Statistics (2023-2026)*. [quoted 18.04.2023]. Available at: https://explodingtopics.com/blog/outsourcing-stats

[174]BLAGORAZUMNAIA, O., AWADA, S. *Managerial out-technologies on the labor market*. International scientific conference «Universitas Europaea: towards a knowledge-based society through europeanisation and globalisation» 13-20 octomber 2017 in ULIM, Chisinev: ULIM, 2018, p.72-76. ISBN 978-9975-3168-7-3

[175]*The Marker*. Outsourcing in Israel: like Finland, Sweden and Germany. [quoted 20.03.2022]. Available at: https://www.themarker.com/career/1.1559963

[176]*OECD Publishing*. Government at a Glance 2015. Expenditures on general government outsourcing as a percentage of GDP, 2013 and 2014. [quoted 20.03.2019]. Available at: https://dx.doi.org/10.1787/gov_glance-2015-graph47-en

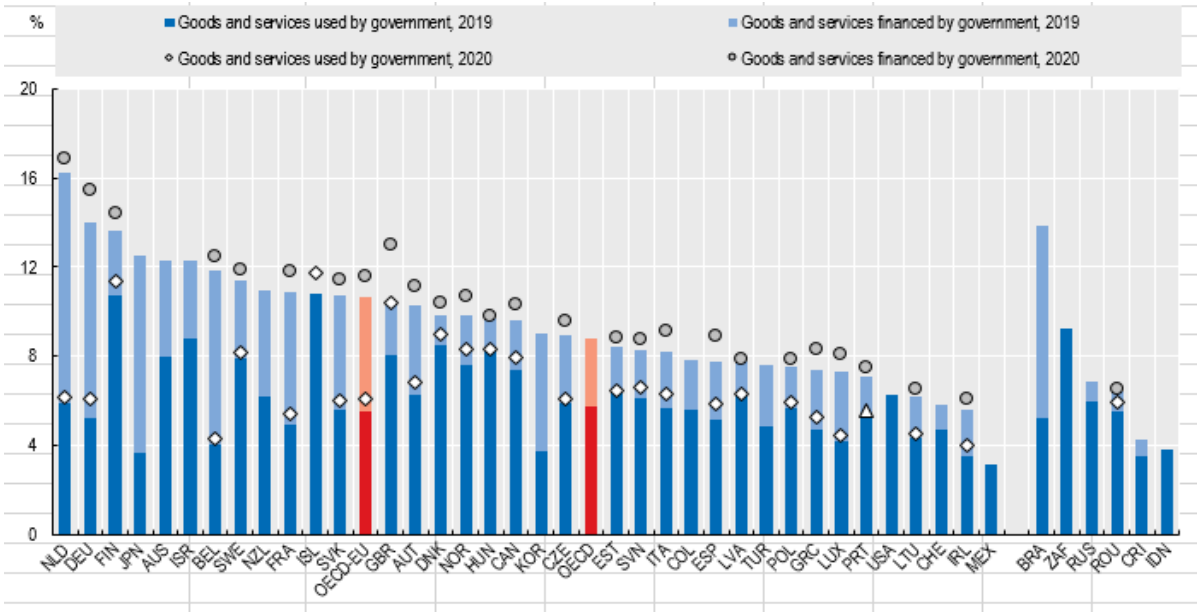

Figure 2.22. Expenditures on general government outsourcing as a percentage of GDP, 2019 and 2020[177]

Israel government expends about 12% of the GDP on outsourcing, which is 30% higher than average in the developed OECD countries[178]. The leaders at the outsourcing market are Netherland, Finland, Japan. Outsourcing in the last 20 years has been continuously growing in the OECD countries, and became a central element in the existence of modern government. OECD claims that outsourcing allows to improve the efficiency and quality of governmental services, grants employment flexibility at the dynamic labor market, allows to use professional skills that the government does not basically employ.

In Israeli economy, startups technologies sector is the leading one. It accounts for 14 percent of economic output and 50 percent of exports[179]. However, it is not sure Israel will be able to keep its position as a world leader in the field, since there are lots of employees missing[180].

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[177]OECD National Accounts Statistics (database). [quoted 20.03.2023]. Available at:https://www.oecd-ilibrary.org/governance/expenditures-on-general-government-outsourcing-as-a-percentage-of-gdp-2019-and-2020_9ccefe27-en

[178]Ibidem. OECD National Accounts Statistics (database). [quoted 20.03.2023]. Available at: https://www.oecd-ilibrary.org/governance/expenditures-on-general-government-outsourcing-as-a-percentage-of-gdp-2019-and-2020_9ccefe27-en

[179]BLAGORAZUMNAIA, O., AWADA, S. *Managerial out-technologies on the labor market*. International scientific conference «Universitas Europaea: towards a knowledge-based society through europeanisation and globalisation» 13-20 octomber 2017 in ULIM, Chisinev: ULIM, 2018, p.72-76. ISBN 978-9975-3168-7-3

[180] ZUO, L., SHESTAk, V., VLASOVA, S., ISLAMOV, A. Efficiency of Outsourcing and Outstaffing Mechanisms Based on MOOCs in the Market of Entrepreneurial Education Services. *International Journal of Emerging Technologies in Learning (iJET)*. 2021, vol. *16*(2), pp. 135-148. ISSN 1863-0383

According to the Innovation Authority of the government, there is a projected deficit of 10,000 engineers and programmers in the upcoming decade within a market that currently employs 140,000 professionals. This shortage poses a significant challenge, especially for Israel's 5,000 startups, as they compete with technology giants like Google, Intel, Microsoft, and Apple for talent. Consequently, outsourcing high-quality staff becomes an inevitable solution to address this issue.

While the government takes steps to stimulate organic growth of workers at home, it is also making changes to visas for a quick fix of importing foreign workers[181]. The government is making arrangements for 500 visas to be allocated to foreign students who have completed science and engineering studies at Israeli universities. These visas will allow them to remain in the country and work at technology firms for a duration of one year. Additionally, efforts are invested to simplify the bureaucratic processes associated with obtaining unlimited "expert visas."

Some of government ministers in Israel claim that outsourcing is hurting labor conditions of employees. However, the Israeli market changed drastically during the last 10 years. Such terms like “non-fired” employee, annual premiums and salary additions do not exist anymore. Finding a good job according to education becomes more difficult, since many professions disappear. Industries and firms change their production schemes, make labor conditions harsher and try to save as much as possible. The world economy changed, outsourcing became its obligatory part. It is very advantageous when a plant has departments which staff cannot be objectively employed 100% of the time. A little office, for example, does not need a cleaning lady for a full time position, it is much easier to use outsourcing. A big company specializing in a specific field and trying to not enlarge its staff too much, will hire cleaning and security staff through outsourcing, in order to avoid building additional and unnecessary departments and positions. This is also the case in a private sector, and the same should also apply in the public sector. Outsourcing, according to Legkov[182] is therefore is not a problem, since it is a necessary part of the world economic development and cannot be avoided. The real problem is bad conditions and even exploitation of workers. There are not enough laws in Israel protecting employees’ rights, the mechanisms controlling the existing laws enforcement – do not

[181]*Reuters*. Short of IT workers at home, Israeli startups recruit elsewhere. Technology News.2017. [quoted 11.03.2019]. Available at: https://www.reuters.com/article/us-tech-israel-ukraine/short-of-it-workers-at-home-israeli-startups-recruit-elsewhere-idUSKBN19H0FY

[182]LEGKOV, J. We should struggle not the outsourcing, but the exploitation. [quoted 13.09.2018]. Available at: 9tv.co.il/news/2014/06/21/178466.html

function. If the outsourcing or mediator companies' management will be sure they will be legally responsible for violating employees' rights, the whole picture will change.

Numerous higher education institutions in the United States, United Kingdom, and Canada opt to delegate certain responsibilities, including IT services, campus security, and custodial services, to external vendors. For example, the University of California, San Diego outsources its facilities management services to a private company[183].

Some examples of countries that have implemented outsourcing in higher education include the United States, the United Kingdom, Australia, India and China[184]. In the US and UK, outsourcing of non-core services such as IT, maintenance, and janitorial services is common in many universities. In Australia, outsourcing is used for services such as marketing and recruitment, while in India, universities outsource services such as admission processing and online course development[185].

Assessment outsourcing is a growing trend in higher education, as many institutions seek to outsource the development and administration of standardized tests and assessments. For example, the University of Cambridge in the United Kingdom outsources the development and administration of its English language proficiency tests to a third-party company[186].

Outsourcing in education is most commonly used for non-core functions, such as facilities management, food service, and transportation. According to a report by Research and Markets, the global education outsourcing market size was valued at $63.57 billion in 2019 and is expected to reach $181.67 billion by 2027, with a compound annual growth rate (CAGR) of 14.6% during the forecast period[187].

In the United States, outsourcing in education has been a topic of controversy, with some arguing that it can lead to job losses and reduced quality of services. According to a report by the Economic Policy Institute, outsourcing of school support services, such as custodial work, transportation, and food service, increased by 60% between 2000 and 2016. By 2018, U.S.

[183]ZUO, L., SHESTAk, V., VLASOVA, S., ISLAMOV, A. Efficiency of Outsourcing and Outstaffing Mechanisms Based on MOOCs in the Market of Entrepreneurial Education Services. *International Journal of Emerging Technologies in Learning (iJET)*. 2021, vol. *16*(2), pp. 135-148. ISSN 1863-0383

[184] YING, M., WRIGHT, E. Outsourced concerted cultivation: international schooling and educational consulting in China. *International Studies in Sociology of Education*, 2021, pp. 1-23. ISSN 0962-0214

[185] SHAH, M., LIM, C. B. Quality assurance in the domestic third-party arrangement in Australia. *International Journal of Educational Management*, 2021. ISSN 0951-354X

[186] CLOTT, C. 5 *The Changing Nature of Work*. The Cambridge handbook of the changing nature of work, 2020. 101 p. ISBN 1108417639

[187] HOWARTH, J. *47 New Outsourcing Statistics (2023-2026)*. [quoted 18.04.2023]. Available at: https://explodingtopics.com/blog/outsourcing-stats

organizations outsourced about 14.4 million employees, and there was an increase in outsourced employees number in 34% from 2020 to 2021, especially in the fields of technology, calling centers, industries and labor recruitment. The issue of outsourcing is a direct consequence of globalization with some complications for economy. On the one hand, outsourcing is cost-reducing and effective, on the other, it might increase local unemployment[188].

In the United Kingdom, outsourcing in education has also been a contentious issue. In 2018, a major outsourcing company, Carillion, collapsed, causing widespread disruptions to public services, including education. The UK government subsequently announced plans to tighten regulations on outsourcing to prevent similar situations from occurring in the future[189].

The onset of the Covid-19 pandemic compelled nearly all educational institutions to shift to remote work. Some colleges and universities conducted in-person classes with limited capacity, while others operated completely online. Higher education institutions that had not offered online courses before had to quickly adapt and implement new technologies to teach students. As educators and administrators needed to communicate with their audience in a completely new way during this period, outsourcing services have become a vital tool for universities. One of the primary reasons tertiary education institutions have turned to outsourcing services is that it has facilitated the transition to virtual education. During the pandemic, a substantial number of new agreements were established between universities and outsourcing companies[190].

Staff outsourcing (or HR Outsourcing) is one of the business process of outsourcing directions. HR outsourcing specializes in the field of staff management using the appropriate experience, knowledge, technical abilities to fulfill part or all the key functions of human capital management in an organization. In the field of personal management, the following processes are outsourced: staff recruitment, salary calculation, informational and technical support, human resources preparing, staff administration, reports and analytic materials preparation.

Some of the experts are sure that increase in the number of outsourced employees among lecturers can be treated as outsourcing. In the western countries, the same lecturers are rented to

[188]Ibidem. HOWARTH, J. *47 New Outsourcing Statistics (2023-2026)*. [quoted 18.04.2023]. Available at: https://explodingtopics.com/blog/outsourcing-stats

[189] HAJIKAZEMI, S., AALTONEN, K., AHOLA, T., AARSETH, W., ANDERSEN, B. Normalising deviance in construction project organizations: a case study on the collapse of Carillion. In: *Construction Management and Economics*, 2020. vol. *38*(12), pp.1122-1138.ISSN 0144-6193

[190] IVANCHEVA, M., GARVEY, B. Putting the university to work: The subsumption of academic labour in UK's shift to digital higher education. In: *New Technology, Work and Employment*, 2022, vol.37.3. Pp. 381-397.ISSN 0268-1072

different educational institutions, which is considered a normal practice[191] . A good qualified expert is planning her schedule for a long time in advance. Educational outsourcing is common in fields where there are few specialists, like conflicts solving, cybernetics, IT –based learning, medicine, nonverbal communication, languages etc. In USA, is it also possible that an academic institution "rents" a whole faculty for educational work organization in other institution[192].In Russia and Moldova, usually a lecturer belongs to one academic institution, sometimes also works for another one. This kind of labor regulation can be beneficial for an institution since it allows it to keep valuable human resources for itself, but is not beneficial for the education field in general[193]. Many qualified professionals could be hired through outsourcing channels and this way increase their own salaries and a quality of education in other academic institutions[194] .

Outsourcing of academic staff stands out as a major challenge in the present Israeli higher education landscape. Currently, there is an abundance of external teachers and lecturers whose future employment and conditions remain uncertain.

A term "external teacher" refers to a lecturer, typically holding a PhD degree, who is not part of the institution's permanent faculty. The role of an external teacher primarily involves teaching responsibilities, excluding research activities and supervision of postgraduate students. The outside teachers are called junior members of the faculty[195].

The practice of employing external teachers originated in the 1960s with the establishment of the Hebrew University branch in Tel Aviv, which eventually evolved into Tel Aviv University. Lecturers from the Hebrew University who transitioned to teaching at the branch were referred to as "outside teachers." Later, this degree was given to faculty members from each university who were asked to teach in other institutions, and later to experts whose main occupation was not academia

[191]FARNDALE, E, et al. Deglobalization and talent sourcing: Cross-national evidence from high-tech firms. *Human Resource Management*, 2021, 60.2. Pp.259-272. ISSN 0090-4848

[192]BLAGORAZUNMNAYA, O., AWADA, S. *The directions of outsource services implementations in the education system of Israel*. In: The international scientific conference „The modern paradigms in development of the national and world economy" of the Faculty of Economic Sciences, 01-02 November 2019. Kishinev: Moldova State University, 2019, p. 364-370. ISBN 978-9975-149-73-0.

[193]БЛАГОРАЗУМНАЯ, О.Н., АВАДА, С. Особенности взаимодействия образовательных учреждений и бизнеса в Молдове. В: *Актуальные проблемы развития вертикальной интеграции системы образования, науки и бизнеса: экономические, правовые и социальные аспекты*. *VI Международная научно-практическая конференция 26-27 декабря 2017.* Воронеж: АНОО ВО «Воронежский экономико-правовой институт», 2017, с. 2-5.

[194] FARNDALE, E, et al. Deglobalization and talent sourcing: Cross-national evidence from high-tech firms. *Human Resource Management*, 2021, 60.2. Pp.259-272. ISSN 0090-4848.

[195]*Haaretz*. PhD degree owner, but works as a contractor's worker: external lecturers are academic staff from the lowest level. [quoted on 25.04.2019]. Available at: https://www.haaretz.co.il/.premium-1.2316518 (Hebrew)

(such as judges) who taught elective courses in their fields of specialization[196]. Starting from the 1980s, Israeli universities and academic colleges have increasingly turned to utilizing foreign teachers as a cost-effective alternative to hiring permanent teaching staff.

The absence of a collective agreement between the external teachers' organization and the management creates uncertainty regarding future employment for each individual, as their job can be at risk every semester. Junior lecturers, not being integrated into the College permanent team, lack a stable position and their salary is not correlated with their seniority or work experience, resulting in inadequate social benefits.

Approximately two-thirds of the academic college personnel in 20 Israeli higher education institutions consist of external lecturers. Between the 2002 and 2012, the years of college advancement and universities decline, the percent of external lecturers grew up by 112%, more than any other category of academic staff[197]. The rationale behind this approach is clear - it is a more cost-effective method of hiring for both the colleges and the government, which provides funding for them. External lecturers are fired at the end of each semester and rehired based on the college's requirements. Many of them hold part-time positions and their salary is not affected by their teaching experience. They do not receive health insurance coverage or access to funds for further research studies. Similar to other outsourced workers like cleaning and security staff, these lecturers face uncertainty regarding the continuity of their employment. They are hired directly by the institutions, so the exploitation is very clear[198].

It is important to highlight that the presence of external teachers in the Israeli academic system is not unique. This phenomenon can also be observed in other countries. The United States and Canada, for example, also have a significant proportion of external teachers within their higher education institutions. The hiring of out of the academic institution lecturers changed the total character of the profession, since lots of lecturers got out of the tenure track and since 1993 became

[196]AWADA, S. The problem of external teachers in higher education in Israel. În: *Asigurarea viabilităţii economico-manageriale pentru dezvoltarea durabilă a economiei regionale în condiţiile integrării în UE. Materialele conferinţei ştiinţifice internaţionale, Bălţi, 15-16 septembrie 2017*. Balti: SU „Alecu Russo", 2018, p.122. ISBN 978-9975-50-215-3.

[197]*Haaretz*. PhD degree owner, but works as a contractor's worker: external lecturers are academic staff from the lowest level. [quoted on 25.04.2019]. Available at: https://www.haaretz.co.il/.premium-1.2316518 (Hebrew)

[198]*Wikipedia*. External teacher. [quoted 23.03.2019]. Available at: https://he.wikipedia.org/wiki/%D7%9E%D7%95%D7%A8%D7%94_%D7%9E%D7%9F_%D7%94%D7%97%D7%95%D7%A5. (Hebrew)

teachers without a regular status (AAUP)[199]. According to data from the US Department of Education, in the autumn of 2001, approximately 44.5 percent of all faculty members held part-time positions, most of which were non-tenured, and an additional 19.2 percent were in full-time non-tenure-track positions. When combined, these categories accounted for nearly two-thirds of all faculty, and it is evident that their numbers continue to increase.

Similar problems exists in Canada since the 90-es. Lecturers' organization in Canada (CAUT) published an announcement about bad employment conditions of this group of teachers and possible outcome for the entire university system[200]. Rajagopal mentioned there are two kinds of part-time workers: the "Classics" and the "Contemporaries"[201]. The first group consists of individuals who hold positions entirely outside of the academic field. The second group, often referred to as "permanent temps," lacks a stable position within the higher education system and does not receive a regular or fixed salary. Rajagopal characterizes them as the "academic underclass" due to their disconnection from research and their diminished value within the system. An increasing number of individuals are being employed on a per-course or limited-term basis to carry out academic work. These roles typically offer low pay, minimal or no benefits, lack of job security, and provide little to no academic freedom. This has serious implications not only for contract academic staff, but for students, their regular academic staff colleagues, and the university system as a whole" [202] [203].

According to the author, addressing the challenges faced by external teachers in higher education requires institutional recognition and support. Implementing policies that ensure fair payment, job stability, and access to professional development opportunities can help create a more equitable and inclusive environment for freelance educators, benefiting both the teachers and the students they serve.

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[199]*AAUP:* American Association for University Professors. In: *Contingent Appointments and the Academic Profession*, 2003, pp.170-185. [quoted 02.02.2020]. Available at: https://www.aaup.org/report/contingent-appointments-and-academic-profession

[200]*CAUT (Canadian Association of University Teachers).* Fairness for Contract Academic Staff. 2011. [quoted 17.11.2019]. Available at: http://www.caut.ca/pages.asp?page=212

[201]RAJAGOPAL, I. *Hidden Academics: Contract Faculty in Canadian Universities.* University of Toronto Press. 2002, 352 p. [quoted 20.02.2019]. ISBN-13 978-0802080981. Available at: https://utorontopress.com/us/hidden-academics-3

[202]*CAUT (Canadian Association of University Teachers).* Fairness for Contract Academic Staff. 2011. [quoted 17.11.2019]. Available at: http://www.caut.ca/pages.asp?page=212

[203]AWADA, S. The problem of external teachers in higher education in Israel. În: *Asigurarea viabilităţii economico-manageriale pentru dezvoltarea durabilă a economiei regionale în condiţiile integrării în UE. Materialele conferinţei ştiinţifice internaţionale, Bălţi, 15-16 septembrie 2017*. Balti: SU „Alecu Russo", 2018, p.122. ISBN 978-9975-50-215-3.

The following table presents a problem existing in Israel, its essence, possible solution and compares it to the situation in Moldova Republic[204].

Table 2.5. Problems of employment in higher education in Israel compared to the situation in Moldova [developed by author]

Problem name	Problem contents (situation in Israel)	Possible solution	Situation in Moldova
Temporary appointment of external lecturers	External lecturers are frequently appointed on a semester-by-semester basis.	Planning teaching hours by courses and teachers (in advance)	The scheduling of teaching hours in the majority of academic institutions is typically done towards the end of the preceding academic year.
Social conditions	External lecturers frequently lack adequate pension plans and other social benefits, as well as access to advanced study funds and sabbatical years, which are typically provided to regular staff members.	Better conditions for external (outsourced) staff	Private institutions often face challenges in adhering to payment agreements for temporary employees, which may not always be honored. However, in case the wage is not correct, a complaint can be submitted to the Labor Inspection and the institution will have to pay a fine[205]
Social changes	There are too many Higher education institutions in Israel, too many overqualified workers[206]. The younger generation is less inclined to pursue extensive education compared to previous generations. They prioritize job security and are not willing to invest in learning solely for the purpose of gaining knowledge.	Placing greater emphasis on vocational education and reducing the emphasis on higher education, while directing investments towards future-oriented professions.	Young individuals emigrate from the country not primarily due to the quality of education, but rather due to better economic prospects in other countries.

The planning of teaching hours for the next academic year is usually done at the end of the previous academic year to allow sufficient time for necessary preparation, such as at ULIM. This

[204]БЛАГОРАЗУМНАЯ, О.Н., АВАДА, С. Особенности взаимодействия образовательных учреждений и бизнеса в Молдове. В: *Актуальные проблемы развития вертикальной интеграции системы образования, науки и бизнеса: экономические, правовые и социальные аспекты*. *VI международная научно-практическая конференция 26-27 декабря 2017*. Воронеж: АНОО ВО «Воронежский экономико-правовой институт», 2017, с. 2-5.

[205] PURAN, A., DRAGHICI, A. *Disciplinary Liability in the Legal System of the Republic of Moldova Special view on the Public Servants*. Annales Universitatis Apulensis Series Jurisprudentia, 2018, 21, 298 p.

[206]SIROTA, J., AWADA, S. Over-qualification at the higher education labor market of Israel. In: *EcoSoEn*. 2018, An.1, Nr.1,2, p.223-227. ISSN 2587-344X.

preparation includes determining the availability of teachers and staff, scheduling classes, and ensuring that funds and resources are available to support the teaching and learning process.

In case of non-compliance with contracts for the payment of temporary employees, you can file a complaint with the State labor inspectorate. The main role of the State labor inspectorate is to ensure that employers comply with labor standards and ensure safe working conditions for workers. It can conduct inspections, investigate violations and impose fines for non-compliance with labor laws, as well as make recommendations to employers and employees on their powers and responsibilities.

Most of the education staff in Higher education institutions is recruited from the former students, based on personal acquaintance and academic achievements within the institutions. There are no many special recruitment agencies for the lecturers in Higher education of Israel[207].

The idea of abandoning the traditional system of recruiting employees, which assumes that teachers are hired and progress through the various stages of their careers within the institution, raises numerous concerns. From a purely financial perspective, outsourcing teacher recruitment offers clear advantages as it can significantly reduce costs. However, determining the true value and cost of education is challenging. It is highly risky to rely on transient human resources hired through short-term agreements, as it can lead to a lack of commitment towards students and researchers who may not be fully integrated into the intellectual life of the organization they work for.

Thus, the mechanism of staff outsourcing and labor-social relations in the educational activity of a higher education institution should be flexible and adaptive.

In the author's opinion, outsourcing should not be viewed as an isolated part, not connected to other administrative and managerial problems, which are solved by the institutions' management.

The author suggests to look into the following directions of outsource services implementations in the education system of Israel.

1. *Interactions between education institutions with the employers at the stage of educational process organization*. In this case, an outside organization gives the students actual practical skills, like methods used in the field, instruments, different way and technologies which are the property of the outsourcing (consulting) company. This will allow to adjust the preparation of specialists considering the requirements of the labor market, grant the graduates some practical skills, to find out

[207]AWADA, S. The problem of external teachers in higher education in Israel. În: *Asigurarea viabilităţii economico-manageriale pentru dezvoltarea durabilă a economiei regionale în condiţiile integrării în UE. Materialele conferinţei ştiinţifice internaţionale, Bălţi, 15-16 septembrie 2017*. Balti: SU „Alecu Russo", 2018, p.122. ISBN 978-9975-50-215-3.

the actual trends of educational process improvement. For example, in France and Mexico the curriculum in Higher education institutions is built taking into consideration employers' demands, when building special consulting professional commissions[208], [209]. In France and Germany professional internship of students at a company is a key element of professional education[210]. In Israel this practice is not common yet, however there is an internship at the local industry organizations for the Braude College students.

2. *Marketing activity outsourcing*. Development of this direction will help to keep the constant control over needs and demands of the customers (both the students and the employers), positioning and identification of the educational institution at the conscience of the target audience, will allow to react immediately to any changes at the market[211]. Outsourcer should do the following:

- Planning, coordination and control over the marketing activity;
- Marketing research conduction;
- PR-activity maintaining; building information channels for objective informing of the target audience (through media channels, personal contacts, organized contacts with the target customers).

3. *Preparing periodicals and souvenirs, presentation*s. Nowadays, printing books and manuals is not a first priority direction of education institutions, but most of them are ready to order this kind of products for some important events, like conferences, anniversaries and so on.

4. *Helping to absorb graduates at the job positions.* Governments of developed countries like Austria, Germany, Great Britain and France delegate part of its work with the unemployed to the specialized companies[212], [213]. The unemployed are registered at the private consultant who gives them recommendations and looks for a potential employer for them. As a result, about 70% of the unemployed get a job. The outsourcing company gets in advance a certain sum of payment for each

[208]BEYLAT, J.-L., TAMBOURIN, P., PRUNIER, G., SACHWALD, F. *L'innovation: un enjeu majeur pour la France – Dynamiser la croissance des entreprises innovantes, Ministère du redressement productif, Ministère de l'enseignement supérieur et de la recherché*. Paris: La Documentation Française. 2013, 143 p.
[209]RANGEL, E., IVANOVA, A. Higher Education Policies and Employment in Mexico. In: *Modern Economy*, 2014, nr. 5 (7), pp. 821-830. ISSN 2152-7245
[210]BEYLAT, J.-L., TAMBOURIN, P., PRUNIER, G., SACHWALD, F. *L'innovation: un enjeu majeur pour la France – Dynamiser la croissance des entreprises innovantes, Ministère du redressement productif, Ministère de l'enseignement supérieur et de la recherché*. Paris: La Documentation Française, 2013. 143 p
[211]*The Marker*. Outsourcing in Israel: like Finland, Sweden and Germany. [quoted 20.03.2019]. Available at: https://www.themarker.com/career/1.1559963 (Hebrew)
[212]MARSDEN, D. Labour market segmentation in Britain. In: *Economie et Sociétés AB*, 2007, nr. 28 (6), pp. 965–998. ISSN, 0013-0567
[213]WHITESIDE, N., GILLESPIE, J. A. Deconstructing unemployment: developments in Britain in the interwar years. In: *Economic History Review.* 2008, 44(4), pp. 665–682. ISSN 0013-0117

potential employee. If the employee works at least for held a year at the new job place, the company is getting additional payment, two times bigger than the original one. For a company, it is a strong incentive to work hard using a personal control over each potential employee, which is difficult to achieve at the Higher education institution.

5. *Information technologies outsourcing*. The academic institution can delegate some part of work to outsourcers, depending in size and a field of its business- objectives. For example, building and maintaining a site, including navigation planning and general structure, developing the design, innovation and putting relevant information on the site, promoting of the institutional site etc. This way, IT outsourcing allows institution to use knowledge, experience, technologies and equipment of the outsourcing companies to build big-scale projects[214].

6. *Library conducting*. Outsourcing may supply useful library services: catalogization, preliminary work on a project, like preparing a list of specialized organization; preparing and printing manuals; creating databases etc.[215].

The author thinks that upon using outsourcing, education institution management should carefully study the following: how will influence the outsourcing on the institution employees; how much will the outsourcing cost; what are the volume and the quality of services when using different kinds of outsourcing; what are the legal and ethical aspects of the decisions made and where will be possible conflicts of interests; how does the outsourcing fit the historical mission and culture of the institution; how can the management control the effectiveness of realizing the assignments the outsourcers took on themselves; how to choose the outsourcer and her activity directions.

The activity of Higher education institution is not limited just by education services. Generally, this activity consists of two inter-connected directions- education and scientific ones. As a result, the Higher education institution acts on a number of markets: education services market, labor market, scientific-technical products and scientific-consulting activity. To keep and increase its competitiveness, the institution should realize itself as a subject of market relations on all the four above-mentioned markets and build its activity taking into consideration on the markets. At this point, there is a need to discover the market demands and adapt the services and products of the institution to these demands. This is the reason that not only the outsourcing services are given by outside companies, but the institution itself can take upon itself some functions of the outsourcer (insourcing).

[214]*TAdviser*. IT Outsourcing in different countries. [quoted 20.03.2019]. Available at: http://www.tadviser.ru/index.php
[215]PHIPPS, R., MERISOTIS, J. *Is outsourcing part of the solution to the higher education cost dilemma? A preliminary examination*. Washington, DC: Institute for Higher Education Policy, 2005. 24 p.

Potential customers of outsourcing services of the institution can be any companies and organizations[216].

There are some possible directions of outsourcing services that can be given by education institutions:

1. *Educational outsourcing*, used by companies in combination with their own education systems (inner firm education) is today one of the most effective approaches to forming and management of organizational knowledge, realized by the continuous system of company employees training. This approach allows to find the best possible equilibrium between demands and peculiarities of a certain company and a high level of teaching, characterizing an educational institution and based on last scientific achievements. Monitoring of training results can systematically find more resources for further improvements of the teaching process. Any employee and a staff in a whole can do much more, which creates additional competitive advantages.

2. *Innovational outsourcing*. When the innovations are developed on the base of Higher education institutions, and there is a need to recruit a qualified staff for the innovational institution, outsourcing is a must, and social-labor relationships should be structured and determined in detail. Innovational industries in different fields of science on the base of a Higher education institution transforms this institution into modern innovational university complex[217]. This kind of complex organization can be developed when the following stakeholders cooperate: owners, governmental authorities, little innovational industries, techno parks, business incubators, structural organizations (including other universities, scientific organizations, logistic and communication centers etc.) One of the biggest advantages of Higher education institutions at the outsourcing market is the possibility to recruit higher –quality institution staff in different kinds of projects. This fact in combination with modern methods and technologies of outsourcing allow achieve a maximal possible output for a client.

3. *Consulting services to companies* can be realized in the fields of finance, laws, taxes, marketing, IT-consulting, developing of business recommendations, preparing business-plan, evaluation activity (including the one of the staff); building analytic surveys, certifications, reports and presentations on different issues of science and technologies development; legal accompanying

[216]*The Marker*. Outsourcing in Israel: like Finland, Sweden and Germany. [quoted 20.03.2019]. Available at: https://www.themarker.com/career/1.1559963 (Hebrew)

[217]*OECD iLibrary*. Government at a Glance 2019. Production costs and outsourcing of general government. [quoted 20.03.2019]. Available at: https://www.oecd-ilibrary.org/sites/44feaa37-en/index.html?itemId=/content/component/44feaa37-en

of firms; lawyers' services of defending intellectual property; expert analysis and marketing researches; building statistic and accounting reports etc[218].

The common basis for outsourcing and consulting is the information product, based on knowledge and experience. The difference is in the ways and orders of realizations of these two kinds of activity.

4. *Consulting accompanying of acceptance* of new students, both school graduates and professionals who wish to change their field of professional activity: individual consulting of choice of profession, including supplying the information about the required knowledges for different professions and making a choice; meeting with lecturers of different professional fields including companies etc.

5. *Implementing a distance form of studying*. Developing of modern informational technologies, including educational distant ones, becomes more and more important all over the world. Lots of leading universities and colleges in the world have a department of distant courses and programs. There are internet resources of course materials, allowing to study, maybe partly, on distance. There are some colleges in Israel that help students to study abroad at the base of distant or on-line learning programs, mostly for advanced degrees. These programs are especially popular for students who work and have families, belong to minorities and find it difficult to be accepted for advanced academic degrees in Israeli institutions[219].

Thus, Higher education institutions that grant their education services in the framework of outsourcing, can recruit high-quality specialists, program products, electronic technologies etc. in order to further develop the education system at different stages: specialist preparing (teaching, practical training of students and so on), re-preparing specialists (quality improvement, re-qualification, consulting etc.). As a result, outsourcing (consulting) makes it possible to attract more finances to education institutions. Trainings and seminars, outsourcing (consulting) projects are good examples of such a finance sources. However, before the decision about the outsourcing is made, education institution management should carefully evaluate all the possible ways of optimal solution, strong and weak sides of outsourcing and its short- and long-term consequences.

The task of the labor management system in a higher educational institution is to ensure the coordination of the actions of managerial personnel and performers when outsourcing personnel, and

[218]KOROK R., TESSA A. T. Online outsourcing and the future of work. In: *Journal of Global Responsibility*. 2019, Vol. 10, nr. 3, pp. 226-238. ISSN 2041-2568.
[219]*Carmel College site*. [Quoted 20.03.2019]Available at: https://mcd.org.il/site/ (Hebrew)

how to increase the motivation of employees, their material and moral interest in work, and reduce or even eliminate potential conflicts (such as opportunism and worker strikes).

In order to establish social and labor relations in the context of outsourcing university staff, it is essential to streamline the labor process according to predefined criteria that align with the interests of all stakeholders. According to the author, in order to increase the efficiency and effectiveness of the implementation of personnel outsourcing, it is necessary to: clearly define the roles and responsibilities of outsourcing personnel and communicate them to all parties involved; establish communication channels and procedures to ensure that any issues or concerns are resolved quickly and efficiently; provide adequate training and support to outsourcing personnel to ensure they have the necessary knowledge and skills to perform their duties; develop performance metrics and regularly monitor the performance of outsourced staff to ensure that they are meeting university expectations and standards; consider introducing technological solutions to simplify administrative tasks and improve communication between external staff and university staff; create a culture of cooperation and mutual respect between outsourcing staff and university staff to ensure a positive and productive working relationship. By taking these steps, it is possible to optimize the labor process when outsourcing the university staff and organizing social and labor relations of employees.

2.4. Conclusions for chapter 2

1. From 2003 to 2019, there is a stable increase of employment at the labor market of Israel. Following the COVID-19 pandemic, the process of recovery in employment levels began in the second half of 2021 and ended in 2022. According to data published by OECD, in 2022 the average unemployment rate of OECD is higher than the one in Israel. However, the social aspects of the labor market are quite alarming. There is a distinct difference between males' and females' salaries in Israel.

2. Education has a crucial role for society development and sustainable economic growth of Israel, since the education level in society and the attitude to scientific potential of the nation are the most important factors of a country’s competitiveness at the international market. Human resource is a central part in higher education budgeting of Israel, and is predominant in the total national expenditure. At the time a number of education institutions and students increased rapidly, the total number of job positions in higher education increases quite slowly. There is a positive phenomenon of reducing gaps between the Arab and Jewish education sectors. As of today, the number of Arab students of high education institutions is rapidly growing.

3. Outsourcing academic staff is a significant challenge faced by higher education in Israel at present. Unfortunately, a considerable number of external teachers and lecturers face uncertainty regarding their future employment and working conditions. Wage inequality is a significant issue in Israel, as it is in many other countries around the world. There is a gender wage gap in Israel.

Based on a questionnaire distributed among college professors and analysis of the obtained data using the statistical tool SPSS, the author discovered inequality in opportunities: women in the Arab and Jewish sectors experience unemployment, find it more difficult to find a job, and when found, do not change for a better one. Women are less ready to take a risk and change a job, maybe because they have less opportunities. Almost all the respondents are ready to study more (even another profession) and have been through different kinds of qualifications improvements. Almost all of the respondents (but one) think they are overqualified for their current position and their potential is not fulfilled. Most of the respondents, however, believe they can advance at their current job, the less optimistic group are Arab women.

4. One of the most important features of modern economic development is intensive spreading of forms of employment like outsourcing, out staffing and staff leasing (out technologies). These technologies' influence on labor market functioning and labor relations development is constantly growing, and the use of them helps in solving problems dealing with hiring and firing of workers, labor conflicts etc. Lots of universities in Israel, Moldova, Romania and other countries use outsourcing when rent their buildings and rooms to other companies, use external staff for different kinds of work.

5. To organize social and labor relations when outsourcing university staff, it is necessary to optimize the labor process based on predetermined criteria that align with the interests of all parties involved. According to the author, in order to increase the efficiency and effectiveness of the implementation of personnel outsourcing, a number of steps should be done such as: provide adequate training and support to outsourcing personnel to ensure they have the necessary knowledge and skills to perform their duties; develop performance metrics and regularly monitor the performance of outsourced staff to ensure that they are meeting university expectations and standards; consider introducing technological solutions to simplify administrative tasks and improve communication between external staff and university staff; create a culture of cooperation and mutual respect between outsourcing staff and university staff to ensure a positive and productive working relationship.

3. IMPROVEMENT OF HUMAN RESOURCES ALLOCATION MECHANISM OF THE LABOR MARKET ON THE BASIS OF MANAGEMENT TECHNOLOGY

3.1. Crowdsourcing as a far-reaching management technology for Higher Education development

In the conditions of modern market economies development, the strong competitions in all the domains of human organizations' activities, including education institutions, causes many of them to use non- standard and rare methods, developing new management technologies. Crowdsourcing is a very effective and becoming more popular way of managing knowledge, information and communities[220].

The outsourcing, described in the previous chapter, is a managerial technology in the labor market, having lots of advantages. Crowdsourcing, as one of outsourcing development directions, has similar to outsourcing characteristics[221]. However, although they are similar, mostly because both delegate some company functions to outside parts, they have also some fundamental differences, presented in the following Table 3.1.

Table 3.1. Differences between outsourcing and crowdsourcing [elaborated by author]

Characteristic	Outsourcing	Crowdsourcing
Legal support	An agreement is signed on supplying outsourcing services	There are no labor or any other agreements
Employees involved	A predefined group of employees	Undefined group of people
Specialization of employees or a company	A specialized organization making a certain function	People not connected to a specialization field can participate
Payment for a work or services	Constant predefined payment	Usually there is no payment
Solving conflicts and controversies	A mutual decision making is possible	Only an organizer-company can make decisions
Responsibility for the service results	Is fully upon the outsourcer organization	Is on the organization delegating crowdsourcing services
Results	Possibly implemented versions of results are known	Possibly implemented versions of results are not known (anything is possible)

[220]ESTELLÉS-AROLAS, E., GONZÁLEZ-LADRÓN-DE-GUEVARA, F. Towards an Integrated Crowdsourcing Definition. In: *Journal of Information Science*, 2012, nr.38 (2), pp. 189–200. ISSN 01655515

[221]AWADA, S., SIROTA, J. "Crowdsourcing" as one of the innovative tools for Higher Education Development. In: *IJO International Journal of Educational Research*. 2019, Volume 02, nr.10, p.1-11. ISSN 2456-8538

In Israel, crowdsourcing is used in nano-technology research on molecules' moves[222], in medicine[223].

Educational potential of crowdsourcing is a basis of education project named Duolingo[224] which combines studying of foreign languages with different kinds of texts translations. Crowdsourcing in education, realized on the basis of information technologies, assumes that the output of the educational process will be a complete and socially demanded product. The crowdsourcing supplies a new evaluation system of studies achievements based on the transparent control of the community and making the results and the pupil's responsibility's validation[225].

The common part for all the crowdsourcing projects is using internet resources to attract more participants willing to contribute some of their knowledge, experience and time to help others. People not connected to a specialization field can participate, on the volunteer basis, since there is usually no payment but can be a kind of prize or reward (in the case of translations) and moral satisfaction (in the cases of nano-project, education and the health projects). The results are not known in advance, neither the time of the expected outcome, but it still attracts people to be part of such projects, maybe from curiosity.

Crowdsourcing technologies can improve a practical orientation of education products of Higher education institutions, which is highly demanded today from the point of view of both students, teachers, Higher education institutions' management, potential employers. Teaching in the crowdsourcing surroundings could help to develop skills of analyzing a situation, evaluation of alternatives, skills of solving some practical tasks.

There are some possible ways to implement a crowdsourcing in education[226]:

- Crowd teaching and learning;
- Creating electronic databases by the students, like an electronic library;
- Building new curricula, based on experts' community interested in them;

[222]*Tel-Aviv University*. TAU/Tsinghua University Project Uses Crowdsourced Computing to Improve Water Filtration. 2015. [quoted 09.02.2019]. Available at: https://english.tau.ac.il/impact/water_filtration

[223]*Patients like me*. Living better starts here. [quoted 2.04.2020]. Available at: https://www.patientslikeme.com/?format=html

[224]*Duolingo*. Learn a language for free. Forever. [quoted 08.10.2019]. Available at: https://www.duolingo.com

[225]PALFREY, J., GASSER, U. *Born digital: Understanding the first generation of digital natives.* New York: Basic Books, 2008. 384 p. ISBN 978-0-465-00515-4

[226]AWADA, S., SIROTA, J. "Crowdsourcing" as one of the innovative tools for Higher Education Development. In: *IJO International Journal of Educational Research*. 2019, Volume 02, nr.10, p.1-11. ISSN 2456-8538

• Allowing students to participate in existing crowdsourcing programs, when not only a lecturer, but the whole internet community will evaluate her knowledge;

For teachers and educators, crowdsourcing allows to get used to a new social arrangement of children who are "born digital"[227]. Crowdsourcing is naturally integrated in solving educational problems of formal education institutions by creating open universities, distant learning courses etc., and also has a huge pedagogical potential which suits the modern social-cultural situation, where there is a dangerous tendency of education consumerization[228]. Since knowledge and experience are important in any profession, the use of crowdsourcing in education field may solve lots of existing problems and improve the education in different institutions. "Crowdsourcing" is getting widespread in educational life, it is one of effective and modern tools to develop a higher education, and solve the following problems.

Problem 1: To improve teaching and adjust it to the new "born digital" generations:

Possible solution: Crowd teaching

Teachers have always been designing and modifying curricula and lesson plans[229]. Using crowdsourcing, it becomes possible to help teachers as designers via a free, Web-based authoring tool like the one called the Instructional Architect (IA)[230]. This tool enables teachers to find and design instructional activities for their students using open educational resources[231]. Teachers have the opportunity to share these outcomes, known as IA projects, by making them accessible to the public within the IA platform. These IA projects can then be viewed, copied, or adapted by other IA users to further support their own teaching activities[232]. Viewed in this way, the IA provides an infrastructure for collective intelligence and crowdsourcing.

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[227]PALFREY, J., GASSER, U. *Born digital: Understanding the first generation of digital natives.* New York: Basic Books, 2008. 384 p. ISBN 978-0-465-00515-4

[228]PALFREY, J., GASSER, U. *Born digital: Understanding the first generation of digital natives.* New York: Basic Books, 2008. 384 p. ISBN 978-0-465-00515-4

[229]MCNEILL, K.L., KRAJCIK, J.S. *Supporting Grade 5-8 Students in Constructing Explanations in Science: The Claim, Evidence, and Reasoning Framework for Talk and Writing*. New Jersey: Pearson, 2011. 208 p. ISBN-0-1370-4345-7ISBN-978-0-1370-4345-3

[230]*Instructional Architect home*. [quoted 2.04.2020]. Available at: http://ia.usu.edu/

[231]RECKER, M. Perspectives on teachers as digital library users: Consumers, contributors, and designers. In: *D-Lib Magazine*. 2006, nr. 12(9). [quoted 21.01.2020]. ISSN 1082-9873. Available at: http://www.dlib.org/dlib/september06/recker/09recker.html.

[232]RECKER, M., et al. A study of teachers' use of online learning resources to design classroom activities. In: *New Review of Hypermedia and Multimedia.* 2007, nr. 13(2), pp. 117- 134. ISSN 1361-4568

In order to create dimension on the IA, teachers work independently to design IA projects. Malone et.al.[233] defined key dimensions for the IA projects in terms of "what is being accomplished (goal)," "who is performing the task," "why they are doing it (incentives)," and "how it is done" (Table 3.2).

Table 3.2. Crowd teaching projects dimensions based on Malone et.al.[234]

	What	Who	Why	How
Create	IA project	Teachers, individually	Motivate students; supplant and supplement textbook; increase efficiency	Create personal collection of IA projects
Decide	View IA project	Teachers, individually	Leverage wisdom of crowd, learn from peers	View public IA projects
Decide	Copy IA project	Teachers, individually	Leverage wisdom of crowd, increase efficiency and effectiveness	Copy public IA projects to personal collection

The key motivations for teachers in using the IA include the desire to increase student motivation by using interactive content, to supplement their textbook materials, to increase student understanding using interactive resources, and to increase their efficiency as teachers[235], [236]. Teachers complete these tasks by generating a compilation of IA projects, which they can subsequently opt to share exclusively with their students or make accessible to anyone using the IA platform. Within the "decide" aspect of the IA, teachers have the autonomy to personally decide whether to view or replicate an existing IA project from the public collection.

In the author's opinion, the following population groups could possibly benefit from crowd teaching[237]:

1. The students, having access to more information and open educational resources, using Internet tools which is common for the "digital born" generations in everyday life. Since educational materials like manuals and books are too old and do not fit any more the demands. Crowdsourcing will allow to refrain from using books;

[233]MALONE, T., LAUBACHER, R., DELLAROCAS, C. *Harnessing crowds: Mapping the genome of collective intelligence*. MIT Sloan Research Paper, No. 4732-09. 2009. [quoted 11.03.2019]. Available at: http://ssrn.com/abstract=1381502

[234]Ibidem. MALONE, T., LAUBACHER, R., DELLAROCAS, C. *Harnessing crowds: Mapping the genome of collective intelligence*. MIT Sloan Research Paper, No. 4732-09. 2009. [quoted 11.03.2019]. Available at: http://ssrn.com/abstract=1381502

[235]RECKER, M. Perspectives on teachers as digital library users: Consumers, contributors, and designers. In: *D-Lib Magazine*. 2006, nr. 12(9). [quoted 21.01.2020]. ISSN 1082-9873. Available at: http://www.dlib.org/dlib/september06/recker/09recker.html.

[236]RECKER, M., et al. A study of teachers' use of online learning resources to design classroom activities. In: *New Review of Hypermedia and Multimedia.* 2007, nr. 13(2), pp. 117- 134. ISSN 1361-4568

[237]AWADA, S., SIROTA J. "Crowdsourcing" as one of the innovative tools for Higher Education Development. In: *IJO International Journal of Educational Research*. 2019, Volume 02, nr.10, p.1-11. ISSN 2456-8538

2. The teachers, who can be both designers and contributors and also consumers using other teachers' projects (copying and editing). The educational material is enriched. Collaboration in building teaching materials will be wider; Crowdsourcing will allow to share common materials; the teachers will not have to prepare the same courses and lessons again; Teachers will have an access to high quality and validity databases;

3. The faculty management, getting the teaching staff more motivated and professional without investing more funds. Crowdsourcing tools like Common Core will allow sharing of best practices and teaching tools on an institutional basis; the curricula can improve without breaks due to crowdsourcing. The teachers can distinguish the most effective methods and use them anywhere.

4. Crowdsourcing supplies a transparency and responsibility in creating teaching materials; both teachers and students will be benefited.

5. Crowdsourcing will give a potential for innovations, so that the education quality will improve.

Problem 2: To improve learning and adjust it to the new generations.

Possible solution: Crowd Learning

Research in Education Management has increasingly focused on understanding the sources of learning, particularly in relation to crowd learning. This approach recognizes that learning is dispersed across societies and educational institutions, presenting new opportunities for innovative education methods. Consequently, it becomes crucial to establish the connection between formal education and the generation of knowledge through crowd learning. This entails examining the assessment of crowd learning, exploring its historical development and conceptual framework, and assessing its impact on future learning processes, including the evolving role of instructors (teachers). In the context of crowd learning, students engage in collaborative projects where they actively teach and learn from one another under the supervision of lecturers (instructors, teachers). Through these projects, students acquire the necessary skills to achieve project goals and solve complex problems.

In the author's opinion, Higher education institutions may propose crowdsourcing projects that create or co-create a service to support students and the public. Examples of crowdsourcing projects for content creating in USA are presented in Appendix 14.

In the author's eyes, the following population groups could benefit from this technology:

1. The students: knowing to work in a crowdsourcing surroundings will help a student to develop volunteering principles, will increase her morale level, and will influence building general cultural

and professional skills. Educational crowdsourcing opens a door for socialization in high-technological multi-language network communities, which is a basic element of modern education.

2. The faculty management cutting some costs.
3. Future employers who can get to know the students by their donations to the common projects.

Problem 3: to help all the students and researchers get equal opportunities by funding tuition fees.

Possible solution: Crowd funding

Using the concept of "crowd tuition," students have the opportunity to fund their tuition fees through crowdsourcing methods. Additionally, "crowdfunding" can be utilized to secure resources such as laboratory and classroom materials or funding for students' study abroad programs. Through these crowdsourcing methods, students can seek assistance in covering their university expenses, including tuition fees. Applying crowdsourcing to education enables the optimization of the institutions' budget and a more efficient use of time for learning which in the end leads to student's better results[238]. In education, "crowd funding" refers to the effort of people who network and pool their money through small contributions from many parties, usually via the Internet, to support much-needed funding for education projects[239]. The type of education projects appropriate for crowd funding is very broad and this includes finding ways to finance student education and fund student scholarship. One of the newest trends in crowd funding is raising money for academic research pursuits[240].

The following groups could profit from the crowd funding:

1. The students who get a support in their tuition fees payment and the ones who get scholarships. It gives more equality to the poor students finding it difficult to pay the full education fee[241].
2. Researchers whose ideas are supported by crowd funding.
3. Faculty management whose staff promote the research projects without the faculty funding.

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[238]*ABC*. Exalumnos de la UPV podrán financiar sus estudios a nuevos estudiantes. In: *ABC. Spanish newspaper*. 2012. [quoted 20.02.2019]. Available at: http://www.abc.es/local-comunidad-valenciana/20121115/abci-exalumnos-podran-financiar-estudios-201211151410.html

[239]AWADA, S., HAJAJRA, M., SIROTA, J. Inequalities in Contemporary Labor Market of Higher Education in Israel. In: *Hal'a Journal of the Forum for the Promotion of Teaching and Learning in Israel.* 2020, nr. 1, p. 145-167. ISSN 2709-7455 (print); 2709-7463 (online)

[240]GLEASURE, R., FELLER, J. Emerging technologies and the democratisation of financial services: A metatriangulation of crowdfunding research. In: *Information and Organization*. 2016, nr.26(4), pp. 101-115. ISSN 1471-7727

[241]HAJAJRA, M., AWADA, S. Educational Equal Opportunity Policy: Arab and Bedouin Sector in Israel. In: *Carmel College Israel site*, 2020. http://mcd.org.il/site/wp-content/uploads/2020/05/Article_Mohammad_Equality_Policies_Hebrew.pdf (Hebrew)

4. Future employers who get to know and possibly enroll smart students and staff members of Higher education institutions.

Problem 4: to make career promotion decisions more fair and objective

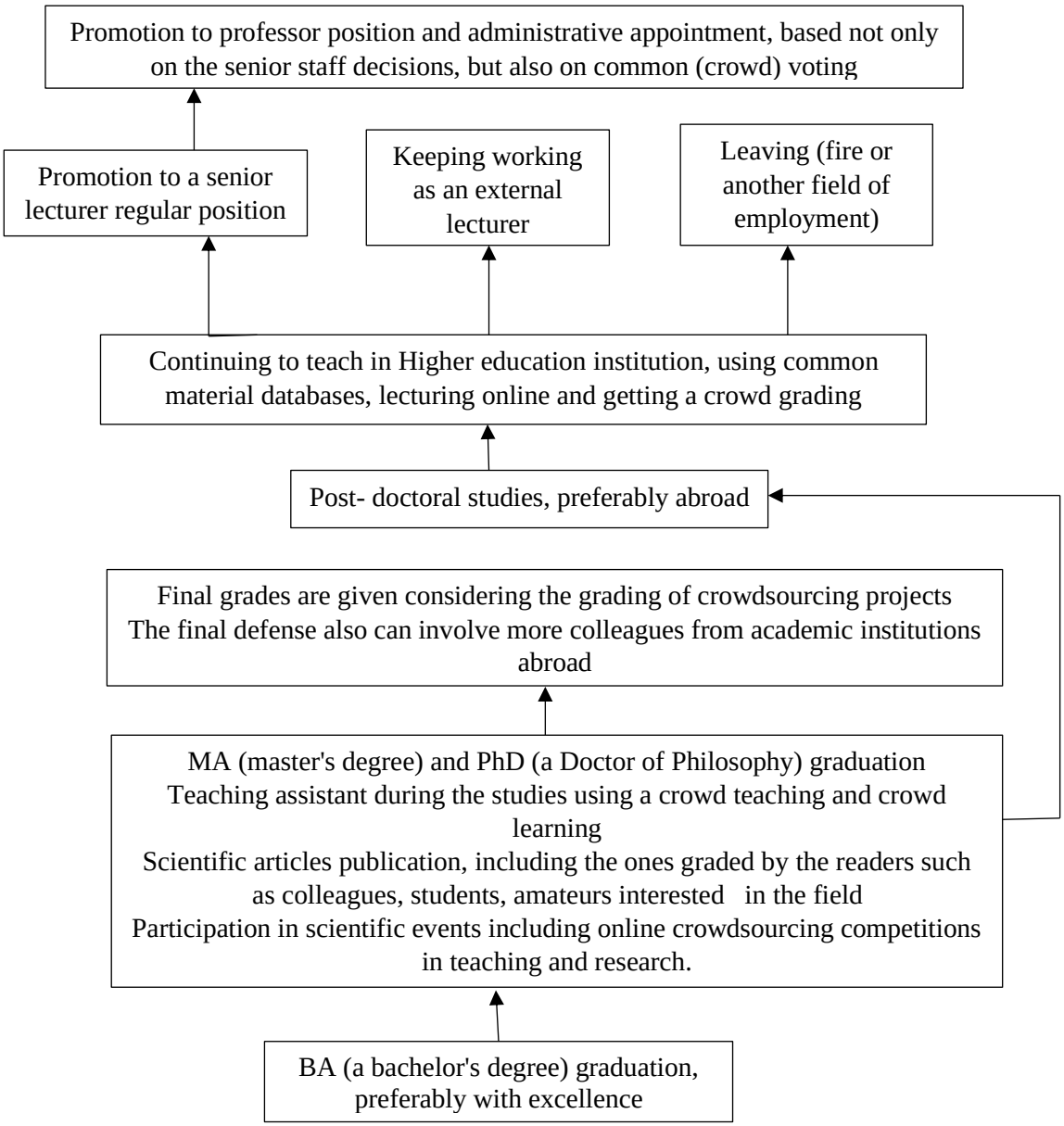

Figure 3.1. Career path of a higher education employee with innovations [proposed by the author]

Possible solution: Crowd voting

This refers to any means of getting the opinion, ideas and decision of the public by way of voting.

Universities and colleges are seen to have used crowd voting for their competition-based initiatives, mostly with the intention to empower students in making decisions[242]. The author proposes to grade some lectures not just by the local students, but also by their peers abroad. Such a voting could distinguish clearer, interesting lecturers who can spread the material to other cultural, social and even language groups of learners.

The career path of a higher education employee described in 2.2 could change into the one described in Figure 3.1 using the crowdsourcing technologies.

According to the scheme presented above, a teaching assistant willing to be promoted and make a career in the Higher education, should develop in a number of fields. In addition to research and regular teaching, she should be graded by listeners from all over the world. Such a competition with other teachers, lecturers and researchers in a certain field could encourage a participant to become better, to make her research more universal and clear, and to make the lectures more interesting for different audiences. It could be fair that the final grading of a student is made not only in the traditional way, but is also based on her success in international and on-line (crowdsourcing) activities, so that the more innovative and creative employees will get more chances to succeed in the future. Finally, it could be fair to promote a lecturer to a senior position using "The Wisdom of Crowds".

In the author's opinion, the following groups could profit from the crowd voting[243]:

1. The students having more power to influence who will teach them (in the case there is a mechanism to get promotion decisions taking the crowd voting into consideration).
2. The academic staff, getting promoted not just in the traditional way when the seniors get the decisions, but also based on the crowd of students.
3. The faculty management, when they are helped in getting promotion decisions.

The following Table 3.3 summarizes the aforesaid problems, possible crowdsourcing solutions and their advantages.

Possible advantages of crowdsourcing in solving educational problems:

[242]CUTLER, K.-M. *OpenVote launches a publishing platform, crowd-voting tool for political debate.* 2016. [quoted 05.11.2019]. Available at: https://techcrunch.com/2016/06/09/openvote-launches-a-publishing-platform-crowdvoting-tool-for-political-debate/

[243]AWADA, S., SIROTA, J. "Crowdsourcing" as one of the innovative tools for Higher Education Development. In: *IJO International Journal of Educational Research*. 2019, Volume 02, nr.10, p.1-11. ISSN 2456-8538

- It allows to cut the costs, replacing the expensive outsourcing services;

Table 3.3. Education problems, possible crowdsourcing solutions and their advantages [elaborated by author]

Problem	Possible solution	Who profits and how
Problem 1: To improve teaching and adjust it to the new "born digital" generations	Crowd teaching	- Materials sharing and better education for the students - Some points for career path of teachers - Additional and free incentive to improve teaching – good for the faculty management
Problem 2: To improve learning and adjust it to the new generations	Crowd learning	- The students: knowing to work in a crowdsourcing surroundings will help a student to develop volunteering principles, will increase her morale level, will influence building general cultural and professional skills - The faculty management cutting some costs - Future employers who can get to know the students by their donations to the common projects.
Problem 3: to help all the students and researchers get equal opportunities by funding tuition fees	Crowd funding	- The students who get a support in their tuition fees payment and the ones who get scholarships - Researchers whose projects are supported by crowd funding - Faculty management whose staff promote the research projects without the faculty funding. - Future employers who get to know smart students and staff members
Problem 4: to make career promotion decisions more fair and objective	Crowd voting	-The students having more power to influence who will teach them - The academic staff, getting promoted not just in the traditional way - The faculty management, when they are helped in getting promotion decisions

- It allows to attract more interested people (students, researchers, donators, future employers) to solving a certain problem;
- It allows to use knowledge and skills of professionals- amateurs, never mind what is their geographic location;
- Assumes a use of distant working.

Disadvantages:

- Sometimes, a quality of work done using crowdsourcing is controversial;
- It is very difficult to predict a time span needed to solve a certain problem;
- It takes efforts to attract people who are ready to invest their resources to solve the problem.

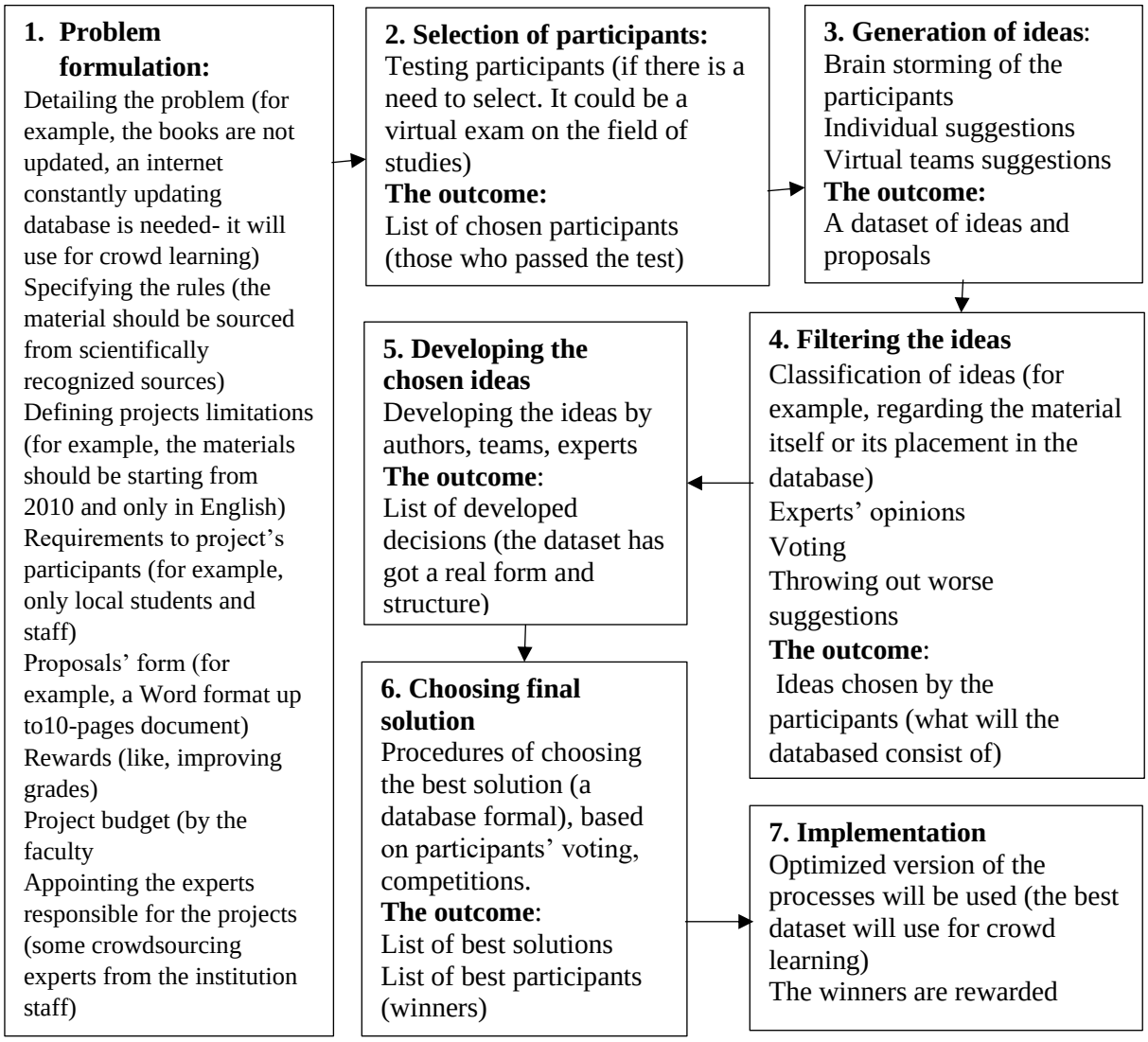

Figure 3.2. Steps of crowdsourcing implementation in educational institution using crowd learning [developed by author]

Sharma[244] presents a three-step approach for effectively managing and implementing ideas in crowdsourcing: gathering, processing, and implementing. Its schematic description is presented in Appendix 15.

In author's opinion, Sharma's model could be adapted to educational institution in the way described in Figure 3.2, where gathering consists of problems formulation and participants' selection, the process is actually the generation of ideas, filtering and developing the chosen ones, choosing the

[244]SHARMA, P. *Crowdsourcing in Higher Education IT*. 2011. Educause Review. [quoted 12.03.2019]. Available at: http://Crowdsourcing%20in%20Higher%20Education%20IT%20_%20EDUCAUSE.html

final solution, and implementation is the seventh stage of the suggested model, also called "implementation".

Based on the crowdsourcing materials, the author also proposes the following model to be used in the Higher education system[245]. This model is more complicated since there is not basic steps like in Sharma's model or the one proposed in 3.2, but there are interrelations (the arrows are two-sided), suggesting that all the three stages may take place simultaneously.

Organization, methodology and staff

First of all, educational crowdsourcing is a project aimed at solving different - level problems of the Higher education institution, based on collect intellectual activity of academic and administrative staff, students, academic and business partners and external experts. The crowdsourcing customer is the initiator of the project within the institution, it could be a special managerial committee dealing with innovations within the institution.

The crowdsourcing experts (managers) are supposed to gather the ideas, choose the most appropriate ones, and implement them, or give the customer recommendation on the final implementation. Crowdsourcing managers are experts who are experienced in leading crowdsourcing projects including generation, gathering, filtering and developing the ideas, they could be recruited from the business and/or programming fields. They determine the scope of the project's work and plan the schedule, resources, budget, communications, etc. These managers can be outsourced from the partners' business companies or can also be recruited by the institution to be responsible for crowdsourcing realization inside the institution, as described in Figure 3.3.

Crowdsourcing participants - a community of people interested in experience and knowledge exchange, looking for new solutions and are ready to active participation in constant organizational improvement of the institution. They could consist of students, lecturers, administration and research staff who are interested to promote crowdsourcing and enjoy its outcomes. Everyone can propose an idea and submit it for further consideration.

[245]AWADA, S., SIROTA, J. "Crowdsourcing" as one of the innovative tools for Higher Education Development. In: *IJO International Journal of Educational Research*. 2019, Volume 02, nr.10, p.1-11. ISSN 2456-8538

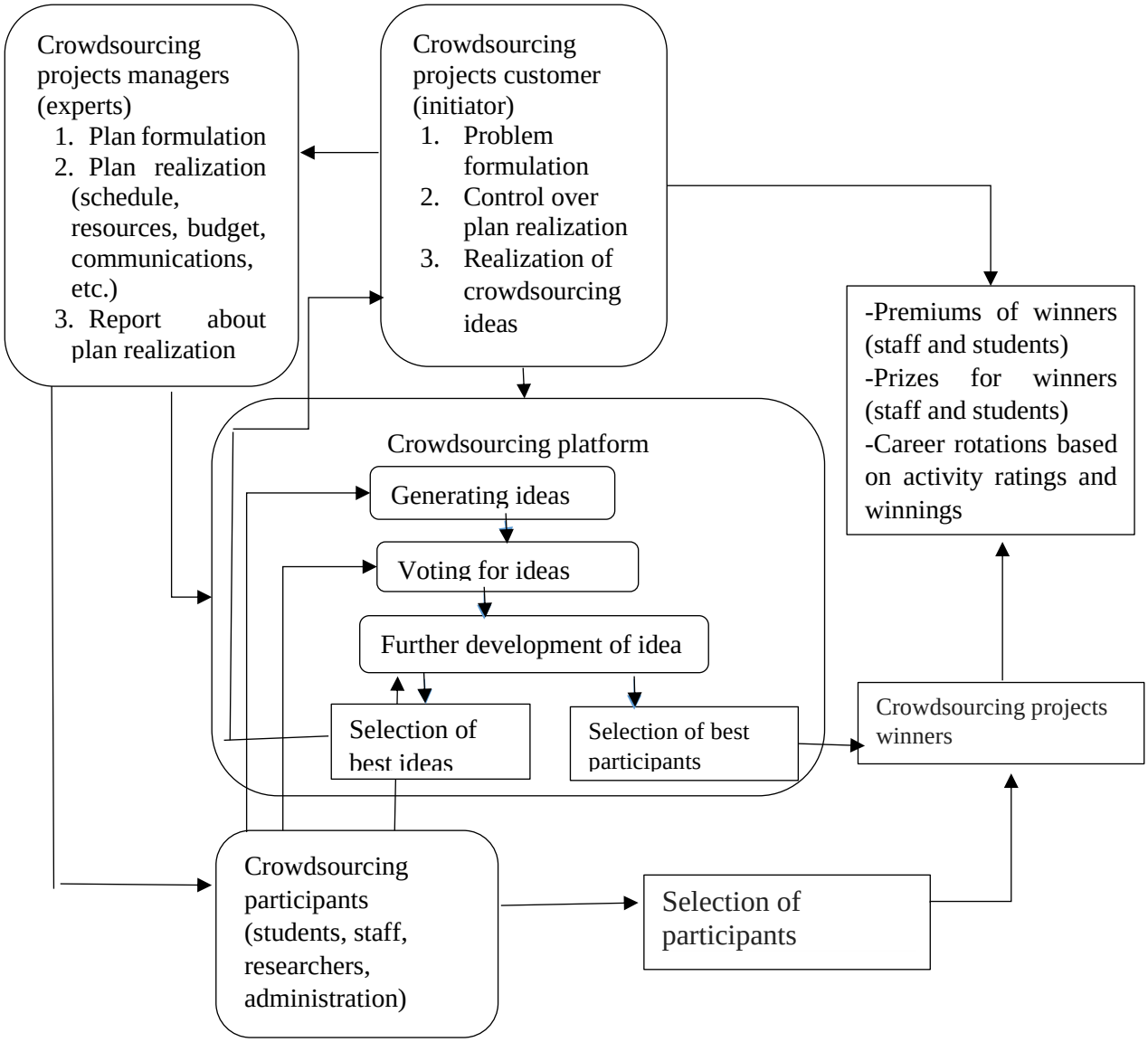

Figure 3.3. Scheme of Higher education crowdsourcing project [elaborated by author]

Crowdsourcing platform could be a site, a set of programs, or mechanism that maintain and supply opportunities for crowdsourcing in order to solve problems. The key element of the platform is the process model the procedure of crowdsourcing is based upon. There are two types of crowdsourcing platforms: external and internal. The external is built based on open innovations principle, it is usually a site with a free access to all the participants. The internal platform is created inside the customer organization, and only its staff have access to it. This platform is able to inform its participants about actual organizational findings and also to recruit staff to developing, financing and realization new ideas in the framework of cooperation within the platform.

An effective organization of the crowdsourcing platform will allow to use the common information space and technology to find and select the most progressive ideas and improvement recommendations. In addition, this platform will create a united monitoring system of innovation activity of customers, staff, faculties' administration, external experts and the institution as a whole. Also, an analysis and evaluation of participants' proposals' effectiveness, to take the best management decisions, which will eventually improve a quality of education in both teaching and learning domain. Generally, it is possible to describe a suggested model of crowdsourcing as participants' activity on the crowdsourcing platform, in the form of virtual teams who develop and improve the ideas, based on customer's (initiator's) order and under control and moderation of crowdsourcing experts (managers). Inside the crowdsourcing platform, there should be also a policy of rating participants for their crowdsourcing activity[246]. Based on the ratings, annual competitions should determine premiums, prizes for developing new innovational ideas. For students, there could be better grades. For lecturers, it can be salary and career improvements. The following principles are the crucial ones' in Higher education crowdsourcing organization and participations recruitment[247]:

- Correct problem formulation to be solved by the institution administration and faculties' management and by the participants (staff, students, researchers, potential employers);
- Organization of working in teams;
- Creating of new methods of participants' motivation- a transition from individual to team motivation;
- Building experts' communities in different fields of educational projects;
- Supplying effective ways of communications between the participants when looking for a solution;
- Looking for best ideas using the participants;
- Using filtering mechanisms, like ratings (based on voting of participants);
- Concentrating efforts on best solutions;
- Achieving a maximal amount of active participants.

[246]AWADA, S. Actuality of management technologies adaptation at the higher education labor market of Israel. In: *EcoSoEn*. 2020, An.3, nr.1-2, p. 137-142. ISSN 2587-344X

[247]AWADA, S., SIROTA, J. "Crowdsourcing" as one of the innovative tools for Higher Education Development. In: *IJO International Journal of Educational Research*. 2019, Volume 02, nr.10, p.1-11. ISSN 2456-8538

At the project completion stage, managers analyze the effectiveness of the project as a whole, as well as the effectiveness of participation in the project of each of its participants. This helps the project team determine how well the achieved results correspond to the set goals, what are the reasons for deviations, and what measures need to be taken to eliminate the identified deficiencies.

3.2. Virtual education as a new technology at the labor market of future teachers

In today's fast-changing technological landscape, employers frequently need to adjust their expectations of employees. This highlights the importance of analyzing labor market trends to identify the most crucial and valuable skills that students should acquire. By enhancing the education system and its quality based on these insights, we can better prepare students for the evolving demands of the workforce market[248].

The Covid-19 crisis in the world, which began in 2020 and influenced greatly all the fields of life, made problems existing at the labor market even more acute. Due to the crisis, both the labor and the academic world had to adjust quickly to transition from working within an organization (like plant, factory, academic institution etc.) to working distantly, usually from home. There was no time to prepare to such a quick change, although distant technologies already existed and were partly implemented. After being made to switch to studying and working remotely, many students and even more lecturers in Israel complained about distant mechanisms and their drawbacks, but there were some advantages found, and today Israeli Ministry of Education and academic institutions empower their infrastructure, in order to be more prepared to the new era of digital, distant and virtual learning and teaching.

Occurrence of virtual universities in different countries of the world, which are financed by governments, is a widespread tendency. According to the Unesco data[249], building up national virtual universities allows governments: -to concentrate high-quality technologies and human resources; -to focus attention of a virtual university on current needs of a national labor market and education system; - to use and develop the existing infrastructure of Internet-technologies; - to support

[248]GORDON, J., et.al. *KeyCoNet 2013 Literature Review: Key competence development in school education in Europe*. Key Competence Network on School Education, 2014. 143 p.
[249]D'ANTONIONI, S. *The virtual university: Models and messages*. [quoted 08.10.2019]. Available at: www.unesco.org/iiep/virtualuniversity/home.php

development of computer-based learning in traditional institutions; -to compete with foreign programs of virtual learning;- to export education to another countries[250].

Virtual universities can be classified into the following models:

- consortium model; cooperation of a number of universities, sometimes from different countries, who have common teaching platform, materials and even courses;

- traditional universities which propose e-learning on some specific curricula;

- educational institutions of distant learning;

- virtual universities.

The Open University in Israel is among a limited number of Israeli universities that hold recognition from the Council for Higher Education. It is different from the others in its admission requirements- anyone who wishes is able to get into BA (Bachelor degree) studies, without any conditions like matriculation diploma, a psychometric exam grade or admission tests. The teaching methods of the Open University combine between traditional and distant learning based on technology. The degree is received if a student successfully passed all the exams and made other assignments which were a must. English language knowledge is demanded. Most of the degrees of the Open University are BA, there are a few MA (Master degree) programs, which admission requirements are similar to those used by other higher education institutions.

Nowadays, lecturers at universities and academic colleges are facing major challenge – they must find a way to bridge between research and teaching. On the one hand, they are required to proceed with their scientific researches which have to be regularly published. On the other, they are expected to be high-quality teachers and to answer needs and expectations of their students. In Israel, the impression is often made that the research is more important than teaching. This claim is supported by the survey which was conducted by the Israeli students union where half of the respondents-students pointed out that the quality of teaching in education institutions is poor, and students' satisfaction with the quality of teaching is reducing[251]. The ratio between the number of students and the number of senior lecturers is getting higher, which means that the availability of the teaching staff to the students' community is quite low, compared to most of the western countries[252].

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[250]BATES, T. *Technology, e-learning and distance education*. London: Routledge, 2005. 246 p. ISBN 0-415-28437-6

[251]*Students union in Israel*. Students' annual survey on issues of welfare. 2017. [quoted 20.02.2019]. Available at: https://www.nuis.co.il/%D7%A1%D7%A7%D7%A8-%D7%94 (Hebrew)

[252]*Quasquarelli Symonds [QS]. QS World University Rankings*. 2019. [quoted 20.02.2019]. Available at: https://www.topuniversities.com/university-rankings/

Traditional education in Israel and other countries is undergoing a crisis due to its non-availability, conservatism, locality, limitations. The classical model of teaching and learning becomes an obstacle to educational development. An individual in a modern world cannot be satisfied with the same knowledge, it needs to be constantly enriched, and so there is a need to learn how to find the right way in the information-loaded environment. The teachers of the future should be prepared to the virtual technologies and methods of education[253].

The globalization processes cause education systems and its staff of different countries and regions to be more uniform, more flexible and international. For example, the Bologna process brought to determining uniform academic and structural standards in Higher education institutions, which allowed students to study in a number of institutions and counties at the same time. Many universities maintain programs for foreign students, other establish local departments in other countries, which culture is sometimes very different from the original one[254]. In addition, technological developments change the manner of teaching – there are virtual courses with a huge number of participants which are taught in a way of "distant learning", using virtual tools like Moodle, which accompany studies making students' physical presence unnecessary.

In order to improve the quality of teaching among lecturers and learning among students, to make an education more open and accessible for all, the author proposes innovative ways of virtual education to be used in technologies of the Higher education staff training.

An online school (virtual school or e-school, or cyber-school) teaches students entirely or primarily online or through the internet. It has been defined as "education that uses one or more technologies to deliver instruction to students who are separated from the instructor and to support regular and substantive interaction between the students" [255].

Distance education or long-distance learning is the education of students who may not always be physically present at a school[256],[257]. In the past, this typically entailed correspondence courses

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[253]AWADA, S. Innovational virtual education as a new teaching technology. In: *Стандартизация – инструмент повышения конкурентоспособности и интеграции казахстанской продукции в мировую экономику. Сборник материалов международной научно-практической конференции, 24 октября 2019*. Kazakhstan, Nur-Sultan: Kazakh Agro Technical University. S. Seifullina, 2019, c.6-9. ISBN 978-601-257-193-6.

[254]TANGE, H. *Caught in the Tower of Babel: University lecturers experiences with internationalisation*. Language and Intercultural Communication, *10*(2). 2010, pp.137-149.ISSN 14708477

[255]ALLEN, E., SEAMEN, J. *Distance Education Enrollment Report 2017*. Digital Learning Compass. 2017, 39 p. [quoted 16.10.2020]. Available at: https://onlinelearningsurvey.com/reports/digtiallearningcompassenrollment2017.pdf

[256]ANDERSON, T. *Theory and Practice of Online Education* (2nd ed.) Edmonton: Athabasca University Press. 2008, 472 p. ISBN 9781897425084

[257]ANDERSON, T., DRON, J. Three generations of distance education pedagogy. In: *The International Review of Research in Open and Distance Learning*. 2010, nr.12(3), pp. 80-97. ISSN 1492-3831.

where students communicated with the institution through mail. However, nowadays, it primarily involves online education methods. A distance learning program can be completely distance learning, or a combination of distance learning and traditional classroom instruction (called hybrid or blended)[258].

When establishing the distance learning program or even distance learning institution, information technologies and telecommunication systems and their development are of huge importance. The most common scheme of distance learning is presented in Figure 3.4. Distance learning is a complicated object consisting of educational resources, processes, communication technologies. Distance learning is realized using e-learning or m-learning[259].

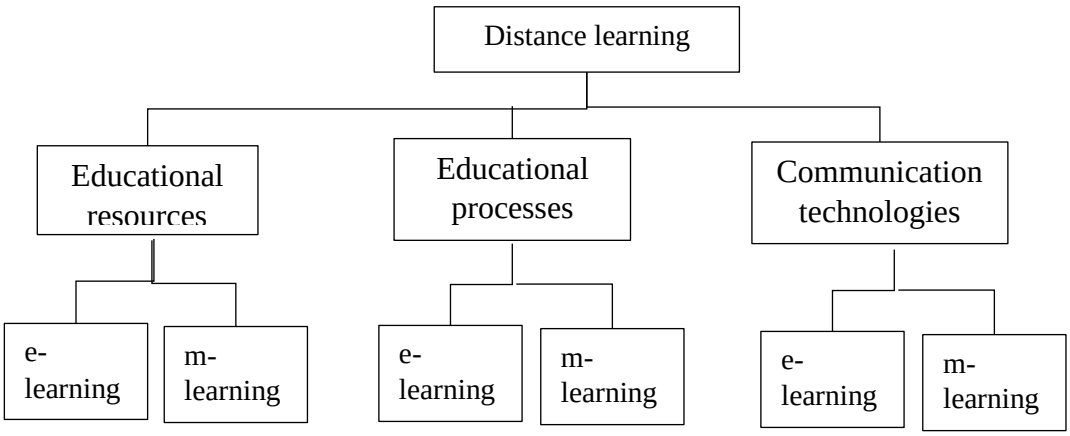

Figure 3.4. Schematic description of distance learning structure[260]

E-learning technology (Electronic learning) is a system of electronic, distant learning, learning using a computer, learning using networks and information technologies[261].

E-learning technologies might consist of the following versions: - working independently with electronic materials, using a personal computer, mobile phone, DVD-player, TV; - getting consultations, advices, evaluations distantly from an expert (teacher, lecturer), interacting from (geographical) distance;- creating a community of users (social networks) to conduct a common educational activity; - creating and improving an informational culture of organizations' management and sub-groups, in order to increase their usual activity effectiveness; - Using innovating pedagogical

[258]BATES, T. *Technology, e-learning and distance education*. London: Routledge, 2005. 246 p. ISBN 0-415-28437-6
[259]ЦВЕТКОВ В.Я. Мобильные образовательные технологии. В: *Современные наукоемкие технологии*. 2008, № 12, с. 32–34. ISSN 1812-7320
[260]Ibidem. ЦВЕТКОВ В.Я. Мобильные образовательные технологии. В: *Современные наукоемкие технологии*. 2008, № 12, с. 32–34. ISSN 1812-7320
[261]CLARK R.C., MAYER R.E. *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. New York: John Wiley & Sons, 2016. 528 p. ISBN: 978-1-119-15866-0

technologies and helping teachers to use them; - a possibility to develop educational web-resources; - availability of higher education to individuals with special physiological-psychological needs[262].

E-learning technology is one of the most important tools allowing to create and transfer knowledge. It uses a wide variety of methods of distant training and learning, making possible to choose the most suitable tool in relation to personal characteristics of the educational services' customer, her profession, employment conditions, not cancelling a "face to face" dialog with a teacher when it is required[263]. M-learning or mobile learning is "learning across multiple contexts, through social and content interactions, using personal electronic devices". M-learners utilize educational technology on their mobile devices whenever it is convenient for them[264].

Distant learning advantages:

1. Obviously, the major advantage of distant learning over the traditional one is the fact that the number of students is not limited. The same lesson may be distributed for a large group of virtual participants. As a result, teaching hours and physical classes costs are saved, the course materials are available on line all the time.

2. Distant learning is a solution for population groups who are far away from the academic institutions and have no chance to get at the class physically (for example, students who combine their studies with work, old people who find it difficult to travel). Learning from distance is very convenient for these population groups, allowing them to preserve their usual way of living (family, career, and geographical distance) with learning. Lessons may be looked over again any time, tasks may be submitted virtually, and a constant connection with a teacher is also possible[265].

3. Education is really important today, which sometimes causes inequalities and gaps between different ethnic, religious and socio-economic sub-groups of population. Distant learning may help to reduce these gaps by developing technologies, which is becoming cheaper all the time. For those who are accepted to higher education studies but cannot make it from socio-economic reasons, distant learning may be a solution, making them into virtual students without hurting the teaching quality[266].

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[262] Ibidem. CLARK R.C., MAYER R.E. *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. New York: John Wiley & Sons, 2016. 528 p. ISBN: 978-1-119-15866-0

[263]MORTERA-GUTIÉRREZ, F. Faculty best practices using blended learning in e-learning and face-to-face instruction. In: *International Journal on E-learning*. 2006, Vol. 5, nr. 3, pp. 313–337. ISSN 1537-2456

[264]CROMPTON, H. A historical overview of mobile learning: Toward learner-centered education. In: BERGE, Z. L., MUILENBURG, L. Y. (Eds.). *Handbook of mobile learning*. 2013, pp. 3–14. Florence, KY: Routledge. ISSN 2148-7278

[265]ANDERSON, T., DRON, J. Three generations of distance education pedagogy. In: *The International Review of Research in Open and Distance Learning*. 2010, nr.12(3), pp. 80-97. ISSN 1492-3831.

[266]AWADA, S. Экономическое содержание рынка труда - особенности Израиля. В: *Наука и инновации – стратегические приоритеты развития экономики государства*. *Материалы VII Международной научно-*

4. Distant learning makes it possible to for each student to study in her own speed, concentrating on the individually chosen issues. If part of material was not so clear during the lesson, a student has an opportunity to get back to it later and to close the gaps. In addition, a student who missed the class, may open it in the virtual version and study the material she missed.

5. Distant learning allows personal interaction between the participants, cooperation and information exchange between students from different cultures and regions. All the global village citizens may be united under common subjects and fields of interests.

Distant learning disadvantages[267]:

1. There is a feeling of isolation and a distance from the social world in the distant learning. A student sitting alone in front of her computer may feel apart from the lecturer and other students, a personal interaction is not created, which could contribute to her success in studies (preparing homework assignments, learning at the lessons together). A student might even feel frustrated and non-belonging since a lack of human closeness and learning brotherhood which sometimes is created during traditional studies. The traditional way of studies makes social skills necessary, when meeting with lots of different people and opinions, and promotes the development of intellectual abilities.

2. Technological barrier – is an obstacle for many students in the era of constantly developing technologies. It is not easy to lots of people to use a computer, requires a period of adaptation and frustrates them causing pressure and anxiety. For these students, a use in distant learning is not efficient and even narrows a number of possibilities for learning. Some researches demonstrate that older population suffers more from this problem, since their adaptation is longer and slower[268].

3. Distant learning requires a high motivation, since the learning is mostly made individually. The social pressure of teachers and peers to study is relatively low, the feeling of competitiveness is not present in the distant learning. Students with low motivation to study are able to delay it, since distant learning is "anywhere and anytime". As a result, a percent of dropping out among students of

практической конференции, спецвыпуск, 05 февраля 2016. Казахстан: Костанайский инженерно-экономический университет имени М. Дулатова, 2016, с.18-22. ISSN 1684-9310.

[267]AWADA, S. Innovational virtual education as a new teaching technology. In: *Стандартизация – инструмент повышения конкурентоспособности и интеграции казахстанской продукции в мировую экономику. Сборник материалов международной научно-практической конференции, 24 октября 2019*. Kazakhstan, Nur-Sultan: Kazakh Agro Technical University. S. Seifullina, 2019, c.6-9. ISBN 978-601-257-193-6.

[268]GILTOW, L. Technology Use by Older Adults and Barriers to Using Technology. In: *Journal of Physical & Occupational Therapy In Geriatrics.* 2014, Vol. 32, nr. 3, pp. 271-280. ISSN 0270-3181

institutions actively using a distant learning is higher than those that prefer the traditional way of teaching[269].

4. Both students and teachers might be hurt from the distant learning. In the traditional teaching, a teacher and a student get to know each other, and the teacher knows the strong and weak points of her student, unlike the distant learning modes, where there is not personal interaction and a teacher cannot recommend a student which are the issues she should focus on. A teacher does not get a feedback on her teaching studies materials, since the students cannot evaluate a teacher's abilities and skills. Like the students, some teachers also find it difficult to use computer technologies[270].

5. There are some disciplines like physics, biology and chemistry, which need a laboratory lessons, making experiments and dealing with materials as an un-separable part of the studies. They are very hard to teach using a distant learning mode. Some developments are made in order to find a solution to this need in the framework of distant learning, however there is no a complete solution yet.

The rapid changes in all the fields of life are so quick, that traditional education systems are not able anymore to prepare professional human resources in any field in a way that they will not suffer from lack of some crucial skills at any stage of their career, stemming from inability to catch up with the changes. Knowledge of virtual technologies are very important in a career path of any professional, especially a teacher.

In order to use virtual technologies in training of future teachers, a proper preparation is needed, including: software platform, curricula, management, manuals and guides explaining how to implement the technology, individual instructions and consultations, special training of teachers. The scheme developed by the author describes a model of virtual education environment organization for training a future teacher (who has no experience in the labor market) to use innovational technologies.

A teacher is a bearer of content, educator, having a system-based view on the process, contents, and a pupil is a subject of the teaching-learning process (Figure 3.5). Preparing teachers in conditions of virtual education environment can be viewed as a constant training of pedagogical staff- teachers, consultants, and school principals.

[269]FRASER, K. *The future of learning and teaching in next generation learning spaces.* Bradford: Emerald Group Publishing Limited, 2014. 383 p. ISBN 9781783509850

[270]GILTOW, L. Technology Use by Older Adults and Barriers to Using Technology. In: *Journal of Physical & Occupational Therapy In Geriatrics*. 2014, Vol. 32, nr. 3, pp. 271-280. ISSN 0270-3181

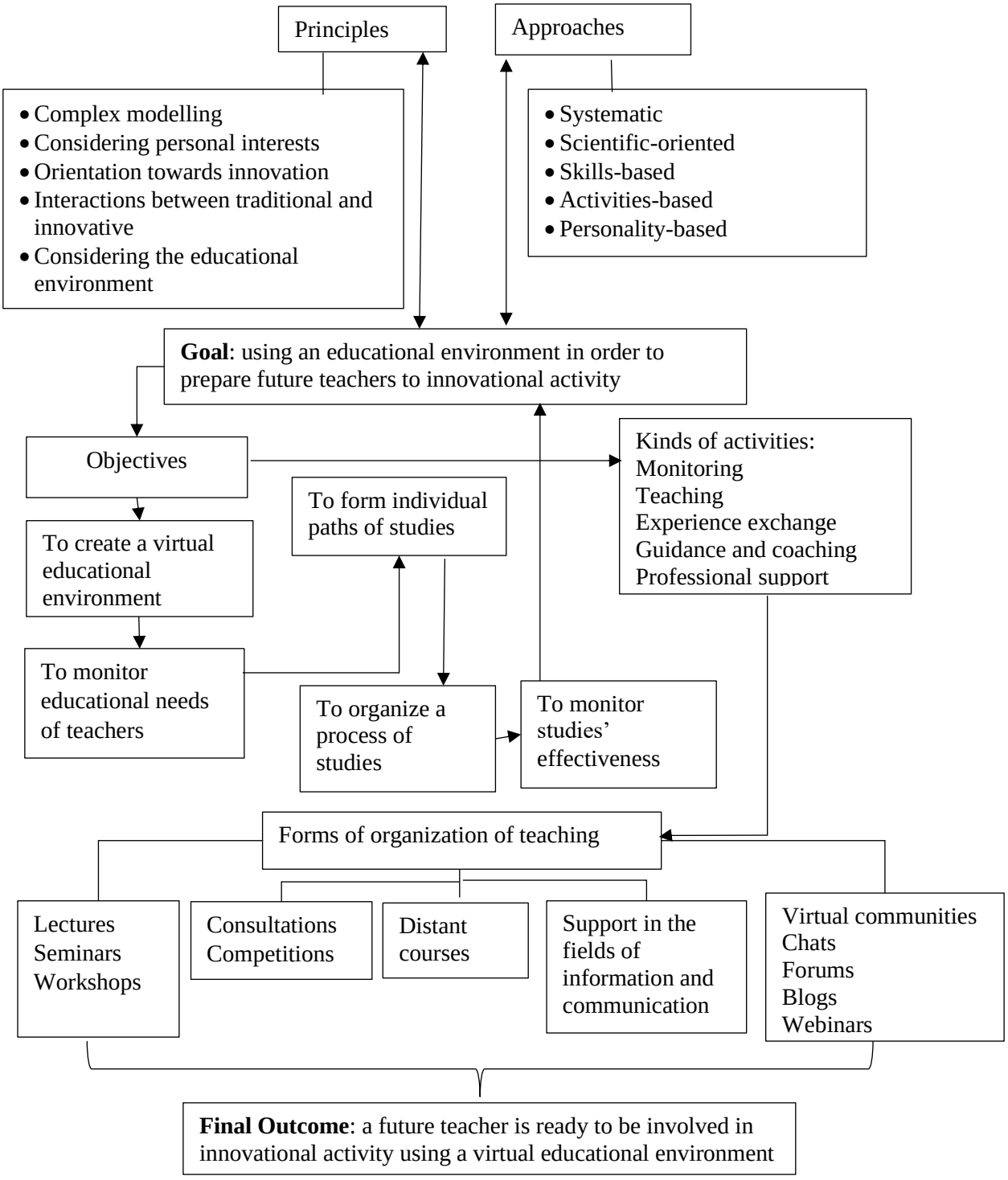

Figure 3.5. Possible model of virtual education environment organization for training a future teacher [elaborated by author]

When preparing school human resources to innovational activity in a virtual education environment, the main objectives are the following ones:

- Stimulation and development of intellectual activity of the pupils, involvement of pupils in gathering, choosing, developing and organization of materials;

- Increasing motivation for constant professional growth;

- Granting the teachers new skills of constant professional studying and self-studying;

- Developing teachers' skills suitable to innovational pedagogical activity, like critical and creative thinking, communication and reflection skills;

- Looking for an individual style of innovational pedagogical activity.

When preparing school human resources to innovational activity in a virtual education environment, the main principles are the following ones:

- A principle of activeness and independency of the future teachers, meaning they have an inner motive to get more educated;

- A principle of common activity of teacher and the taught regarding planning, realization, evaluation and correction of the learning process;

- Ability to solve problems in a way of dialogues and being practice-oriented in interaction of the process pf studies;

- Studies are a part of a whole system;

- Reflectivity principle, meaning that the pupils are involved in comprehended in all the dimensions of the process of studies, ways of acting, and their own changes;

The following approaches to organization of the virtual education are used:

- Personality-based, taking into account personal characteristics of the pupils;

- System- based (taking into account the combination of all the factors of studying);

- Skills-based, aimed to develop certain skills;

- Activity-based, taking into account future professional activity.

Monitoring is a specific activity aimed at evaluation of a state of the observed object, tracking its current changes and forecasting future changes. The main objectives of monitoring are:

- To gather a valid and true information about the object of monitoring;

- Building up suitable databases;

- System analysis and evaluation of the gathered information;

- Providing the suitable controlling members with the right information;

- Preparing suggestions regarding the organizational activity in the file on monitoring.

The final output of the model of virtual education environment organization for training is a future teacher able to:

- Teach distantly in a virtual educational environment;
- To build and plan a course in a virtual framework;
- To teach through internet, using modern technologies of net communications;
- To create a virtual electronic course on a discipline;
- To use net abilities in order to constantly improve professional education, self-learning, improving professional skills, exchange experiences, to get more information about pedagogical innovations etc.;
- To be able to conduct a "virtual discussion" (in which it is important to be short, precise, clear) , to reflect more during communication, and develop more logical skills;
- To use modern principles of teaching and learning (individualization, practice- orientation).

Occurrence of virtual universities in different countries of the world, which are financed by governments, is a widespread tendency. According to the Unesco data[271], building up national virtual universities allows governments:

-to concentrate high-quality technologies and human resources; -to focus attention of a virtual university on current needs of a national labor market and education system; - to use and develop the existing infrastructure of Internet-technologies; - to support development of computer-based learning in traditional institutions; -to compete with foreign programs of virtual learning; - to export education to another countries[272].

According to the experts, virtual universities can be classified into the following models:

- consortium model; cooperation of a number of universities, sometimes from different countries, who have common teaching platform, materials and even courses;
- traditional universities which propose e-learning on some specific curricula;
- educational institutions of distant learning;
- virtual universities.

The Open University in Israel is one of a few Israeli universities which are recognized by the council for higher education. It is different from the others in its admission requirements- anyone who

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[272]BATES, T. *Technology, e-learning and distance education*. London: Routledge, 2005. 246 p. ISBN 0-415-28437-6

wishes is able to get into BA (Bachelor degree) studies, without any conditions like matriculation diploma, a psychometric exam grade or admission tests. The teaching methods of the Open University combine between traditional and distant learning based on technology. The degree is received if a student successfully passed all the exams and made other assignments which were a must. English language knowledge is demanded. Most of the degrees of the Open University are BA, there are a few MA (Master degree) programs, which admission requirements are similar to those used by other higher education institutions.

Game models of virtual learning and their innovational advantages for training future generations of teachers.

Different kinds of e-learning are already used in education and training in many countries. However, still new experts in any discipline are trained in the framework of traditional lectures-seminar methodology. The educational process consists of lectures, practical tutorials, laboratory lessons, control programs and so on. This methodology's effectiveness was proved for years and it very acceptable in the higher education field. However, problems appear and a traditional way of thinking is not working any more. More dynamic methods of teaching are required, to solve problems of the following kind:

1. Forming competencies and skill for situation from the real life, which are not enough presented in the existing and old educational curricula and plans.

2. Acquiring an experience of research, making projects and establish an industrial activity quickly with the lowest possible costs.

3. Organization of effective adaptation of the student to her future job conditions.

4. Developing creative skills, as least, the ability to define goals.

The practice demonstrates that technologies of teaching that use virtual game models are a useful tool to solve the aforesaid problems[273]. Dynamic game models are active methods of learning, urging the student to participate actively and creatively in the process of learning. The basic terms of these models are "situation model" and "visual model". The visual models reflect the situation and make it crucial for the student to formulate the problem conditions. Such a model imitates real processes, conditions and problems, which make it easier for the students to build up some necessary

[273]CLARK R.C., MAYER R.E. *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. New York: John Wiley & Sons, 2016. 528 p. ISBN: 978-1-119-15866-0

skills, in order to solve the problems. Real processes imitation is done using visual representation. As a result, an analytical thinking is being formed.

A visual game is an additional description and representation of the situation using visual aids and cognitive graphics. It improves the analysis efficiency. Visual model consists of: goals of solving problems, visual description of the situation, rules of going over the scenario.

When developing a model, 2 kinds of goals are usually defined:

1. Object-based goals, like: ability to find the direction in a given object-based field;

2. Pedagogical goals, like: - making earlier basic and professional knowledges stronger; - self-evaluation and self-testing; -forming competencies and skills; - forming system-based knowledge based on narrow-professional knowledge; - accordance of professional level the quality requirements; - acquiring new skills and abilities.

Thus, using technologies of teaching based on virtual visual dynamic models will allow to create a system-based approach in students' perception towards solving problems, to empower the existing basic knowledge, which was acquired in a traditional way of lectures-tutorials, to get new skills of working in an industry-based community. The author proposes to use the approach of integration these technologies in the existing educational process (Figure 3.6).

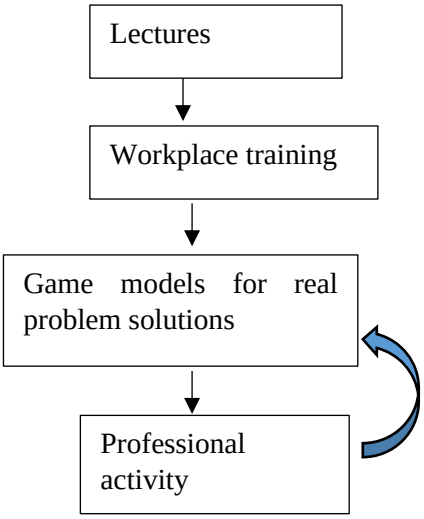

Figure 3.6. Use of technologies of teaching based on virtual visual dynamic models in the process of professional training [elaborated by author]

The processes of lectures and practical trainings (at the workplace) are enriched by technologies using virtual game models, in which real situations' descriptions are a very important component. The back direction from the field of professional activity to the models should be noted,

since it allows to model real life situations, making a future professional more prepared and skilled. The scheme presented in Figure 3.6 is implementable both for preparing professionals in a higher education and in training the experienced experts. Use of technologies based on virtual models makes it possible to connect between studies and working experience, generalizing the experience that was acquired and gathered in the professional field. An expert in a training program studies to get real-life decisions and to complete tasks based on her real experience. In this form of learning, real life situations and processes in a chosen field are created.

A virtual game may be developed for a certain discipline or a number of disciplines. The information for the game should be gathered from 3-5 real companies existing in the labor market, who are actually potential employers of the students (like schools who will accept teachers, higher education institutions who will employ lecturers, and research and development institutions, who look for scientists, and even business organizations who look for entrepreneurs). The real-life situations from the labor market should be modeled in the games, in the economic, marketing, financing, information and other aspects, based on real experience and problems the aforesaid companies are used to solve. The situation model is a reflection of real-life situations and processes, in order to form an analytical thinking. Dynamic visual model is an active way of teaching that uses an imitation of a real object under consideration for solving practical problems, making a feeling of decision maker as real as possible. Eventually, teaching technologies using visual dynamic models deal with real life managerial decisions making based on a dialog- based content[274].

The visual game solves problems using cases and strategies (or both).

A strategy in a game is a full plan of actions for all possible situations that may occur. A strategy defines an action of a player for any given moment and any turn of the game, bringing about a certain situation.

The method of cases is characterized by the following[275]: there is a complex problem and the solution is not immediate; a teacher formulates questions related to the problem; there are competing groups of solvers; the groups develop versions for solution of the problem; the versions of solutions are discussed; the versions are evaluated by their effectiveness and conclusions are made.

[274]ЦВЕТКОВ В.Я. *Мобильные образовательные технологии.* Современные наукоемкие технологии. № 12. 2008, С. 32–34. 7. ISSN 1812-7320

[275]MCGONIGAL, J. *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*. London: Penguin Publishing Group, 2011. 416 p. ISBN 1101475498

In cases, generally four kinds of situations are used:

- Situation- illustration – is used to present visually the device, method, object or process;
- Situation-training- is used to learn the rules, assumptions, methods of solving for typical and frequent problems;
- Situation- evaluation – is used to evaluate a level of effectiveness of the chosen strategy;
- Problem-oriented situation (real or modeled) – is used to solve a specific problem.

The cases game method allows a search for the right solution during a lesson.

As a result of a game, the students-participants will build up solutions for the companies who volunteered to supply their problems and information about the companies. The solutions will be presented to companies' representatives, who will evaluate the proposed solutions and decide whether their companies should implement the solutions. Later on, an electronic version of the game should be made. Is can be used both inside the institution for the local students and on the crowdsourcing platform for local and outside participants. The following scheme presents an algorithm for the game use of virtual education.

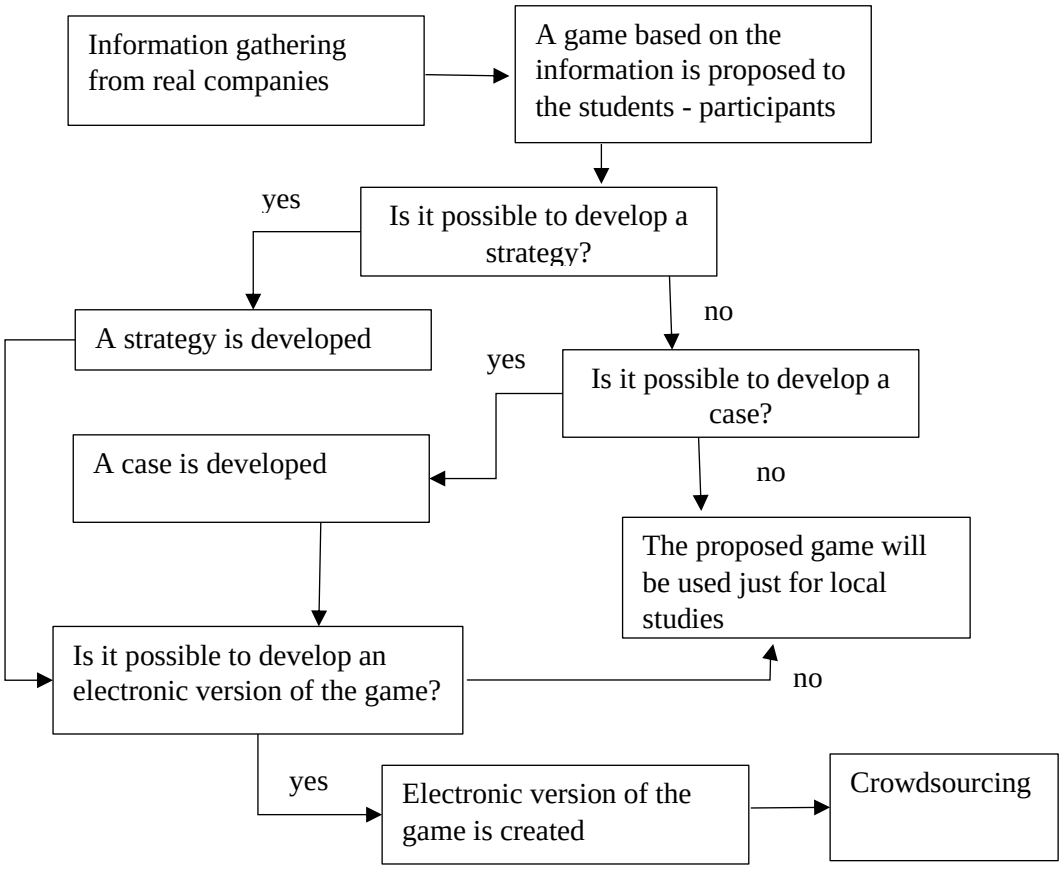

Figure 3.7. An algorithm of creating virtual situation games [elaborated by the author]

This technology is successful way to solve problems of traditional distant education. It allows to get skills and competencies faster and more effectively, to learn how to think creatively and systematically. Real situations and visually programmed games connect the student directly to solving the problems. A teacher is actually a mediator who may interpret the situation and explain how she perceives it. Sometimes the teacher is not even needed. This way of learning improved future experts' qualifications and skills and also makes them more creative personalities.

There are scientists who claim that technologies' development will eventually have some negative consequences on social competencies' development[276]. There is a threat that working with machines and computers will decrease a development of flexible skills. However, with the growth of technologies' use there are much more professional contacts and collaborations and much more business correspondence. Therefore, the scenario of growing cooperation is more reasonable, meaning that social and communication skills will be in need. The field of higher education will be probably more characterized by increasing the involvement of a student into the educational process, creating additional, the virtual one, infrastructure and realizing there is a need to study all the time.

3.3. The mechanism for adapting management technologies to the needs of the Israeli academic labor market

Adaptation mechanism of management technologies in the field of Higher education of Israel is crucial. To meet the evolving demands of the labor market, there is a need to enhance the current process of recruiting academic staff in higher education. Right now, there is no a well-defined mechanism of attracting teaching and researchers' staff to academic institutions in Israel. For this end, the management system of Higher education needs to be modernized, especially in the field of human resources management. An effective human resources politics should be implemented in Higher education institutions, innovative approaches should be used in recruiting and evaluation of academic staff members[277]. As was shown in chapter 2, the labor market of Higher education staff in Israel experiences non agreement between supply and demand, which is expressed in over-qualification of workers, lots of highly educated employees who do not get promoted and leave the system very

[276]PRZYBYLSKI, A.K., RIGBY,C.S., RYAN, R.C. *A* Motivational Model of Video Game Engagement. In: *Review of General Psychology.* 2010, nr.4, pp. 155-156. ISSN 1089-2680

[277]LAVROV, E. et al. Development of adaptation technologies to man-operator in distributed E-learning systems. In: *2017 2nd International Conference on Advanced Information and Communication Technologies* (AICT). IEEE, 2017, p. 88-91. [quoted 01.01.2023]. Available at: https://ieeexplore.ieee.org/xpl/conhome/8014337/proceeding

disappointed, and as a result- strikes and struggles between Higher education institutions administration and their teaching staff lately.

In the author's opinion, the traditional human resources management technologies should be used in Higher education of Israel, but in a more adjusted, technology-based and effective ways. New management technologies of the globalization era will also contribute a lot to the effectiveness of Higher education.

There are five most common used methods of traditional Human Resources managers in other fields, the author proposes to use them in the Israeli Higher education field as well[278]: recruiting, preliminaring, screening, headhunting, and exclusive search (they were mentioned in chapter 1):

Recruiting is the most common method of looking for employees. It does exist in Israel, but there are no special recruitment experts companies in Higher education. The author suggests establishing such companies (maybe, using an outsourcing technology which was described in chapter 2) for Higher education institution. In our opinion, this will make a process of looking for the right candidates more effective and fast. A crowdsourcing (described in chapter 3.1) should also be used when getting a decision who will be hired. This technology will contribute to new academic staff who will be hired more quickly and effectively and the university management, who will find it easier to hire new lecturers and researchers. Screening is also recommended, and its goals are similar to the recruiting.

Preliminaring could help young academic employees to get to know their job, colleagues and the institutions with its organizational rules and culture better. Head hunting and exclusive search are effective technologies of local institution's managements to choose the best members of its staff to be promoted.

The use of the aforesaid technologies and approach to their use should change, using the following innovative methods:

1. Life Long Learning is defined as "ongoing, voluntary, and self-motivated"[279] pursuit of knowledge for either personal or professional reasons and may take the following forms which can be useful in the future:

[278]MATHIS, R. L., JACKSON, J. H., VALENTINE, S. R., MEGLICH, P. *Human resource management*. Cengage Learning.2016. ISBN 130585618X

[279]*Ireland. Department of Education and Science*. 'Learning for Life: White Paper on Adult Education'. Dublin: Stationery Office, 2000. 226 p. ISBN 9780707664507

- Homeschooling refers to the process of acquiring knowledge and skills outside of traditional educational settings, focusing on self-directed learning and the development of informal learning patterns;
- Adult education or the acquisition of formal qualifications or work and leisure skills later in life[280];
- Continuing education typically refers to the provision of extension or non-credit courses offered by higher education institutions;
- Lifelong learning institutes refer to communities of learners aged 50 and above who gather for noncredit college-level studies, seeking intellectual stimulation and social engagement;
- Knowledge work encompasses professional development and on-the-job training to enhance skills and expertise;
- Personal learning environments involve self-directed learning, utilizing various sources and tools, including online applications, to acquire knowledge and skills[281].

International organizations like UNESCO, OECD, EFT point out that Life Long Learning tools will be at the center of dealing with changes at the labor markets. The term Life Long Learning relates to all kinds and types of learning, including of learners of all the ages and education levels[282]. Life Long Learning is a central educational goal, since there is a need for employees at different ages to stay updated and efficient at the labor market. Even today, governments, businesses and private entities all over the world began to develop these kinds of initiatives. It is actually a transformation from an approach of education and training before entering a labor market to another approach of constant studying, including at the labor market, enriching a personal toolset of skills all the time[283].

2. Learning for job means being ready for the 21st century, when those entering the labor market need immediate job skills, but they also need to be smart and flexible enough for career changing, and it is important for them to sustain their learning capacity. OECD[284] researchers determined that

[280]ANDERSON, J., RAINIE, L. *Digital Life in 2025*. Pew Research Center. 2014. [quoted 16.10.2020]. Available at: https://www.pewresearch.org/internet/2014/03/11/digital-life-in-2025/

[281] ANDERSON, J., RAINIE, L. *Digital Life in 2025*. Pew Research Center. 2014. [quoted 16.10.2020]. Available at: https://www.pewresearch.org/internet/2014/03/11/digital-life-in-2025/

[282]*Cedefop. European Center for development of vocational training*. Council Resolution on better integrating lifelong guidance into lifelong learning strategies. 2009. [quoted 21.09.2017]. Available at: https://www.cedefop.europa.eu/en/news-and-press/news/council-resolution-better-integrating-lifelong-guidance-lifelong-learning

[283]ANDERSON, J., RAINIE, L. *Digital Life in 2025*. Pew Research Center. 2014. [quoted 16.10.2020]. Available at: https://www.pewresearch.org/internet/2014/03/11/digital-life-in-2025/

[284]*OECD Reviews of Vocational Education and Training*. Learning for Jobs, 2010. 220 p. ISBN 978-92-64-08223-6

professional trainings and education were neglected during the last years, although they are important at preparing both youth and adults to changing demands at the labor market. At the time academic studies were at the first place at the national priorities, and High schools also first of all put efforts in preparing pupils to get into the academic studies, many professions were neglected. Partly, we can justify this tendency by the fact that many jobs are done now in the Far East countries where it is cheaper or maybe the modern technology replaces a human labor. Still, we believe there is a way to bridge between the gaps by orientating pupils to study fields that are demanded at the market, by adjusting trainings and professional education of young generation to the needs of labor market, staring with this approach at schools, colleges, work places and other education institutions. In order to do that, OECD[285] calls its countries to realize that labor market changes too quickly today and a concept of "getting education for the whole life" is not working any more. A valid ground for constant professional adjustment should be made, including professional teachers and guides, who will cooperate constantly with the industry. In order to achieve that, OECD[286] proposes to create a better accordance between all the relevant factors, to gather information about kinds and types of trainings. The decisions about trainings should be made based on the labor market analysis and its demands. OECD suggests that this function will be done by a public mechanism and financing, in addition to the employers' and students' funding.

Technologies of "Life Long Learning" and "Learning for job" should be used at the organization and motivation stage of management of Higher education staff labor market.

3. Buddying (mentoring at the same hierarchical level) and Job shadowing (the new employee becomes the "shadow" of an experienced specialist) are supposed to ensure a quick and successful adaptation of an employee, making her involved.

Labor market special features and functions. The labor market space is social because its main elements are workers and employers. They enter into various social interactions and relationships. In addition to them, in the social space of the labor market there are various intermediaries who perform the following functions:

- workforce training (system of intermediate, professional and higher education);
- ensuring the contact of the employee and employer (employment and employment service);

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[285] *OECD Reviews of Vocational Education and Training*. Learning for Jobs, 2010. 220 p. ISBN 978-92-64-08223-6
[286]Ibidem. *OECD Reviews of Vocational Education and Training*. Learning for Jobs, 2010. 220 p. ISBN 978-92-64-08223-6

- professional retraining (system of additional vocational education);
- protection of the interests of workers (trade unions);
- protection of the interests of the employer (association of employers);
- control and formation of labor market laws (state and local authorities).

Without taking into account the needs of the main participants of the labor market (employer, employee) it is difficult to talk about the use of management technologies[287].

According to the study of World Economic Forum, in 2020, 2 millions of jobs will be added on the global labor market, but 7.1 million of job positions will disappear[288]. New jobs will come to the market in intellectual and high-technological spheres, but the number of real-life and administrative jobs will decrease. It is predicted that the labor market will be influenced by two groups of factors: social-demographic situation and the development of new technologies. The development of new technologies and their daily use (big data, cloud technologies, mobile internet and internet tools (the network of "intelligent" devices that can interact to each other, as well as with the environment)) will contribute new careers which did not exist before[289] . Higher education institutions must adjust its technologies and staff to the new and fast changes.

Higher education institutions should plan their demands now and in the future, taking possible changes at the market into account, developing its staff to be prepared to possible transformations and ready to react. For this end, all the staff members should be constantly trained to use more technologies in their field and even to conquer other, neighbor fields of studies. It demands lots of work and constant efforts, on the one hand, but it could provide a regular job, on the other hand. Employee having a rich toolset will probably be employed on a more regular basis than the one who is not ready to improve constantly. These technologies are inner ones, but can be performed be special outsourced consulting companies, whose expertise is to recognize the new trends in the labor market and in education, so that to propose the best possible ways of the academic staff to improve themselves. Of course, these technologies should answer also needs of Y and even younger generations.

[287]BLAGORAZUMNAYA, O. Forming the management mechanism of adaptation the management technologies to the needs of the labor market. In: *EcoSoEn*. 2019, Year 2, nr. 1-2, pp. 23-31. ISSN 2587-344X
[288]*Фориншурер*. На мировом рынке труда к 2020 году прибавится 2 млн. новых рабочих мест, но 7,1 млн. при этом исчезнет. [quoted 03.09.2020]. Available at: https://forinsurer.com/news/17/02/13/34861.
[289]BLAGORAZUMNAYA, O. Forming the management mechanism of adaptation the management technologies to the needs of the labor market. In: *EcoSoEn*. 2019, Year 2, nr. 1-2, pp. 23-31. ISSN 2587-344X

To ensure a successful adaption of employees to the organization, a management should note that adaptation is a two-sided process: the employee adapts to the organization, its conditions and job requirements, and vise versa- the organization is getting used to the employee.

Adaptation mechanism of management technologies. Adaptation technologies are crucial for achieving the following results[290]:

1. Sense of goal- is important in order to create an emotional connection between the employees and their jobs.

2. Effective communication- creating trust and legitimacy between the manager and their subordinates (by common meetings, social networks, "suggestions box", feedback).

3. Health and wellbeing of employees at their job is an important factor of labor efficiency. Organizations that invest more in health and welfare of their employees – actually save a lot, minimizing possible costs of healthcare and absences.

4. Organization of a comfortable place of work- as a space reflecting an organizational culture, its values and goals. It might include open space, game and coffee rooms, rest rooms.

5. Clear division of roles- is the basis for making an employee realize how her personal efforts contribute to the organization mission: each one has to know how the job she does contribute to the common organizational achievements. Personal contribution beings to the group contribution and then to the organizational one.

6. Strengthening a sense of community- is a strategic element of a corporate culture of organization, which allows some competitive advantages over other organization. Belonging to a community means there are friendly ties and loyalty at the workplace. Friendly relations at the place of work increase a sense of satisfaction of the employees and their involvement.

7. Chances of personal growth within the organization- is in investment in the organization's future. A personal strategy of growth is very important for employees: they need to feel they are constantly developing and growing up in both personal and professional arenas. If there is no growth and the employee feels it, she will start looking for external possibility to realize her growth. It is especially relevant for the Y, Z and future possible generations. Therefore, to create an

[290]ARMSTRONG, M., TAYLOR, S. *Human capital management. A Handbook of Human Resource Management Practice.* Gale virtual reference library. Kogan Page Publishers. Thirteenth edition, 2014. 440 p. ISBN 978 0 7494 6964 1

atmosphere of a permanent growth is extremely important for organizations who wish to keep their employees.

The following table 3.4 summarizes the management technologies, their kinds, possible performers and beneficiaries. The following scheme describes the proposed use of management technologies in the career path of professional teachers and researchers in the Higher education market (based on the scheme proposed in 3.2).

Recruiting should be used more actively in transition from BA studies to higher academic studies, in order to "catch" the best students and graduates, who may potentially contribute to education institutions more than to the industries. Screening and preliminaring should help talented PhD graduates to get hired for post-doctoral studies, it is not so developed now in Israel.

Table 3.4. Management technologies summary [elaborated by author]

Technology	Management function	A possible performer	A possible beneficiary
Recruiting Screening	Planning	Outsourcer recruitment company	New candidates, institutions' management
Preliminaring	Planning	Outsourcer recruitment company; local management	Academic staff in beginning of career path
Head hunting Exclusive search	Planning	Local management, consulting and recruiting experts within the institution	Academic staff in the middle of career path, management
Life long learning Learning for job	Organization Motivation	Local management, consulting companies (may be outsourced)	Academic staff, clients (new generations of students)
Adaptation technologies: Buddying and Job Shadowing	Organization; control and supervision of implementation	Local management, consulting companies (may be outsourced)	Academic staff, clients (new generations of students)

This table lists different technology-related management functions, including recruiting screening, preliminary screening, head hunting, lifelong learning, and adaptation technologies such as buddying and job shadowing. Each management function has a corresponding possible performer, such as outsourcer recruitment companies or local management, and a possible beneficiary, including academic staff, institutions' management, and clients. The table demonstrates the importance of technology in managing various functions in institutions and highlights the potential performers and beneficiaries of these functions.

Actually, only candidates with lots of money get to study in USA post-doctoral programs, and lots of talented candidates do not get a proper chance.

The author also believes that adaptation technologies of buddying and job shadowing which are not used commonly yet should help the academic staff to continue teaching and researching in Higher education institutions. Headhunting and preliminaring should help the institutions to choose the right candidates for promotion senior lecturer positions, and exclusive search should promote further. Life long learning and learning for job technologies should be implemented all the time on any stage, including those which are not presented in the scheme.

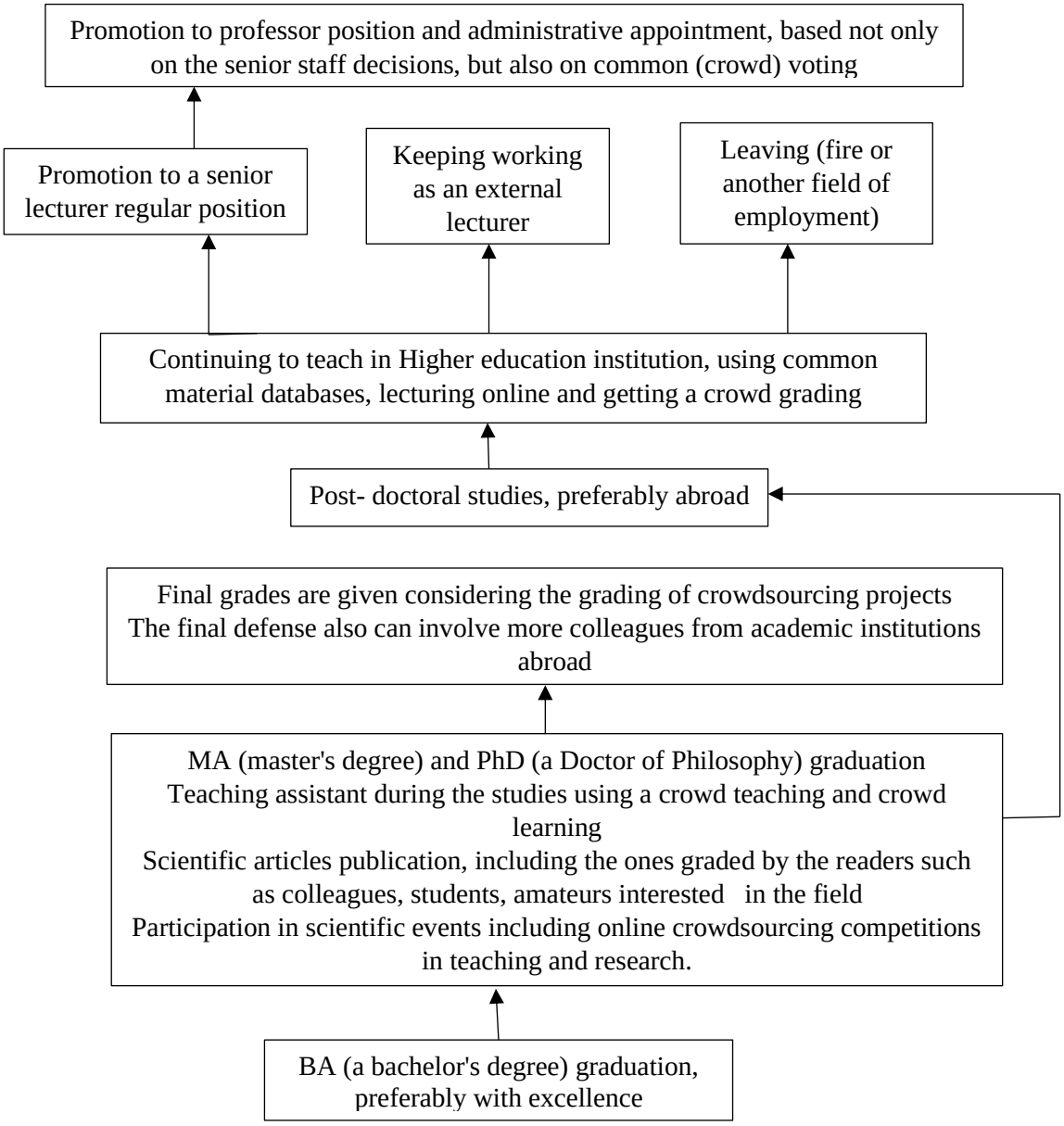

Figure 3.8. Use of management technologies (MT) in the career path in the Higher education market [developed by author]

The author proposes a mechanism of choosing and adapting management technologies for the labor market, which is the step-by-step proceeding from general to particular (Figure 3.9).

At the first stage, proper arguments are found to apply staff management technologies. The ability to apply management technologies (MT) must be related to goals, problems, specific working conditions and planned results in the academic institution. A comparative analysis of the existing staff in the organization with the staff of competitors should be made according to certain criteria. This analysis makes it possible to timely adjust the level of income of key employees, optimize the company's renumeration system, have a motivating effect on the staff, reduce staff turnover (if necessary), and even change the company's staff policy.

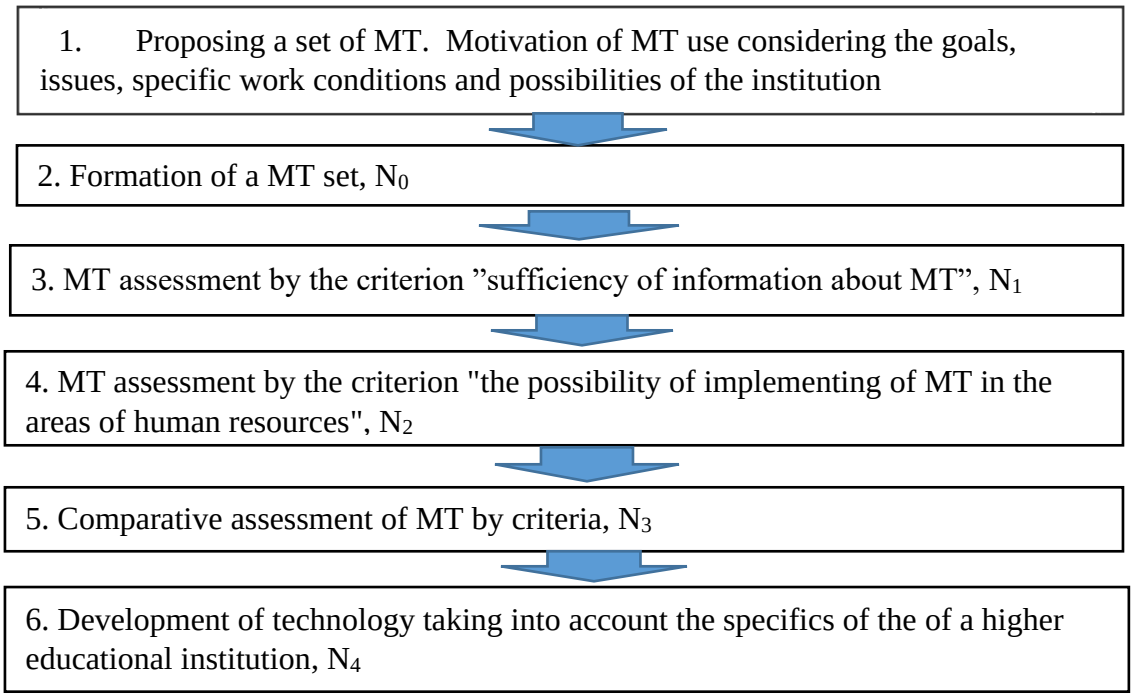

Figure 3.9. The mechanism of adaptation and selection of management technologies [developed by the author based on[291]]

At each stage, according to the developed mechanism, technologies that do not meet the necessary criteria of a certain stage are excluded from the entire set of management technologies (N_0). Due to the fact that the company is interested in the results of the application of adapted technologies, their selection is carried out depending on their importance for achieving the goals set.

[291] BLAGORAZUMNAYA, O. Forming the management mechanism of adaptation the management technologies to the needs of the labor market. In: *EcoSoEn*. 2019, Year 2, nr. 1-2, pp. 23-31. ISSN 2587-344X

ORT Braude Academic College of Engineering is located in Karmiel, Israel, occupying a spacious 30-acre (120,000 m2) campus. It is recognized as a prestigious higher education institution in Israel. The strategic choice of its location aligns with the national and regional demands by serving as a hub for academia, technology, and scientific advancements in the Galilee region. Additionally, the college plays a crucial role in enhancing the accessibility of higher education in northern Israel.

Currently, Ort Braude Academic College of Engineering has an enrollment of over 5500 students, with the majority pursuing a Bachelor of Science (B.Sc.) degree in Engineering. All educational programs offered by the college have received approval from the Council for Higher Education in Israel. The college's focus is primarily on engineering disciplines, offering various departments dedicated to B.Sc. degrees in engineering: 1. Mechanical Engineering; 2. Electrical and Electronic Engineering; 3. Industrial Engineering and Management; 4. Software Engineering; 5. Biotechnology Engineering; 6. Information System Engineering; 7. Optical Engineering.

It takes four years on average to finish a B.Sc. academic degree (eight full-time semesters).

At third stage, informational sufficiency about managerial technologies is determined. It is necessary to take into account the quantity and quality of information capable of disclosing the essence of management technology, its methodology, and experience of implementation in other organizations.

Information on management technologies can be obtained from scientific magazines, collections of works of higher educational institutions and research institutes, from textbooks and monographs on this subject, websites of consulting firms, from top managers of enterprises that used any management technologies, from World Wide Web (Internet). The volume and quality of information available for analysis of management technologies are proposed to be measured using a three-point system. Management technologies that have:

- descriptive information, estimated at one point;

- information about the tools and methods of implementing management technologies are estimated at two points;

- information sources regarding the practice of implementing management technologies in foreign and domestic companies are estimated at three points.

Numerous studies have linked internal communication and the degree to which employees are informed to job satisfaction and performance[292],[293],[294]. The competitive advantage of strategic internal communication comes not only from the obvious benefits of employee satisfaction and productivity, but also from the positive contributions that well-informed employees can make to an academic institution's external public relations efforts. Employees can be an organization's best ambassadors or loudest critics, depending whether and how they get information[295]. So, not only manager, but employees should have a possibility to get to know MT and their implementation, altogether with the right to express their ideas and opinions about it.

In Braude, there is a strict separation between the administrative and the teaching staff, and the lecturers, especially the external ones, do not feel a part of the institution at the managerial levels of decision making. Perhaps, if the teaching staff was more involved in policy making, it would strike less. So, the best MT must provide more information to the teaching staff and make it feel more belonging to the institution as its members.

At this stage of assessment, remain those management technologies that received a score of three points. Management technologies that have a lower score cannot be allowed to be implemented in organizations, since the impossibility of strict regulation of managers' actions in the development and implementation of management technologies can lead to unpredictable results of organizations' production, competitive reputation and achievements. At this point, a set of N_1 is formed ($N_1 \leq N_0$).

At fourth stage, the assessment and selection of the criterion "the possibility of implementing of MT in the areas of human resources" is carried out. There is a number of management technologies that can be applied on the labor market at the state level (for example, Foresight[296] and outsourcing technologies for studying the prospective of social phenomena in future), at the highest level of management in the company (for example, staff planning using head hunding and exclusive search),

[292]GRAY, J., LAIDLAW, H. Insider Perspectives on Communication Satisfaction. In: *Australian Journal of Communication*, 2002, Vol. 29, nr. 3, pp. 111-124. ISSN 0811-6202

[293]BARTOO, H., SIAS, P.M. When Enough is Too Much: Communication Apprehension and Employee Information Experiences. In: *Communication Quarterly*, 2004, Vol. 52, nr. 1, pp. 15-26. ISSN 0146-3373

[294]ROSENFELD, L.B., RICHMAN, J.M., MAY, S.K. Information Adequacy, Job Satisfaction and Organizational Culture in a Dispersed-network Organization. In: *Journal of Applied Communication Research.* 2004, nr. 32(1), pp. 28-54. ISSN 0090-9882

[295]MEN, L. *The Effects of Organizational Leadership on Strategic Internal Communication and Employee Outcomes*. University of Miami, 2012. 229 p.

[296]AWADA, S., SHIHADI, N. Foresight technology to solve modern challenges and achieve a better future. In: *EcoSoEn*, 2018, An.1, nr.3, p. 267-271. ISSN 2587-344X.

at the middle and lower levels of management in the company (Buddying – Mentoring, job shadowing, recruiting). Analysis of the organizational structure of the management of a higher education institution helps to clarify the overall goals and objectives of the units, as well as select the management technologies that contribute to managerial decisions. Therefore, it is important to evaluate and select management technologies that solve the tasks of management levels that are problematic for achieving the goals of a higher education institution. A set of N_2 is established ($N_2 \leq N_1$).

Braude, in our opinion, needs to improve a lot in management technologies based on human resources. Perhaps, a human resource experts from outside Consultant Company should ask the college administration about the possibility of implementation of different management technologies (in ranking grades from 1 to 5, with explanations of their responses).

At the fifth stage, on the basis of the comparative characteristics of certain criteria, the implementing of best feasible management technologies is assessed. Evaluation criteria can be:

- costs that imply cost minimization when using management technologies;

- time, based on minimizing the time to achieve the desired result;

- social criteria related to the professional and socio-psychological adaptation of a person to the team, leadership and corporate culture.

One of the priorities of Braude is hiring talented and qualified academics staff, and prevent its dropout (due to relatively low salaries, unstable job positions, especially of external lecturers). One of Braude's goals then is to find MT to decrease the employees' turnover, since it is costly from both academic teaching quality and economic points of view.

The employee turnover rate refers to the proportion of employees who have departed from a company during a specific time frame. An employee turnover rate is usually measured and calculated on monthly and/or annually basis. We propose to calculate it on the semester basis.

The following formula is used to calculate the employee turnover rate:

$$\frac{Number\ of\ employees\ who\ left}{Average\ number\ of\ employees} X100 =$$

$$= \frac{Number\ of\ employees\ who\ left}{(Number\ of\ employees\ at\ the\ beginning + Number\ of\ employees\ at\ the\ end)/2} X100 \qquad (3.1)$$

Replacing employees of Higher education institution is costly, since their job required years of studies and also training and adaptation within the institution.

The author suggests that an esteemed academic institution like Braude could adopt a methodology similar to Bourdeau and Lawler's[297] approach to assess the progress of HR technology. This involves comparing how HR leaders evaluate the extent of their activities and the effectiveness of HR system features over time, such as their role as strategic partners and the comprehensiveness of their information systems.

The following Table 3.5 presents these effectiveness features.

Table 3.5. HR technology effectiveness features[298]

Effectiveness features	Order of importance according to Bourdeau and Lawler (2017) survey
HR services	**1**
Providing HR services	2
Being an employee advocate	1
Analysing HR and business metrics	4
Preparing talent for the future	3
Corporate Roles	**3**
Managing outsourcing	2
Operating HR centers for excellence	2
Operating HR shared centers units	3
Working with corporate board	1
Business and Strategy	**2**
Providing change consulting services	3
Being a business partner	1
Helping to develop business strategies	4
Improving decisions about human capital	2

The author determined the order of importance using a survey conducted by Bourdeau and Lawler (2017), in which organizational leaders were asked to rate various features on a scale ranging from 1 (not meeting the needs) to 10 (all needs met).

Based on research the author conducted in some Israeli Higher education institutions, we propose to rate them in Israeli higher education organizations asking administrative managers and HR directors to rate the proposed MT-s according to the features in Table 3.5. As a result, we can find out what are the most important features from their point of view and which MT supply the majority of them. To calculate relative importance of all the characteristics in Table 3.5, we propose Braude to

[297]BOUDREAU J.W., LAWLER E.E. *How to measure HR effectiveness*. 2017, 9 p. [quoted 16.10.2020]. Available at: https://quarterly.talenteconomy.io/issue/fall-2017/how-to-measure-hr-effectiveness/

[298] BOUDREAU J.W. , LAWLER E.E. *How to measure HR effectiveness*. 2017, 9 p. [quoted 16.10.2020]. Available at: https://quarterly.talenteconomy.io/issue/fall-2017/how-to-measure-hr-effectiveness/

conduct a similar survey to the one conducted by Bourdeau and Lawler[299] in Israeli Higher education institutions. It can be predicted (not for sure though) that preparing talent for the future will be one of the most important criteria of Braude college (since it is a part of its declared vision), managing outsourcing, managing HR centers for excellence will also be important, however helping to develop business strategies will not be as important as it is among western business companies, which were surveyed by Bourdeau and Lawler[300].

Organizations have the ability to collect and utilize three types of HR criteria: efficiency, effectiveness, and impact. Efficiency focuses on the financial resources invested in HR programs, such as cost-per-hire. Effectiveness measures the results and outcomes generated by HR activities, such as knowledge gained from training. Impact assesses the business outcomes that can be attributed to HR activities, such as increased sales.

According to Bourdeau and Lawler[301], it is common to recommend that HR management technology criteria focus on production yields. This can lead to a misconception that only impact criteria hold the highest value. However, it is important to recognize that a combination of all three types of criteria can be beneficial and provide a more comprehensive understanding of HR effectiveness. Each type of criteria requires specific metrics and analytics for evaluation. When used in conjunction, they can mutually support and enhance each other, creating a more holistic assessment of HR performance. The following Table 3.6 presents these comparative characteristics.

Table 3.6. HR technology comparative characteristics using efficiency, effectiveness and impact criteria[302]

Measures	**Comparative characteristics**
Efficiency	Financial efficiency of HR management technologies operations (for example, cost-per-hire, time-to-fill, training costs)
	Collection of metrics that measure the cost of HR programs and processes
	Benchmark analytics and measures against data from outside organizations
Effectiveness	Use of HR dashboards and scorecards
	Measuring specific effects of HR programs (for example, learning from training, motivation from rewards, validity of tests)

[299] BOUDREAU J.W. , LAWLER E.E. *How to measure HR effectiveness*. 2017, 9 p. [quoted 16.10.2020]. Available at: https://quarterly.talenteconomy.io/issue/fall-2017/how-to-measure-hr-effectiveness/
[300] BOUDREAU J.W. , LAWLER E.E. *How to measure HR effectiveness*. 2017, 9 p. [quoted 16.10.2020]. Available at: https://quarterly.talenteconomy.io/issue/fall-2017/how-to-measure-hr-effectiveness/
[301] BOUDREAU J.W. , LAWLER E.E. *How to measure HR effectiveness*. 2017, 9 p. [quoted 16.10.2020]. Available at: https://quarterly.talenteconomy.io/issue/fall-2017/how-to-measure-hr-effectiveness/
[302] BOUDREAU J.W. , LAWLER E.E. *How to measure HR effectiveness*. 2017, 9 p. [quoted 16.10.2020]. Available at: https://quarterly.talenteconomy.io/issue/fall-2017/how-to-measure-hr-effectiveness/

	Capability of conducting cost-benefit analysis (aso called utility analysis) of HR technologies
Impact	Measuring the business impact of HR programs and processes
	Measuring the quality of the talent decisions made by non-HR leaders
	Measuring the business impact of high versus low performance in jobs

For Braude, we would suggest to conduct a survey among both administrative and teaching staff, in order to find out which from the proposed technologies would help them advance more in their career, sense of wellbeing and satisfaction, stability at the workplace and feeling of belonging to the organization. Also, all the measures of the Table 3.6 should be implemented is formed.

As a result of the assessment, the best management technology is selected according to the criteria ($N_3 \leq N_2$), which have the best results of combining impact, effectiveness and efficiency.

At the fifth stage, management technologies are developed to meet the specifics of the organization. Internal regulations on the use of technology are also being finalized.

The adaptation projects of advanced management technologies are implemented by working groups. Specialists from relevant departments, domestic and foreign experts participate in the joint work.

The developed stages of selection and adaptation of management technologies are based on assessing the possibility and necessity of applying management technologies in a higher educational institution, using the following criteria: the sufficiency of information about management technologies; the possibility of implementing management technologies at various levels of management; the possibility of implementing management technologies in the areas of staff management; the possibility of performing general management functions; the possibility of introducing management technologies based on comparative assessment of costs, time and social criteria. The proposed adaptation mechanism can be used, in addition to higher education institutions, in various companies to select management technologies that meet the individual goals and problems of the company.

3.4. Conclusions for chapter 3

1. One of the effective and popular ways to manage knowledge, information and communities is crowdsourcing. It is often treated as a management method, allowing to distribute knowledge between a large number of people both inside and outside an organization. At the same time, a quality of decision making and complex tasks completion improve.

2. Crowdsourcing technologies are implemented in an education environment, and make practical characteristics of the education products better. The author considered four problems and ways of their possible solutions using crowdsourcing in two fields: in improving an education product quality and in the framework of socially valuable projects. Also, categories of crowdsourcing participants who will benefit from its implementation were defined.

3. The author developed and described a model of crowdsourcing implementation stages in an education institution, altogether with a scheme of a crowdsourcing project in Higher education. Implementation of these models will encourage exchange of experience and knowledge between the crowdsourcing participants, who are looking for new solutions and are ready to active involvement in a constant organizational improvement of an education institution.

4. Traditional education in Israel and other countries is undergoing a crisis due to its non-availability, conservatism, locality, limitations. As a result, in addition to conventional education methods, distance education or remote learning approaches are being implemented. This typically involves online education, where students can participate in courses remotely. A distance learning program may consist entirely of remote learning, or it may combine both distance learning and traditional in-person classroom instruction. In order to use virtual technologies in training of future teachers, a proper preparation is needed, including: software platform, curricula, management, manuals and guides explaining how to implement the technology, individual instructions and consultations, special training of teachers.

5. Different kinds of e-learning are already used in education and training in many countries. Traditional methodology's effectiveness was proved for years and it very acceptable in the higher education field. However, problems appear and a traditional way of thinking is not working anymore. More dynamic methods of teaching are required, to solve problems of the new era. The author proposes to use the approach of integration these technologies in the existing educational process, which could be realized both for preparing professionals in a higher education and in training of the experienced experts. The processes of lectures and practical trainings are enriched by technologies using virtual game models, in which real situations' descriptions are a very important component. The author developed an algorithm for the game use of virtual education. It allows to get skills and competencies faster and more effectively, to learn how to think creatively and systematically.

6. In order to improve and adapt to the changes at the labor market, a modern teacher has to use more innovative technologies. The author proposes a model of a career path of a lecturer and teacher taking into consideration technologies like outsourcing and crowdsourcing.

7. In order to adapt to changes in the needs of labor market, there is a challenge to improve the existing mechanism of recruitment of Higher education academic staff. Right now, there is no well-defined mechanism of attracting teaching and researchers' staff to academic institutions in Israel. In the author's opinion, the traditional human resources management technologies should be used in Higher education of Israel, but in a more adjusted, technology-based and effective ways. The author proposes a mechanism of choosing and adapting management technologies, which are used at the the labor market.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Interaction's system of education system and labor market is a dynamic and open one, requiring a certain mechanism of management in order to achieve the goals and providing a synergy effect. Management technologies have to be improved and adapted to new conditions at the labor market, for the sake of making an effectiveness of education institutions' organization higher.

After profound research on the subject of «Improving and adapting the management technologies in order to meet the needs of the labor market for the education field of Israel», the author arrived to the following conclusions:

1. Based on theoretical studies and analyses of approaches to the interaction of the labor market and the market of educational services, the author reveals a following feature of the educational market: the presence of bilateral links between the interdependent markets. The labor market and higher education system are interrelated, with impacts in several aspects of the labor market such as employment, job structure, and wage levels. Likewise, the education system is also affected by the labor market, and requires constant adjustments to meet the demand for highly qualified professionals through learning programs and development of in-demand educational programs. Understanding these relationships is necessary to identify the features of the process of providing educational services.
2. The author has highlighted several characteristics of the academic labor market, such as a strong emphasis on education and specialized skills, as well as a focus on research and teaching. Despite limited employment opportunities, job security tends to be high in this field. However, wages can be relatively low compared to other professions, and career advancement opportunities may be limited. In addition, academic institutions are often heavily dependent on funding, which can create additional challenges for those working in the academic labor market.
3. In conditions of ever-changing of demand and supply at the labor market, firms and education institutions have to master management technologies, which will allow them to treat their human staff wisely. As a result, a mechanism of human staff outsourcing and social and labor relations in the educational activity of an education institution has to be flexible and adaptive. Direction of outsourcing services' implementation in a higher education system of Israel, suggested by the author, will help education institutions not only attract mediator companies for outsourcing services, but also provide such services by their own.

4. As a result of research, the author has revealed that Israel has a well-developed system of higher education, with universities and colleges offering a wide range of programs and degrees. In recent years, there has been a growing demand for higher education in Israel due to factors such as population growth, an increase in the number of students, and the need for qualified professionals in various fields. This has created employment opportunities in the higher education sector for teachers, researchers, administrators, and support staff. The author noted that teaching positions in Israeli universities usually require academic degrees (Bachelor, Master or PhD) in the relevant field of study. The demand for faculty can vary by discipline and university. In addition to teaching positions, there are also opportunities in research positions, especially for individuals with specialized knowledge in scientific, technological, and social research. The demand for administrative and support staff, including staff in various departments, IT professionals, student advisors, and others, depends on the size and specific needs of each institution.
5. The widespread implementation of outsourcing, outstaffing, and personnel leasing, collectively referred to as out-technologies, has been observed in many countries. These technologies have a significant impact on the labor market's functioning and the development of labor relations, with their utilization aiding in addressing challenges associated with employee recruitment, termination, labor disputes, and more. It has been determined that numerous universities employ outsourcing practices by leasing their buildings and facilities to external companies, hiring external personnel for various tasks, managing personnel, providing financial support to students, handling accounting, and other functions.
6. The problems related to the outsourcing of academic staff in Israel have been identified, including the uncertainties surrounding employment and working conditions for external teachers and lecturers. These individuals often lack stable positions, work part-time, and receive salaries that do not correspond to their seniority or work experience, resulting in insufficient social benefits. Additionally, the absence of a collective agreement between the external organization of teachers and the educational institution's management further exacerbates these issues. According to the author, addressing the challenges faced by external teachers in the higher education system necessitates institutional recognition and support.

Solution of issues dealing with researches in the field of improvement and adaptation of management technologies to the labor market needs in the education field of Israel, which were reflected in the current paper, could be considered as the following methodological recommendations:

1. The Ministry of Education of Israel and the leadership of educational institutions are invited to implement the author's proposed stages of introducing crowdsourcing as a management technology within educational institutions. This can be achieved by implementing crowdsourcing projects to address pressing issues in the development of educational institutions, enhance the quality of decision-making, tackle complex tasks, and initiate new projects and events. The author suggests adopting an integrated approach to analyzing the problem of improving the quality of the educational product (educational materials) by engaging in socially significant projects and involving beneficiaries (students, teachers, employers) in developing solutions through crowdsourcing. This can include volunteering in research activities and acquiring professional skills. Through crowdsourcing, the teaching staff will have additional opportunities for advanced training and career growth. Both educational institutions and participating companies will be able to identify talented specialists, reduce certain costs, save time, and streamline decision-making processes, such as increasing employee wages.
2. The author recommends that heads of educational institutions utilize the model for organizing a virtual educational environment and the algorithm for implementing a virtual learning game in the training of future teachers. This necessitates continuous learning and professional development of personnel, including department heads, teachers, and consultants. Furthermore, it involves leveraging and enhancing the existing infrastructure of Internet technologies, supporting computer-based training, and other related initiatives. Implementing the stages of organizing a virtual educational environment for training future teachers is advised, encompassing goal setting, establishing objectives, selecting guiding principles, choosing organizational forms of training, monitoring educational needs, and assessing results. The application of the proposed model and algorithm will enable the utilization of innovative methods for knowledge exchange within the learning process, foster the intellectual engagement of students, and motivate teachers to grow professionally.
3. Managers and teachers of educational institutions are advised to adopt the teacher's career growth model, incorporating outsourcing and crowdsourcing, as the foundation for

developing human resources and facilitating career advancement. This model enables the teaching staff to acquire new teaching methodologies, enhancing their professional skills and competence. It also provides students with increased opportunities to influence the quality of education. Moreover, faculty management can accurately assess individual abilities and contributions of teachers, aiding in informed decisions regarding promotions and career progression. By implementing this model, educational institutions can foster a supportive and dynamic environment that nurtures continuous growth and improvement for both teachers and students.

4. Heads of educational institutions are recommended to adopt the mechanism proposed by the author for selecting and adapting management technologies (MT) to meet the requirements of the labor market in the field of higher education in Israel. This mechanism consists of six stages: (motivation for the use of MT, Formation of a set of MT, evaluation of MT based on the criteria of "sufficiency of information" and "feasibility of implementation in the areas of human resources", comparative assessment of MT using specific criteria, development of technology considering the university's specifics). The developed stages of selection and adaptation of management technologies, based on an assessment of the possibility and necessity of using management technologies in a university, will allow us to assess the possibility of introducing management technologies at various levels of management in the implementation of management functions; in the field of personnel management; to compare the cost of time and others costs.

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APPENDIXES

Appendix 1

Israeli education budget and students' distribution

Table 1.1. Israeli Ministry of education budget in 2014-2019

Year	Budget in milliard NIS
2014	43.6
2015	48.9
2016	50.9
2019	60.46

Source: *Economic data of Ministry of education 2015-2016*. [quoted 27.03.2019]. Available: http://meyda.education.gov.il/files/MinhalCalcala/uvdot_venetunim_kalkali_2015_2016.pdf (Hebrew)

Table 1.2. Number of BA students, 2016, and their distribution by regions

	1990	2000	2016
Total absolute number of students	55,250	126,900	193,615
Total percent	100	100	100
Jerusalem	22.7	15.5	13.6
North	-	5.3	9.7
Haifa	21.7	17.9	13.5
Center	4.1	15.9	17.3
Tel-Aviv	42.8	31.5	31.7
South	8.7	13.9	14.2

Source: *Council of Higher education* .Higher education in Israel. Planning and Budgeting Committee. Jerusalem, Israel. 2016. [quoted on October 2th, 2019] http://che.org.il/wp-content/uploads/2016/10/

Appendix 2

Israeli academic staff salaries

Table 2.1. Salary updated for senior academic staff in universities, updated in 2018*

Experience years	Erosion additions	Total salary including erosion addition	Tenure additions	Academic additions (clothes, telephone, availability)	Total salary including experience	Promotion percent
0	1,329.50	9,496.43	0.00	0.00	9,496.43	0.000%
10	2,871.09	20,507.78	1,045.63	7,212.05	12,250.09	28.997%
11	2,916.95	20,835.34	1,135.79	7,212.05	12,487.50	31.497%
12	2,962.81	21,162.90	1,225.94	7,212.05	12,724.91	33.997%
13	3,008.66	21,490.46	1,316.09	7,212.05	12,962.32	36.497%
14	3,054.52	21,818.02	1,406.24	7,212.05	13,199.74	38.997%
15	3,100.38	22,145.58	1,496.39	7,212.05	13,437.15	41.497%
16	3,146.24	22,473.14	1,586.54	7,212.05	13,674.56	43.997%
17	3,192.10	22,800.71	1,676.69	7,212.05	13,911.97	46.497%
18	3,237.96	23,128.27	1,766.84	7,212.05	14,149.38	48.997%
19	3,283.82	23,455.83	1,856.99	7,212.05	14,386.79	51.497%
20	3,329.67	23,783.39	1,947.14	7,212.05	14,624.20	53.997%
21	3,375.53	24,110.95	2,037.29	7,212.05	14,861.61	56.497%
22	3,421.39	24,438.51	2,127.44	7,212.05	15,099.02	58.997%
23	3,467.25	24,766.07	2,217.59	7,212.05	15,336.43	61.497%
24	3,513.11	25,093.63	2,307.74	7,212.05	15,573.84	63.997%
25	3,558.97	25,421.20	2,397.89	7,212.05	15,811.25	66.497%
26	3,604.83	25,748.76	2,488.04	7,212.05	16,048.66	68.997%
27	3,650.68	26,076.32	2,578.20	7,212.05	16,286.07	71.497%
28	3,696.54	26,403.88	2,668.35	7,212.05	16,523.48	73.997%
29	3,742.40	26,731.44	2,758.50	7,212.05	16,760.89	76.497%
30	3,788.26	27,059.00	2,848.65	7,212.05	16,998.31	78.997%
31	3,834.12	27,386.56	2,938.80	7,212.05	17,235.72	81.497%
32	3,879.98	27,714.12	3,028.95	7,212.05	17,473.13	83.997%
33	3,913.45	27,953.24	3,094.76	7,212.05	17,646.44	85.822%
34	3,946.80	28,191.45	3,160.32	7,212.05	17,819.08	87.640%
35	3,980.94	28,435.28	3,227.42	7,212.05	17,995.81	89.501%

*****Full time positions professor salary (in NIS)

Source: *Council for Higher education*. University senior staff salaries tables. [Quoted 20.04.2019] Available: https://che.org.il/wp-content/uploads/2020/01/

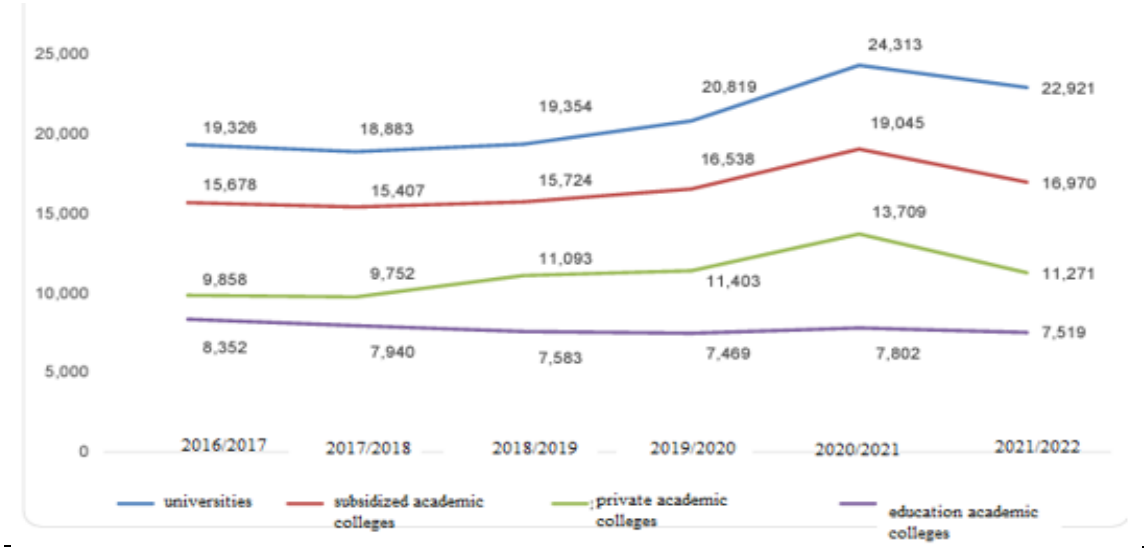
Table 2.2. Full time junior teacher with a PhD degree salary (in NIS)

Experience years	Erosion additions	Total salary including erosion addition	Tenure additions	Academic additions (clothes, telephone, availability)	Total salary Including experience	Promotion percent
0	1,084.85	7,748.91	0.00	0.00	7,748.91	0.000%
2	1,831.04	13,078.85	207.83	4,388.09	8,482.93	9.473%
3	1,865.84	13,327.42	262.68	4,388.09	8,676.65	11.973%
4	1,900.64	13,576.00	317.53	4,388.09	8,870.37	14.473%
5	1,935.44	13,824.57	372.39	4,388.09	9,064.09	16.973%
6	1,970.24	14,073.14	427.24	4,388.09	9,257.82	19.473%

Source: *Council for Higher education*. University senior staff salaries tables. [Quoted 20.04.2019] Available: https://che.org.il/wp-content/uploads/2020/01/

Appendix 3

Numbers of students in difference kinds of academic institutions in Israel over years



Source: *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023]. Available at: http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

Appendix 4

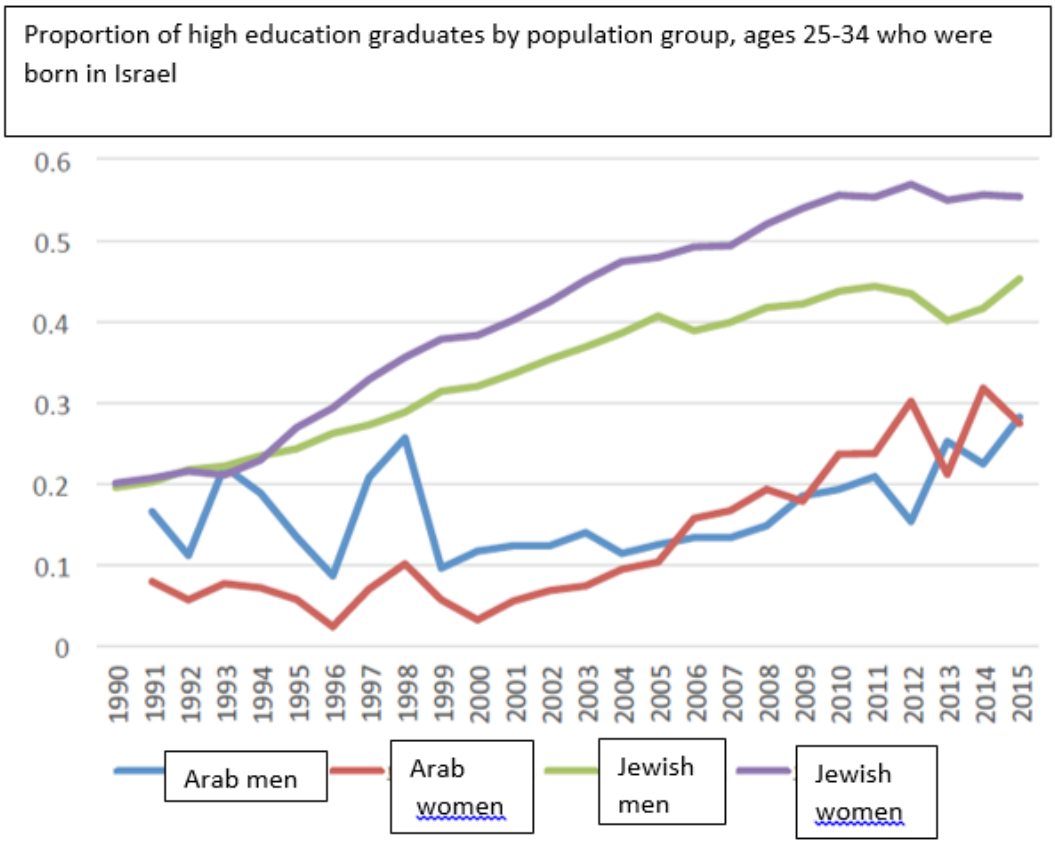
The research achievements of Israeli institutions in different scientific fields

	Publications			Citations per Paper		
Field	University	Number	Ranking	University	Number	Ranking
Clinic. Med. (3150)	Tel Aviv	9955	59			
Physics (2900)	Tel Aviv Technion Weizmann	3372 2983 2919	98 129 132	Weizmann Tel Aviv Technion	20.9 11.6 10.6	9 87 100
Chemistry (1250)				Weizmann Hebrew Tel Aviv	21.2 19.2 16.8	39 63 109
Engineering (1200)	Technion	2616	71	Tel Aviv Technion	6.8 6.2	91 109
Biol.&Bioch. (750)	Tel Aviv Hebrew Weizmann	[169]6 1451 1384	102 123 133	Weizmann Technion Hebrew	23.9 19.6 18.5	58 140 166
Mol Bio.&Gen. (950)	Tel Aviv Hebrew Weizmann	1103 990 961	110 135 142	Weizmann Hebrew Tel Aviv	42.2 27.0 24.2	25 93 110
Neuro& Behav (600)	Tel Aviv Hebrew	1473 970	69 137	Weizmann Hebrew Technion	27.0 22.7 20.9	44 83 143
Comp.Science (450)	Technion Tel Aviv Ben-Gurion	1326 1219 570	30 40 147	Tel Aviv Weizmann Hebrew Technion Ben-Gurion	7.0 6.9 6.4 5.2 3.9	32 36 46 74 123
Social Sci. (1250)	Hebrew Haifa Tel Aviv	1385 1269 1268	103 117 118	Haifa Hebrew Tel Aviv	5.1 4.9 4.7	104 106 114
Psycht/ Psychl (700)	Tel Aviv Haifa Bar Ilan Ben-Gurion Hebrew	1247 906 762 734 715	73 113 137 140 145	Tel Aviv Bar Ilan Hebrew Ben-Gurion Hebrew	11.5 10.9 10.2 9.1 8.8	109 120 126 141 142

Source: *Essential Science Indicators*, Thomson Reuters, ISI Web of Science, 2013. [quoted 18.06.2018]. Available: https://clarivate.com/webofsciencegroup/solutions/essential-science-indicators/

Appendix 5

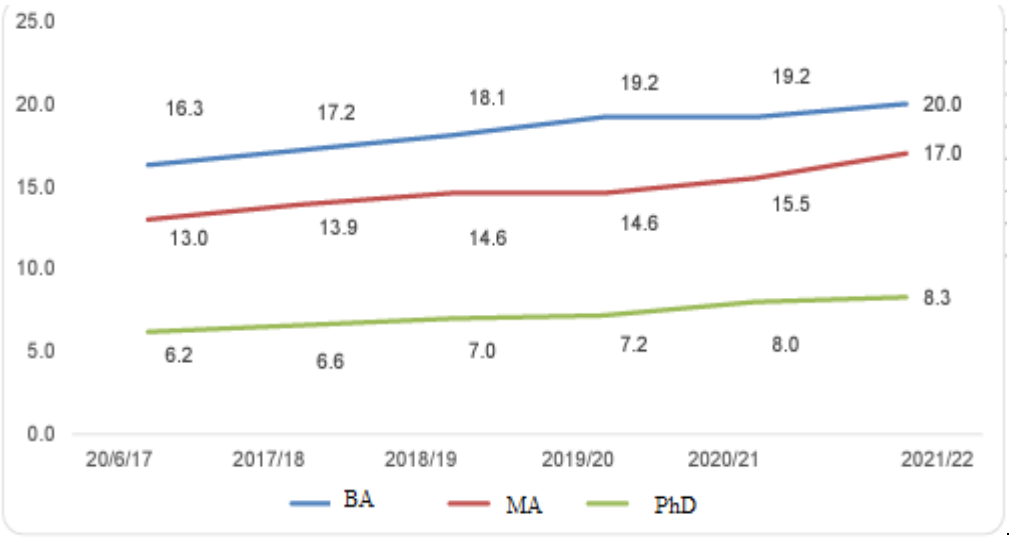
Proportion of High education graduates by population groups, ages 25-34 who were born in Israel



Source: KRIL, Z., GEVA, A., ALONI Z. *Not all the degrees are born equal – Investigation of education premium to the salary, as a function of a field of studies*. 2016. Ministry of Finance, Economic department paper 52. [quoted 07.02.2019]. Available: http://mof.gov.il/ChiefEcon/EconomyAndResearch/ArticlesSet/Article_27122016.pdf (Hebrew)

Appendix 6

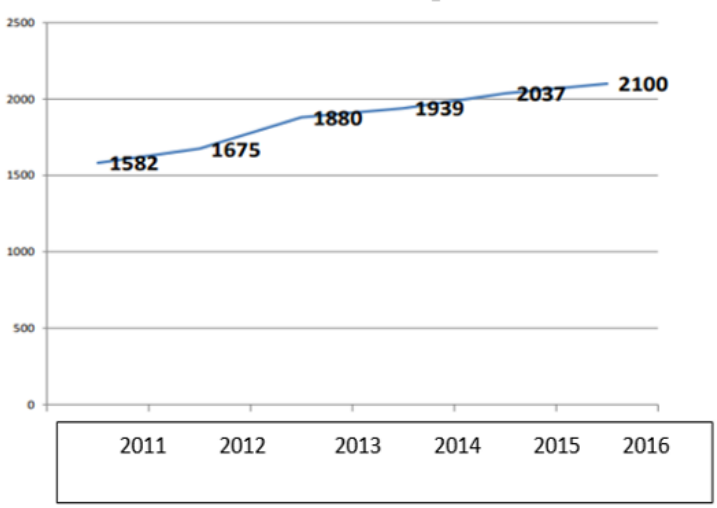
Arab students proportion by degrees, 2017 till 2022



Source: *CBS (Central Bureau of Statistic*). Higher education in Israel. [quoted 13.03.2023].http://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cbs.gov.il/he/mediarelease/doclib/2022/331/06_22_331t1.pdf (Hebrew)

Appendix 7

A number of senior full position employees in Israeli colleges over years



Source: ZILBERSHATZ Y. *Higher education system in Israel- current situation and vision.* Council for Higher education in Israel. Planning and Budgeting Committee. 2016. 24 p. (Hebrew)

Appendix 8

Questionnaire

Dear respondent! We ask you to fill in the anonymous questionnaire for research sake.
Thank you for cooperation!
Demographic questionnaire
1. What is your gender?
- Female
- Male

2. Which race/ethnicity best describes you? (Please choose only one.)
- Jewish
- Arab
- Multiple ethnicity
- Other (please specify)_____

3. What is your age?
- Less than 30
- 31-40
- 41-50
- 51-60
- 60 and more

4. Please describe what language(s) were primarily spoken in your childhood home:
- Hebrew
- Arab
- Russian
- English
- Other (please, specify)_____

5. What is the highest level of education you have completed?
- High school
- College BA
- College MA
- College PhD
- Other_____

6. What is your approximate average salary?
- Low
- Average
- High

Job Experience History
1. What is your working experience (in years)?_____
2. How many job places have you had?
- This is the first place
- Have changed a job place a few times
- Change my job all the time

3. Difficulties in finding the job:
- The job was found immediately
- Have been looking for a long time: _____months _____years
- Have been looking through labor exchange

4. What are the reasons for the difficulties?

- No vacancies
- Low salary
- Job conditions
- Others_____

5. How was your job found:
- By my own
- Through recruitment agency
- Through friends
- Through internet ads

6. If your job does not suit your qualification, what are the reasons?
- I do does realize all the potential I have
- I am over-qualified
- I am under-qualified
- Other (please, specify)_____

7. Are there professional growth perspectives at your current position?
- Yes
- No
- Other :_____

8. What are your plans for the nearest 2-3 years?
- Keep on studying in the field
- Get another professional education
- Get advanced training course

9. Have you got an advanced training course in the past?
- Yes
- No
- Other :_____

Job Position Satisfaction

1. How positive are your interactions with other members of your department?

- Extremely positive
- Very positive
- Moderately positive
- Slightly positive
- Not at all positive

2. How effective is the leadership of your department chair?

- Extremely effective
- Very effective
- Moderately effective
- Slightly effective
- Not at all effective

3. How much do you feel your department chair values your input in making decisions?

- A great deal
- A lot
- A moderate amount

- A little
- None at all

4. How effectively do you feel your talents are being used by your department?

- Extremely effectively
- Very effectively
- Moderately effectively
- Slightly effectively
- Not at all effectively

5. How fair are the administrative procedures at this university?

- Extremely fair
- Very fair
- Moderately fair
- Slightly fair
- Not at all fair

6. Are you satisfied with the senior administration at this university, neither satisfied nor dissatisfied with it, or dissatisfied with it?

- Extremely satisfied
- Moderately satisfied
- Slightly satisfied
- Neither satisfied nor dissatisfied
- Slightly dissatisfied
- Moderately dissatisfied
- Extremely dissatisfied

7. How manageable is your teaching requirement at this university?

- Extremely manageable
- Very manageable
- Moderately manageable
- Slightly manageable
- Not at all manageable

8. How easy is it to get the resources you need for teaching at this university?

- Extremely easy
- Very easy
- Moderately easy
- Slightly easy

Not at all easy

9. How fair is your pay at this university?

Extremely fair

Very fair

Moderately fair

Slightly fair

Not at all fair

10. Overall, are you satisfied with this university as a place to work, neither satisfied nor dissatisfied with it, or dissatisfied with it?

Extremely satisfied

Moderately satisfied

Slightly satisfied

Neither satisfied nor dissatisfied

Slightly dissatisfied

Moderately dissatisfied

Extremely dissatisfied

11.Why did you choose to become a teacher?

- My own decision
- Parents requests
- It is a prestigious profession
- Love for children
- Higher salary
- Other_____

12. In your opinion, what are the most important characteristics of future teachers?

- Being responsible
- Love for children
- High level of communication
- Adaptation ability
- Others_____

13.In your opinion, what are the most important characteristics of future school principals?

- Decisiveness
- Being independent
- High level of communication
- Adaptation ability
- Others_____

Thank you for being cooperative!!

https://www.surveymonkey.ru/mp/education-survey-templates/

Source: elaborated by the author

Appendix 9

Demographic descriptive data of the subjects sample

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	7.1	7.1	7.1
	2	17	30.4	30.4	37.5
	3	26	46.4	46.4	83.9
	4	9	16.1	16.1	100.0
	Total	56	100.0	100.0	

Salary

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	7.1	7.1	7.1
	2	41	73.2	73.2	80.4
	3	11	19.6	19.6	100.0
	Total	56	100.0	100.0	

Educ

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	9	16.1	16.1	16.1
	3	36	64.3	64.3	80.4
	4	11	19.6	19.6	100.0
	Total	56	100.0	100.0	

Source: elaborated by the author

Appendix 10

Correlations between age, experience and education

		Salary	Exper_years	Educ	Age
Salary	Pearson Correlation	1	.429**	.462**	.478**
	Sig. (2-tailed)		.001	.000	.000
	N	56	56	56	56
Exper_years	Pearson Correlation	.429**	1	.686**	.934**
	Sig. (2-tailed)	.001		.000	.000
	N	56	56	56	56
Educ	Pearson Correlation	.462**	.686**	1	.680**
	Sig. (2-tailed)	.000	.000		.000
	N	56	56	56	56
Age	Pearson Correlation	.478**	.934**	.680**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	56	56	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Source: elaborated by the author

Appendix 11

Survey statistical analysis outputs

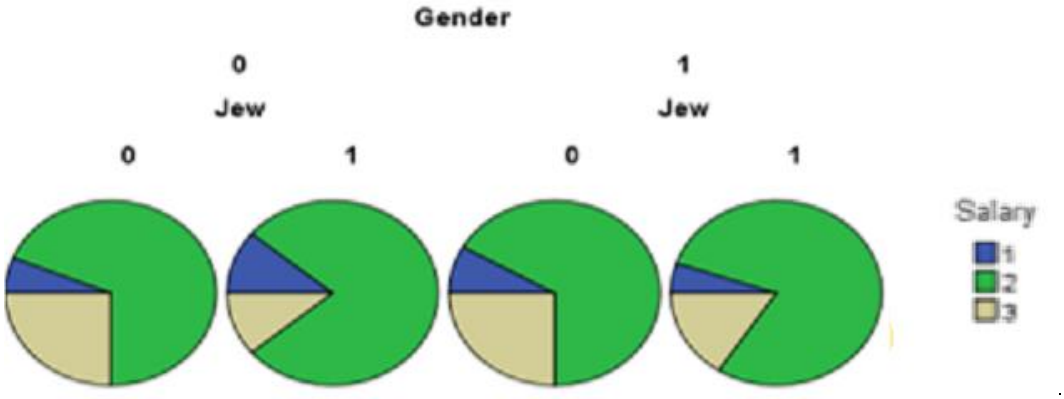


Figure 11.1. Salary levels distribution

Salary : 1-low, 2- middle, 3- high; Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

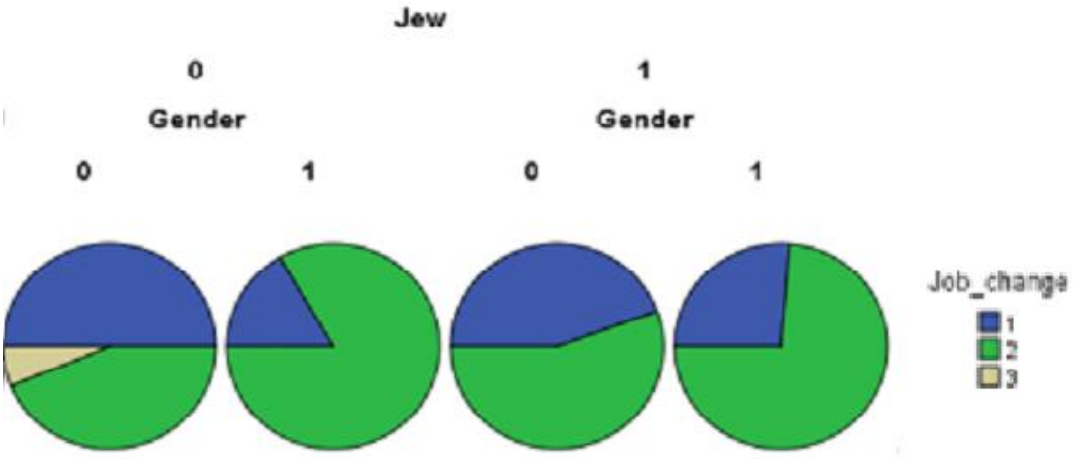


Figure 11.2. Job change frequency distribution

Job_change : 1-no change, 2- changed job a few times, 3- changed job all the time; Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

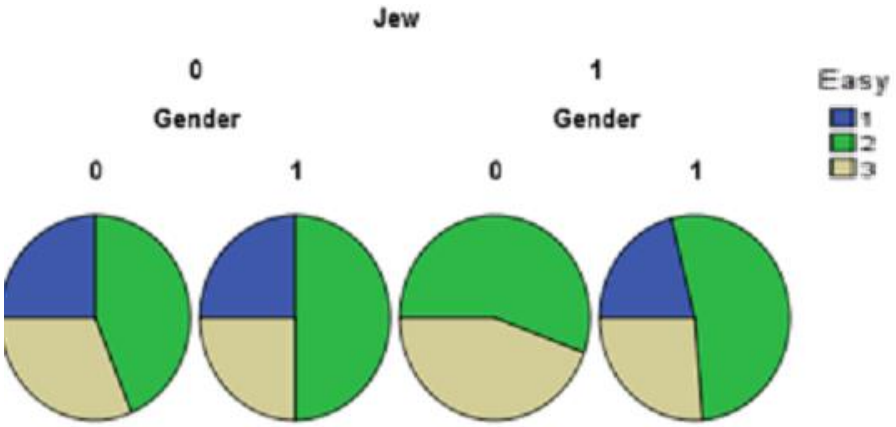


Figure 11.3. Distribution of easiness of job finding

Job_finding easiness: 1-very hard, 2- middle hardness, 3- very easy; Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

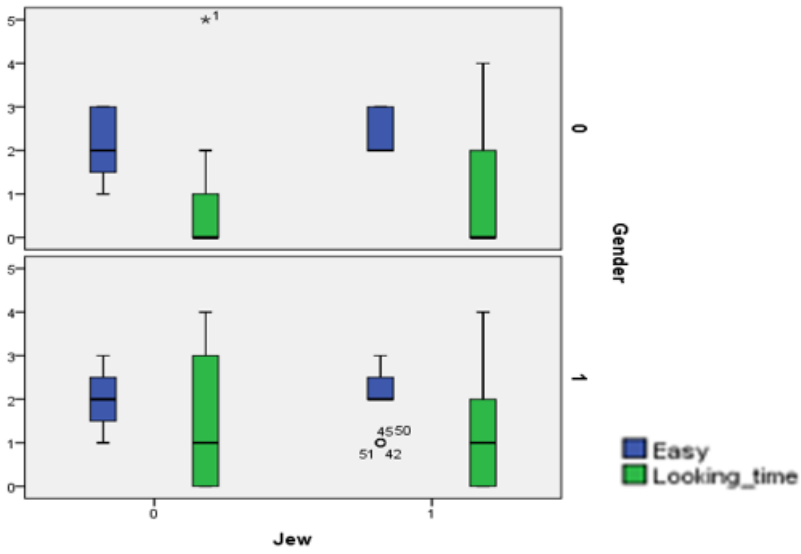


Figure 11.4. Box plot diagram of easiness of looking for a job and the time of looking for it

Job_finding easiness: 1-very hard, 2- middle hardness, 3- very easy; Looking time: 0- no time till 5- very long period; Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

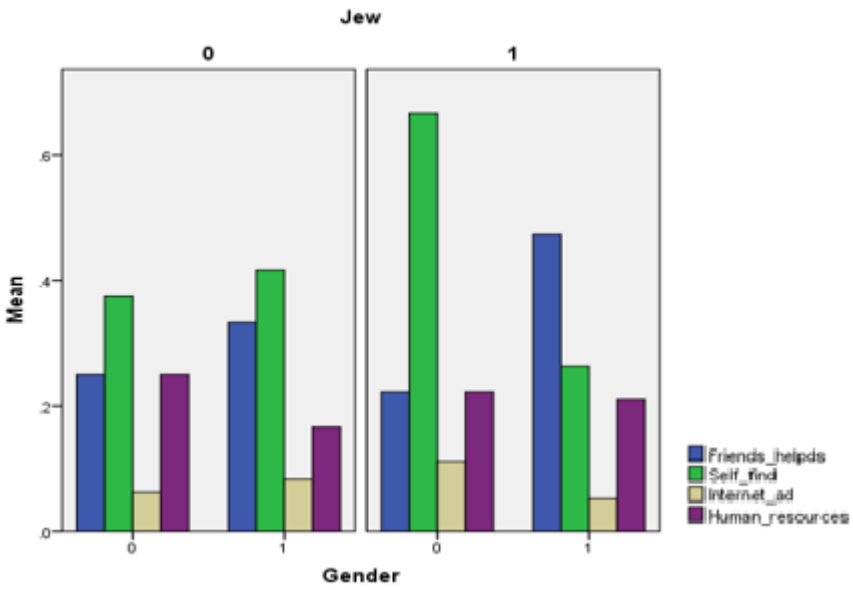


Figure 11.5. Job finding way

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

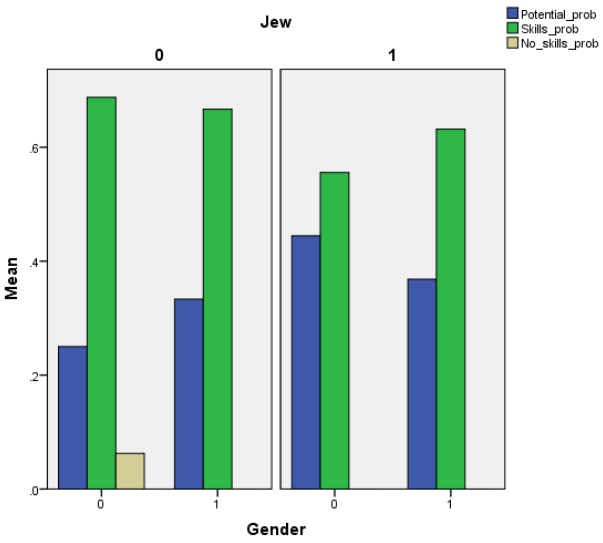


Figure 11.6. Distribution of reasons the job position does not fit

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

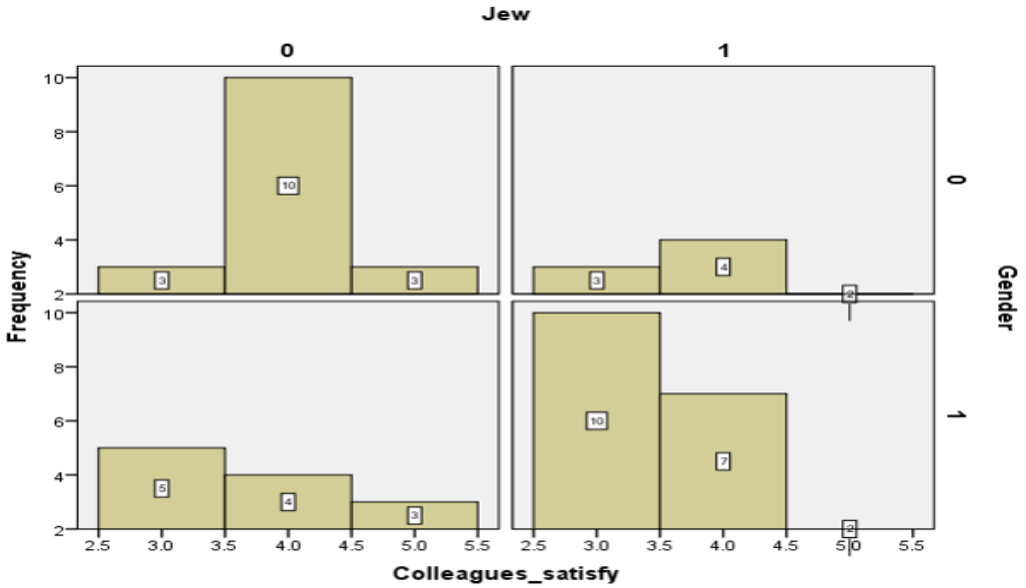


Figure 11.7. Frequencies of satisfaction by colleagues

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

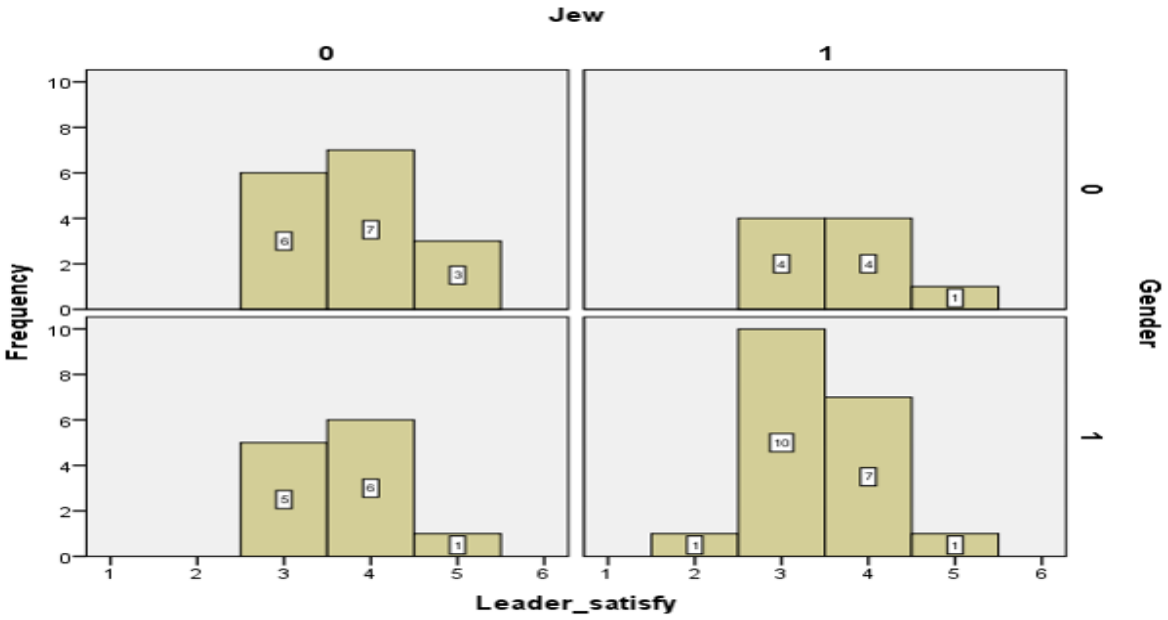


Figure 11.8. Frequencies of satisfaction by leader

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

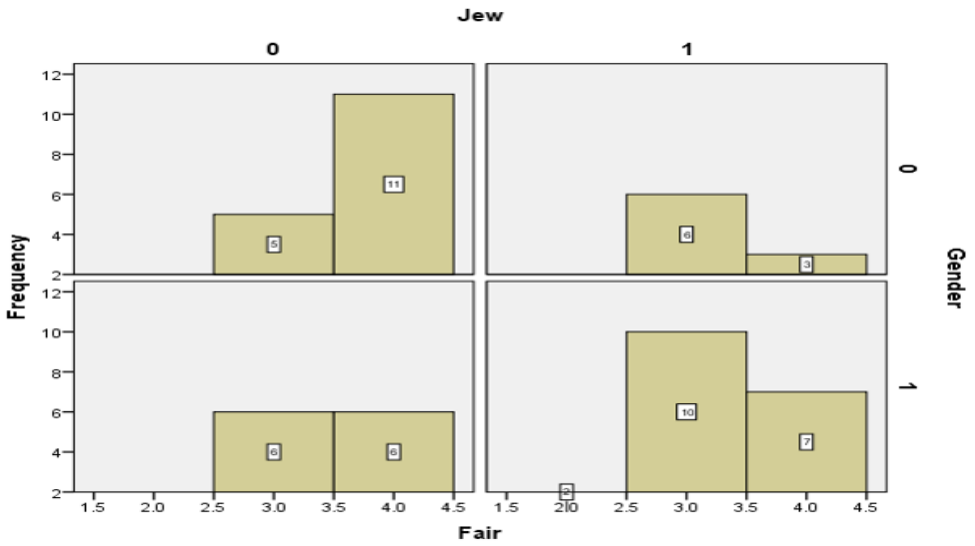


Figure 11.9. Frequencies of agreement to the statement: "Generally, the administrative rules at the current job are fair"

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

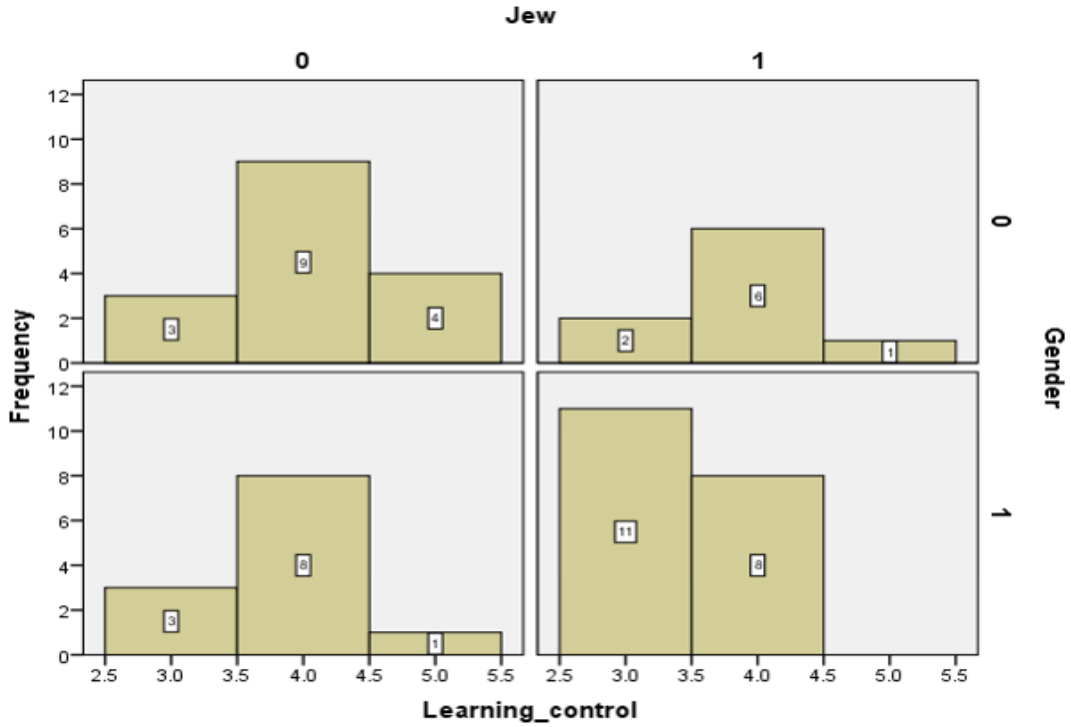


Figure 11.10. Frequencies of satisfaction by the equipment control at the current job

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

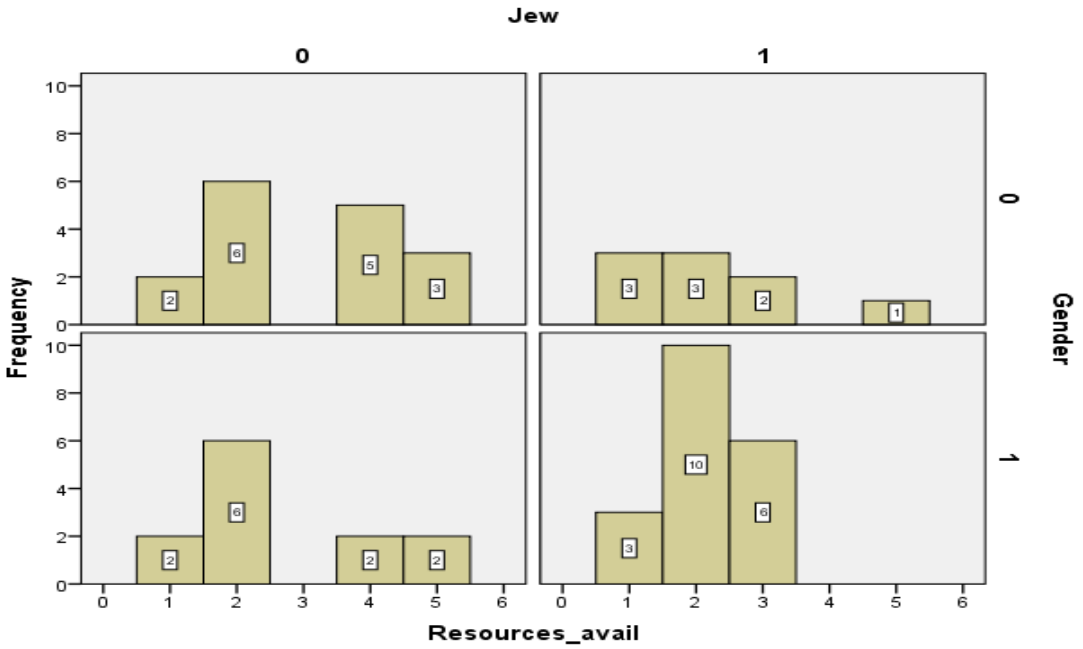


Figure 11.11. Frequencies of satisfaction by resources availability

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: elaborated by the author

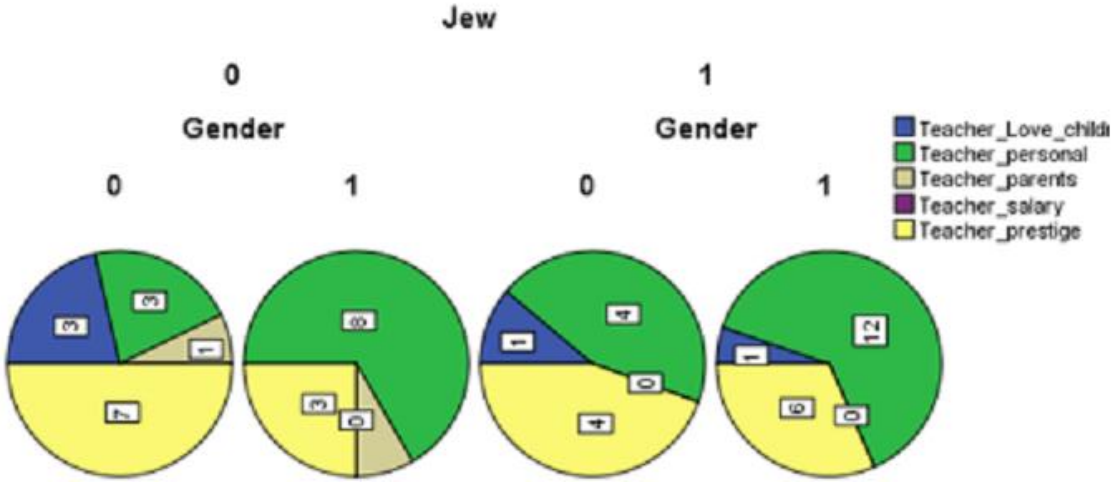


Figure 11.12. Frequencies of reasons to become a teacher

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. В: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

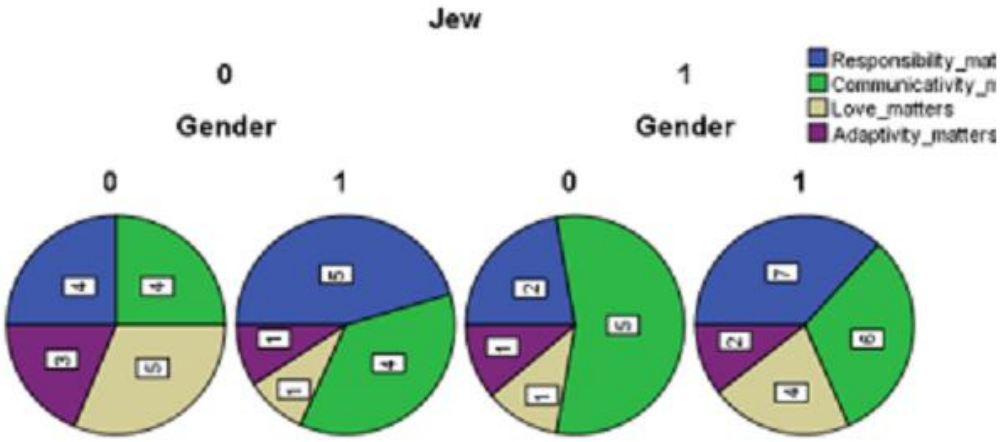


Figure 11.13. Distribution of most important characteristic of a future teacher

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. B: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

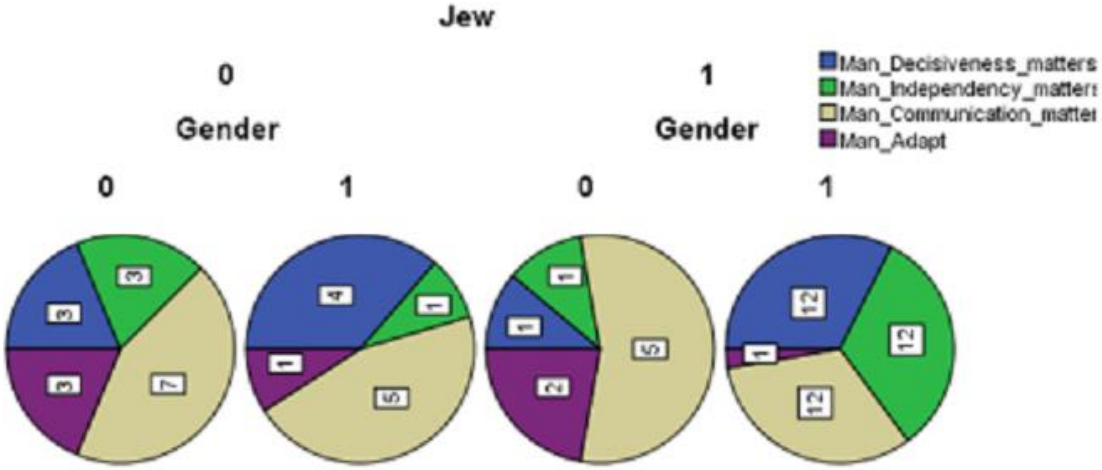


Figure 11.14. Distribution of most important characteristics of a future school manager

Gender: 0- female, 1- male; Jew: 0- Arab, 1- Jew

Source: AWADA, S., BLAGORAZUNMNAYA, O., SIROTA, J. Contemporary labor market of higher education in Israel. B: *Журнал гуманитарных наук*. Московский институт государственного управления и права, 2018, № 20, с. 75-83. ISBN 2078-9661

Appendix 12

Correlations between different job satisfaction components

Correlation / Probability	GENERAL_SATIS	HEAD_AI	IMPROVE_C	LEADER_	LEARNIN	POTENTI	MANAGE	RESOUR	SALARY_	SALARY	TALENTS_USED
GENERAL_SATISFY	1										

HEAD_APPRECIATE	0.379116	1									
	0.004	---									
IMPROVE_CHANCE	-0.041755	0.0428	1								
	0.7599	0.7541	---								
LEADER_SATISFY	0.246303	0.7183	-0.008073	1							
	0.0673	0	0.9529	---							
LEARNING_CONTRC	0.308906	0.4071	0.247244	0.4146	1						
	0.0205	0.0018	0.0662	0.0015	---						
POTENTIAL_PROB	-0.058396	0.079	0.069503	0.1152	-0.156	1					
	0.669	0.5627	0.6108	0.398	0.2513	---					
MANAGEMENT_SAT	0.198241	0.3901	0.069058	0.3679	0.4744	-0.106	1				
	0.143	0.003	0.613	0.0053	0.0002	0.4358	---				
RESOURCES_AVAIL	0.153574	-0.05	0.10621	0.0472	0.3251	-0.19	0.0149	1			
	0.2585	0.7144	0.4359	0.73	0.0145	0.16	0.913	---			
SALARY_FAIR	0.375606	0.3176	0.034074	0.2995	0.4105	0.0343	0.199	0.1725	1		
	0.0043	0.0171	0.8031	0.0249	0.0017	0.8018	0.1415	0.2036	---		
SALARY	0.341319	0.3183	0.033561	0.4406	0.376	0.0469	0.1912	-0.022	0.2642	1	
	0.01	0.0168	0.806	0.0007	0.0043	0.7312	0.1581	0.8734	0.0492	---	
TALENTS_USED	0.389128	0.6139	0.130152	0.6378	0.5653	-0.126	0.3218	0.043	0.3231	0.5031	1
	0.003	0	0.339	0	0	0.356	0.0156	0.7528	0.0152	0.0001	---

Source: elaborated by the author

Appendix 13

Output for simultaneous system of regressions model

System: UNTITLED
Estimation Method: Least Squares
Date: 12/02/17 Time: 16:45
Sample: 1 56
Included observations: 56
Total system (balanced) observations 112

	Coefficient	Std. Error	t-Statistic	Prob.
C(4)	0.503517	0.088684	5.677670	0.0000
C(6)	0.451376	0.085703	5.266756	0.0000
C(7)	2.050746	0.556689	3.683828	0.0004
C(10)	0.480597	0.154824	3.104158	0.0024
Determinant residual covariance		0.116391		

Equation: TALENTS_USED=C(4)*LEADER_SATISFY+C(6)
*LEARNING_CONTROL
Observations: 56

R-squared	0.505862	Mean dependent var	3.535714
Adjusted R-squared	0.496711	S.D. dependent var	0.659595
S.E. of regression	0.467935	Sum squared resid	11.82401
Durbin-Watson stat	1.967469		

Equation: GENERAL_SATISFY=C(7)+C(10)*TALENTS_USED
Observations: 56

R-squared	0.151421	Mean dependent var	3.750000
Adjusted R-squared	0.135707	S.D. dependent var	0.814639
S.E. of regression	0.757348	Sum squared resid	30.97313
Durbin-Watson stat	1.688071		

Source: elaborated by the author

Appendix 14

Summary of crowdsourcing projects for creation of crowdsourcing content

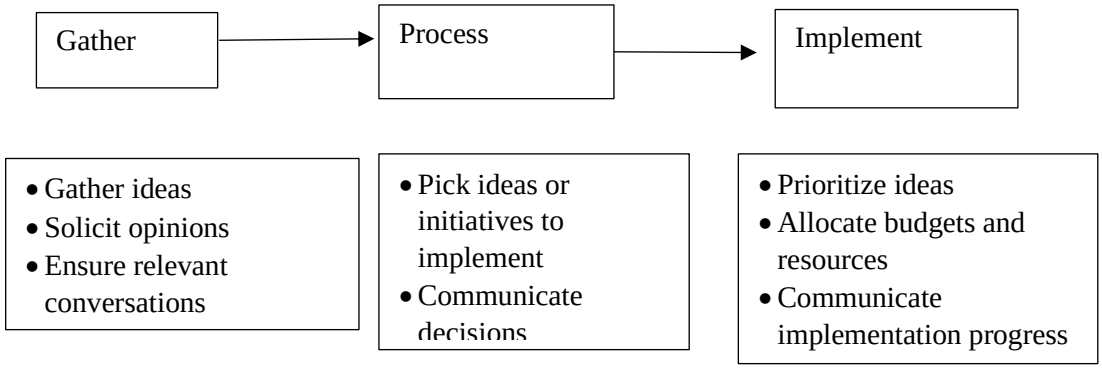
Project Name	Institution	Volunteers	Project	Source
Online Textbook	Brinham Young University, USA	682 students of Project Management class	Textbook-Project Management for Instructional Designers	Wiley, 2011
Crowdsourcing Textbooks	North Carolina State University, USA	120 students	Textbook- Object Oriented Design, Architecture of Parallel Computers	Gehringer, 2011
Management through Collaboration Book Project	St John's University, USA	Almost 100 management educators and researchers in about 90 nations	Management through Collaboration: Teaming in a Networked World	Wankel, 2009
The SOS classroom	University of Southern California, USA	Teachers, parents, and students	Case materials for students (ESL-English as a second language), language arts, math, music, and science	http://sosclassroom.org

Source: elaborated by the author based on[304]

[304]SOLEMON, B., ARIFFIN, I., MD DIN, M., MD ANWAR, R. A review of the uses of crowdsourcing in higher education. In: *International Journal of Asian Social Science*. 2013, nr.3(9), pp. 2066-2073. ISSN: 2226-5139

Appendix 15

Steps of crowdsourcing implementation



Source: elaborated by the author

DECLARATION ON ASSUMING THE RESPONSIBILITY

Exhibits

By signing below, I certify personal responsibility that the materials presented in the doctoral thesis are the result of independent scientific research and processing. I am aware that otherwise I will be punishable fully of the law.

Name: Awada Saleh

Signature:

Date:

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A THESIS APPLIED FOR

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WORK EXPERIENCE

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1996-2006	Community Center manager
1986-1991	Village Sports coordinator and Keter plastic company executive manager
1983-1986	Army service- soldier-teacher

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2013 – 2018	**PhD** doctorate student at the Free International University of Moldova (ULIM).

2007-2013	**M.A.** in Educational systems and organization. The Center of Academic Studies of Or Yehuda.
1997-1998	**B.A.** in Physical education, Ohalo Center.
1980-1983	General sport guide, Wingate Institution.
1976-1980	Senior teacher certification, Teachers' seminar, Haifa.
	Matriculation certificate, Rama High school.

PERSONAL SKILLS

Mother tongue(s) **Arabic**

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
Hebrew	C2	C2	C2	C2	C2
English	B1	B2	B2	B1	B2

List of scientific papers published by the author on the theme of thesis

1. Articole în reviste științifice:

1.2. în reviste din străinătate recunoscute:

1. AWADA, S. The nature of labor market and its main characteristics. In: *Вестник*. Казахстан: Костанайский государственный педагогический институт, 2016, №2, p.19-21. ISSN 2310-3353. Revista este indexată în D Space, РИНЦ. https://press.ksu.edu.kz/ru/journal/2016/issue-42
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6. HAJAJRA, M., AWADA, S. Educational Equal Opportunity Policy: Arab and Bedouin Sector in Israel (Hebrew). In: Carmel College Israel site, 2020. http://mcd.org.il/site/wp-content/uploads/2020/05/Article_Mohammad_Equality_Policies_Hebrew.pdf
7. AWADA, S., HAJAJRA, M., SIROTA, J. Inequalities in Contemporary Labor Market of Higher Education in Israe (Hebrew). In: *Hal'ah Journal of the Forumfor the Promotion of Teaching and Learning in Israel*. Teaching, learning, quality of assessment in higher education, 2020, Nr. 1, p. 145-167. ISSN 2709-7455 (print); 2709-7463 (online). www.mta.ac.il.

1.3. în reviste din Registrul Naţional al revistelor de profil (cu indicarea categoriei):

1. AWADA, S. Labor market and its management. In: *Studii economice*. Chişinău: ULIM, 2015, an.10, nr. 2, p.104-118. ISSN 1857-226X (Categoria "C")
2. AWADA, S. Conceptul de auto-gestionare economica in instituţii. In: *Studii economice*. Chişinău: ULIM, 2015, an.10, nr. 2, p.119-124. ISSN 1857-226X (Categoria "C")
3. SIROTA, J., AWADA, S. Over-qualification at the higher education labor market of Israel. In: *EcoSoEn*, 2018, An.1, Nr.1,2, p.223-227. ISSN 2587-344X. (Categoria "B") este editată de Universitatea Liberă Internaţională din Moldova și indexată în CEEOL, DOAJ, IBN, Index Copernicus, Munich Personal RePEc Archive (MPRA), Academia.edu. http://ecosoen.ulim.md/
4. AWADA, S., SHIHADI, N. Foresight technology to solve modern challenges and achieve a better future. In: *EcoSoEn*, 2018, An.1, Nr.3, p. 267-271. ISSN 2587-344X. (Categoria "B") este editată de Universitatea Liberă Internaţională din Moldova și indexată în CEEOL, DOAJ,

IBN, Index Copernicus, Munich Personal RePEc Archive (MPRA), Academia.edu. http://ecosoen.ulim.md/

5. AWADA, S., HAJAJRA, M. Inequality at the higher education and labor market of Israel. In: *EcoSoEn*, 2018, An.1, Nr.4, p. 134-139. ISSN 2587-344X. (Categoria "B") este editată de Universitatea Liberă Internaţională din Moldova și indexată în CEEOL, DOAJ, IBN, Index Copernicus, Munich Personal RePEc Archive (MPRA), Academia.edu. http://ecosoen.ulim.md/
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7. AWADA, S. Comparison of Israel and Moldova of higher education labor market and its challenges. In: *Journal of Research on Trade, Management and Economic Development*. Chisinau: UCCM, 2022, Volume 9, nr. 2(18), p.89-97. ISSN 2345-1424.

2. Articole în culegeri ştiinţifice

2.1. în lucrările conferinţelor ştiinţifice internaţionale (peste hotare)

1. AWADA, S. Экономическое содержание рынка труда - особенности Израиля. В: *Наука и инновации – стратегические приоритеты развития экономики государства*. *Материалы VII Международной научно-практической конференции, спецвыпуск, 05 февраля 2016*. Казахстан: Костанайский инженерно-экономический университет имени М. Дулатова, 2016, с.18-22. ISSN 1684-9310.
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1. AWADA, S. Labor market management. În: *Preocupări contemporane ale științelor socio-umane. Materialele Conferinței Științifice Internaționale. Ediția a VI-a. Chișinău, 11-12 decembrie 2015.* Chisinau: ULIM, 2016, p. 17-21. ISBN 978-9975-933-82-7.
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Acts of implementation

Israel Sci-Tech Schools Network

ביה"ס אורט סאנג'ור

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פקס 04-9889321

ORT

7th June , 2020

Certification

I the undersigned, Dr. Ofra Daher, Principal of ORT High School Sajour-state of ISrael

Studied very carefully the thesis of **Mr. Saleh AWADA** named:

IMPROVING AND ADAPTING THE MANAGEMENT TECHNOLOGIES IN ORDER TO MEET THE NEEDS OF THE LABOR MARKET FOR THE EDUCATION FIELD OF ISRAEL

In the last decade and especially today, at the time of Corona crisis, there is a revolution in the Higher education methods of teaching and learning, and huge changes take place in the field of hiring and promotion of Higher education staff.

Some of the ideas in the thesis of **Saleh AWADA** are implemented within our organization, and I believe will have a high potential for the future education and its labor market.

Sincerely

ד"ר עפרה דאהר

Dr. Ofra Daher

Principal of ORT High School -Sajour

state of ISrael

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"02" iunie 2020 Chișinău

Nr. 19

Acte de implementare

al rezultatelor cercetărilor științifice
realizate de **Avad Saleh**
În teza Perfecționarea și adaptarea tehnologiilor de management la nevoile pieței muncii în domeniul educației în Israel

Esența și originalitatea investigației științifice constă în dezvoltarea și descrierea etapelor implementării crowdsourcing-ului ca tehnologie de management într-o instituție de învățământ, elaborarea și descrierea unui model de organizare a unui mediu educațional virtual pentru pregătirea unui profesor viitor, dezvoltarea unui algoritm pentru utilizarea jocului virtual în proces de studii, modelului de carieră a unui profesor, ținând cont de outsourcing și de crowdsourcing, mecanismului de selectare și adaptare a tehnologiilor de management la nevoile pieței muncii în domeniul educației în Israel.

Implementarea propunerilor, efectuate de Avad Saleh permit a eficientiza procesul educațional universitar și adaptarea la cerințele pieței muncii contemporane.

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