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Measuring Higher Education Services Using the SERVQUAL Model

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Abstract:

Research Question (RQ): In this research analysis, SERVQUAL tool was used with higher education institutions (HEIs) to measure service quality as well as to compare them. HEIs were compared to see the service quality dimensions that need improvements in public HEI verses private HEIs. More specifically, to examine if there is a common trend with public universities in specific quality service dimensions that were not expected and less perceived by students.

Purpose: Quality of service in a higher education institution is an essential aspect to ensure competency and attractiveness in the marketplace. Students are the primary stakeholders. Students expectations from an HEI and their perception of quality of service needs to be a strategic objective of an HEI. Public HEIs have a different strategy from private ones. In this research study, such a difference was examined to determine if it is reflected in a specific service quality dimension.

Method: The study is based on a comparative literature review of SERVQUAL instrument used in measuring service quality in HEIs. Results obtained from the review of literature were triangulated and examined for specific quality dimensions that were common in public HEIs that need improvement.

Results: Students' perception was less than expected in the quality of service provided. Public HEIs should consider reliability and responsiveness as a priority and along with other dimensions to improve service quality. SERVQUAL could be used to examine and measure students' perspective and measure periodical and implemented strategic objectives of higher education.

Organization and Society: The research impact is mainly on HEIs, their managers, and their plans for quality improvements.

Originality: The findings of the measuring tool SERVQUAL was compared among different HEIs from the review of literature using triangulation techniques.

Limitations / Further research: Limitations of the study are concerned mostly with the different data collected among different HEIs in different geographical regions. Triangulation of the same scale excluded many related studies which used different scale measures or further specified quality dimensions yielding fewer studies that could be triangulated. Further research could be conducted by collecting data on public and private HEIs in the same region and time and then repeated at different time intervals to examine any progress.

Keywords: SERVQUAL, Higher education, Public HEI, Triangulation, Service Quality, strategic objectives, students' perceptions, students' expectations.

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1 Introduction

Quality in service is as vital as quality in products in the industrial sector. Service quality as a sector by its own entity was not regarded as such until recently. Service assessed by itself was not a primary focus even in research till the late 1970s. However, since then, the service sector has demonstrated its significant effect on the economy. It had become a vital topic for study, and thus its measurement becomes imperative. However, the measurement of service quality is not straightforward, and often it is done indirectly by measuring a byproduct or tangible output. Therefore, it is essential to study the assessment and measurement of service quality (Abdullah, 2006).

Higher education is regarded as a service sector and an indispensable part of the commercial service sector. Its quality is a primary concern for its competitiveness and effectiveness. To maintain and ensure its quality, government requirements and accreditation standards were assigned to higher education. The assessments of these requirements and standards have placed more attention on curricula or tangible aspects than directly assessing service quality. The direct measurement of service quality will fill this gap of ensuring quality in service institutions. The assessment of quality service has to be done continuously for continuous improvement (Çerri, 2014). Assessment and measurement of service quality need to be executed from the perspective of primary stakeholders. As discussed in Douglas, McClelland, and Davies (2008) the primary stakeholders in higher education are the students.

Having the above in mind, in this study, Higher Education Institutions (HEIs) were compared to see the service quality dimensions that need improvements in public HEIs versus private HEIs. More specifically, for this paper to examine if there is a common trend with public universities in specific quality service dimensions that were not expected and less perceived by students.

SERVQUAL is a research instrument that measures customers' perception of service quality and their expectation of the service. It then measures the difference between the expectation and perception to see if the perception is higher or lower than the expected. When it is lower, improvements need to be conducted in that quality dimension. In the case of higher education, it measures the perception of students with regards to the quality of service of higher education institutions. This research aims to do a comparative literature review of several higher education institutions that had used the SERVQUAL research instrument to determine if there is consistency in the findings regarding which dimension of service is lacking in public institutions in general. The method to be used is the triangulation of results from different public institutions of the data collected by SERVQUAL in several public and private higher education institutions.

Leisyte and Westerheijden (2014) state that students who are regarded as equal partners, i.e., as stakeholders, are more involved in determining the institution's strategy. Through measurement of student's perception and expectation of quality service, the obtained results

can then be included in the strategic objectives of the institution. The purpose of quality assurance is to ensure that higher education institution meets its strategic objectives. They need to have input for internal and external evaluations, quality assurance, curriculum, and other factors (Kettunen, 2012). Therefore, the measurement of student's perception of quality service, and their involvement in strategic management completes the circle in the institution's back and forth measurement and input of quality.

2 Theoretical framework

2.1 Definition of Service Quality

From a theoretical standpoint, there is no universal definition of quality - it may be defined as the conformance of a requirement, being fit to use (Parasuraman, Zeithaml, & Berry, 1985; Zeithaml, 1988). Moreover, measuring the quality of a service can be a challenging exercise. Unlike products where there are specific specifications such as length, depth, width, weight, color, and so on, a service has many intangible or qualitative specifications. Also, there is an expectation of the customer with regards to the service, which can vary considerably based on a range of factors such as prior experience, personal needs, and what other people may have told them (Grönroos, 1984).

Quality service is defined as the customers' perceptions of service performance that meets or exceeds their expectations of what the service organization provides. Thus, the service quality is to fulfill customer expectations (Pariseau & McDaniel, 1997).

Castleberry and McIntyre (2011) define the perceived quality of service as the belief about the excellence level of the service (p. 75). According to Zeithaml (1998), perceived quality of service is "the judgment of consumer on the superiority or the excellence of a product or service" (p. 3). Perceived quality of service differs from objective quality. Perceived quality of service is the consumers' perception, which is unequal to satisfaction obtained by comparing consumers' expectations from service and performance of the received service (Zeithaml, 1988). Perceived quality of service is an attitude that is related to but different than contentment, and it is attained by comparing the expectations with perceived performance (Parasuraman, Zeithaml, & Berry, 2002).

Parasuraman, Zeithaml, and Berry (1985, 1991) and Parasuraman, Berry, and Zeithaml (1991) developed a measurement tool entitled SERVQUAL, to be used in a variety of service industries. SERVQUAL has been tested in a number of service settings (Buttle, 1996; Ladhari, 2009; Lam & Woo, 1997). The SERVQUAL scale was developed to provide an instrument for measuring service quality to be applied to a broad range of services with minor modifications in the scale. There are five dimensions of service quality that apply to service-providing organizations in general.

2.2 Service Quality Determination

The SERVQUAL method consists of 5 quality dimensions (i.e., Tangible, Reliability, Responsiveness, Assurance and Empathy) and of 20 elements. The SERVQUAL instrument was used to measure the five quality dimensions of service quality. The five dimensions with the corresponding definition are listed in Table 1.

Table 1. The Five dimensions of SERVQUAL with Definitions

(1) <i>Tangibles</i>	Physical facilities, equipment and appearance of personnel.
(2) <i>Reliability.</i>	Ability to perform the promised service dependably and accurately.
(3) <i>Responsiveness</i>	Willingness to help customers and provide prompt service.
(4) <i>Assurance</i>	It includes competence, courtesy, credibility and security. It is the knowledge and courtesy of employees and their ability to inspire trust and confidence.
(5) <i>Empathy</i>	It includes access, communication, understanding the customer. It is the caring and individualized attention that the firm provides to its customers.

Note: Five Dimensions of SERVQUAL with Definitions. Adapted from “Five imperatives for improving service quality”, by L. L. Berry, V. A. Zeithaml, and A. Parasuraman, 1990, *MIT Sloan Management Review*, 31(4), p. 29.

These five dimensions appear in the questionnaires used for SERVQUAL measurement and Figure 1 presents a summary of the critical factors in each of the five quality dimensions of service.

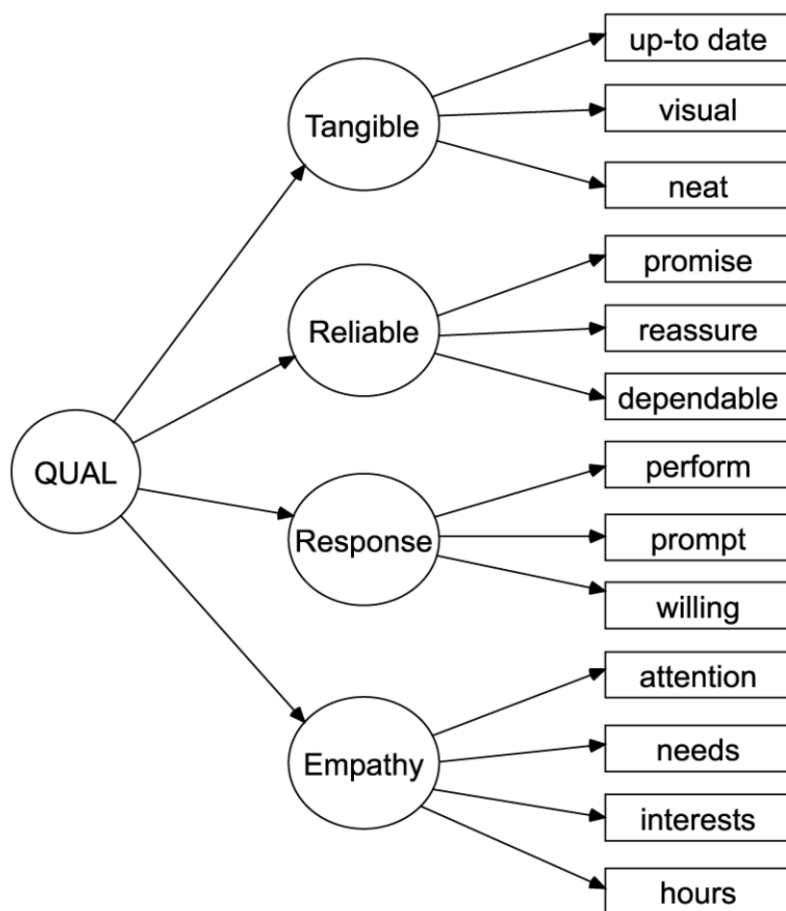


Figure 1. Factors incorporated in the five service quality dimensions. Adapted from The applicability of SERVQUAL in cross-national measurements. Kilbourne, Duffy, and Giarchi, (2004), *Journal of Services Marketing*, 18(7), p. 528

SERVQUAL contains 20 pairs of items (see example below). Half of these items are intended to measure consumers' expected level of service for a particular industry (Expectations). The other 20 matching items are intended to measure consumer perceptions of the present level of service provided by a particular organization (Perceptions).

Example of a pair of items:

Expectation items (1-20)

1- Excellent Higher education institutions must have attractive buildings

1 2 3 4 5

2-

Perception items (1-20)

1- Higher education institution X has attractive buildings

1 2 3 4 5

2-

Both sets of items are presented in five-point Likert response format, with the range between 5 as ‘strongly agree,’ and 1 as ‘strongly disagree’. Service quality is measured on the basis of the different scores by subtracting Expectation scores from the corresponding Perception scores.

Putting service quality into operation as a difference or ‘gap’ score is a consistent extension of the theoretical work of Parasuraman and his colleagues (1985, 1988) on the determinants of service quality. It is unique in the sense that the definition of the construct is based on the difference between expectations and perceptions. The construct is differentiated from consumer satisfaction in a way that defines the expectations/ perceptions ‘gap’ as an enduring perception of the overall excellence of a particular firm.

A structured survey questionnaire was developed according to SERVQUAL scale. It consists of 20 statements with two columns.

For each pair of statements listed in the SERVQUAL instrument, a score was computed as follows: Service quality (SQ) = Perception (P) – Expectation (E). For example, if a perception of a statement on Empathy scored a 3 and the corresponding statement for expectation scored a 5 then, $SQ = P(3) - E(5) = -2$. The service quality of the higher education institution is assessed along each of the five dimensions by averaging the SERVQUAL scores on the statements making up the dimension measures.

The SERVQUAL scale is analyzed based on the gap-based principal. The service quality based on the gap for each dimension is calculated with the following equation (Sánchez Pérez, Carlos Gázquez Abad, María Marín Carrillo, & Sánchez Fernández, 2007):

$$GSQ_j = \frac{\sum_{i=1}^n (P_{ij} - E_{ij})}{n_i}$$

In this formulation;

P_{ij} = the perceived (experience) level of service for the *i*th aspect at the *j*th dimension,

E_{ij} = the expected level of service for the *i*th aspect at the *j*th dimension,

n_i = number of observations.

Zeithaml, Berry, and Parasuraman (1993) state that the only criterion for measuring service quality is the match between the service provided and the consumers’ expectation (i.e., the stakeholder in our research) of quality. More specifically, the definition of quality of service is determined by the consumer (Quester & Romaniuk, 1997). In the service sector, the consumer (i.e., stakeholder) determines not only the quality of service but also its limits. Therefore, the quality of service and its limits are consumer stakeholder-oriented.

3 Method

3.1 Data Collection

The study is based on the comparative literature review of the SERVQUAL instrument used in measuring service quality in higher education institutions (HEI). Results obtained in the literature were triangulated and examined for specific quality dimensions that were common in public HEIs that need improvement.

Data collected was through the review of literature. Articles were selected using the following criteria:

- SERVQUAL instrument is used in a higher education institution,
- It is evident that the institution is a public or private institution,
- The quality dimensions used are the five original dimensions with no further elaborated dimension,
- The measurement is the original measurement: $\text{Gap} = \text{Expectation} - \text{Perception}$,
- The findings in the article are actual numbers which can be used and calculated in a way that suits our study.

The triangulation of data from the articles requires the presence of sufficient data inside the article reaching data saturation. Several articles were eliminated as they did not fit the criteria above. Table 2 lists the articles that were selected for data collection.

Table 2. Articles included in Data Analysis

No.	Public/ Private	Country	University	Faculty	Article
PB1	Public	Bosnia and Herzegovina	University of Tuzla	Faculty of Economics	Donlagić, S., & Fazlić, S. (2015). Quality assessment in higher education using the SERVQUAL model. <i>Management: Journal of contemporary management issues</i> , 20(1), 39-57.
PB2	Public	Iran	Zanjan University of Medical Sciences		Mohammadi, A., & Mohammadi, J. (2014). Educational Service Quality in Zanjan University of Medical Sciences from Students' Point of View. <i>World Journal of Education</i> , 4(5), 86.
PB3	Public	Croatia	University of J.J.Strossmayer,	Faculty of Law in Osijek	Legčević, J. (2010). Quality gap of educational services in viewpoints of students. <i>Ekonomika Misao i Praksa</i> (2)279.
PB4	Public	Iran	Hormozgan University of Medical Sciences		Aghamolaei, T., & Zare, S. (2008). Quality gap of educational services in viewpoints of students in Hormozgan University of medical sciences. <i>BMC Medical</i>

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					Education, 8(1), 34.
PB5	Public	Brazil	São Paulo State University (UNESP)	Production Engineer program	De Oliveira, O. J., & Ferreira, E. C. (2009). Adaptation and application of the SERVQUAL scale in higher education. Paper presented at the Proceedings of POMS 20th Annual Conference Orlando, Florida USA.
PB6	Public	Albania	Aleksandër Xhuvani University (UNIEL)		Çerri, S. (2012). Assessing the quality of higher education services using a modified SERVQUAL scale. <i>Annales Universitatis Apulensis: Series Oeconomica</i> , 14(2), 664.
PB7	Public	Poland	Czestochowa University of Technology	Faculty of Management	Ulewicz, R. (2014). Application of Servqual method for evaluation of quality of educational services at the university of higher education. <i>Polish Journal of Management Studies</i> , 9, 254--264.
PR1	Private	Iran	Islamic Azad University-Khorasgan Branch		Abari, A. A. F., Yarmohammadian, M. H., & Esteki, M. (2011). Assessment of quality of education a non-governmental university via SERVQUAL model. <i>Procedia-Social and Behavioral Sciences</i> , 15, 2299-2304.
PR2	Private	Thailand	Khon Kaen University		Yousapronpaiboon, K. (2014). SERVQUAL: Measuring higher education service quality in Thailand. <i>Procedia-Social and Behavioral Sciences</i> , 116, 1088.
PR3	Private	Dubai	Manipal University Dubai Campus		Datta, K. S., & Vardhan, J. (2017). A SERVQUAL-Based Framework for Assessing Quality of International Branch Campuses in UAE: A Management Students' Perspective. <i>SAGE Open</i> , 7(1).

3.2 Data Analysis: Triangulation of Data

The measurement findings of the quality dimensions of SERVQUAL were triangulated from different HEIs. The numbers were compared, and the magnitude for each parameter was examined. Then the ranked quality dimensions that were in the first rank and last rank were also compared. Each of these triangulated data is presented consecutively.

SERVQUAL uses the Likert-type scale to measure the importance of a quality measure to the student. Each quality dimension tangibles, reliability, responsiveness, assurance, and empathy is measured by several questions in the questionnaire on a scale of 1 to 5. Various articles used in the data analysis used different scales, which were either 1 to 5, 1 to 7, or 1 to 9. The results were converted by using a conversion formula (see Table 3).

Each one of the five dimensions with their questions has an average measurement for Expectation, Perception, and then the Gap ($\text{Gap} = P - E$). In this study, the total average of Expectations, Perceptions, and Gaps was triangulated and compared, collected from each articles' findings.

3.3 Reliability and Validity of Data

All findings from the dataset have a reported acceptable validity and reliability values. The validity and reliability of this research in comparing and triangulating findings was completed by paralleling and choosing literature that used a similar scale and provided sufficient data for further calculating needed measurements.

The limitations of the study were mostly with the different data collected among various HEI in different geographical regions. Triangulation at the same scale excluded many related studies that used different scale measures or further specified quality dimensions yielding fewer studies that could be triangulated. Further research could be done by collecting data on public and private HEIs in the same geographical region and time and then repeated at various times to examine any progress.

4 Results

4.1 Triangulation of Average Measurements of Expectation, Perception, and their Gap

Data triangulation of the average expectations, perceptions, and gaps of the ten articles, of which seven represented public HEIs and three private HEIs, are presented in Table 3. The mean (\bar{x}) expectation and the mean (\bar{x}) perception are listed along with the gap of each mean (\bar{x}). Some of these measurements were calculated from the data present in the respective articles. The data were regarded as a whole mean (\bar{x}) of findings and not by dimension to obtain a holistic view of the data. Each column then has its respective mean (\bar{x}) to be compared. Expectation column then has its mean (\bar{x}) for the public HEI vs. mean (\bar{x}) of the expectation column for private HEIs. Similarly, this was computed for perception and gap columns (Table 3).

Table 3. Mean Expectation, Perception, and Gap Measurements for 10 HEIs.

<i>HEI Public/ Private</i>	<i>Likert Scale</i>	\bar{x} <i>Expectation Original</i>	\bar{x} <i>Expectation Converted*</i>	<i>SD</i>	\bar{x} <i>Perception Original</i>	\bar{x} <i>Perception Converted *</i>	<i>SD</i>	\bar{x} <i>Gap (P-E)</i>	<i>The New \bar{x} Gap (P-E)</i>	<i>SD</i>
PB1	7*	6.35	4.58		3.86	2.91		-2.49	-1.66	
PB2	5	4.44	4.44		2.84	2.84		-1.60	-1.59	
PB3	5	4.38	4.38		3.11	3.11		-1.30	-1.27	
PB4	5	4.03	4.03		3.13	3.13		-0.89	-0.89	
PB5	7*	5.35	3.90		4.50	3.33		-0.85	-0.57	
PB6	7*	6.01	4.34		5.43	3.95		-0.58	-0.39	
PB7	7*	Not available	Not available		Not available	Not available		-0.43	-0.43	
Total Average Public			<u>4.28</u>	0.23 7		<u>3.22</u>	0.36 6		<u>-1.06</u>	0.5
PR1	5	4.03	4.03		3.51	3.51		-0.52	-0.52	
PR2	9*	7.12	3.69		4.56	2.57		-2.56	-1.13	
PR3	9*	7.10	3.68		4.28	2.44		-2.81	-1.24	
Total Average Private			<u>3.80</u>	0.16 3		<u>2.84</u>	0.47 7		<u>-0.96</u>	0.31 7

*NB: conversion formula was used to calculate 7 and 9 Likert Scale to a 5 point scale.
newscore = $(1 + 2/3(\text{oldscore}-1))$ for the 7 Likert Scale [6 parts for 7 scale to 4 parts for 5 scale]
newscore = $(1 + 1/2(\text{oldscore}-1))$ for the 9 Likert Scale [8 parts for 9 scale to 4 parts for 5 scale]

Interpretation:

With all 10 HEIs, each expectation exceeds perception of the services provided. This is interpreted as the primary stakeholders (i.e., the students) in all of the examined HEIs do not have a met expectation. As such, the findings showed unmet expectations as perceived by students. When perception scale was subtracted from the expectation scale, a negative measurement is obtained, indicating a presence of a gap, which means the students' perceive the service provided at a lesser level than what they would expect. None of the HEIs (i.e., private or public) has met expectations. All of them had a negative gap when P - E was calculated.

Comparing the total average Expectation of the students of public HEI with that of the Expectations of students of private HEIs, the public HEI showed a higher value; this means that the total Expectation of students from public HEIs is greater than that of the total Expectation of students from private HEIs.

Such a higher result was not expected as students pay for private institutions and thus they tend to expect more.

4.2 Triangulation of the Highest and Lowest Rank for Expectations

Another triangulation comparison was conducted regarding the highest and lowest rank for expectation. The ranking of the five-quality dimension: tangibles, reliability, responsiveness, assurance, and empathy are a finding in each of the studies. In each study, the findings included the quality dimension of one or more of the five that needed prioritized improvement. The quality dimension that had the most significant negative gap number was the one selected in ranking as number one, then followed by a list of five that were ranked, consecutively for the remaining quality dimensions. The same was completed for the expectation and perception measurements. In this research, the results for each HEI was collected and tabulated. It was also triangulated and compared in each aspect of expectation, perception, and gap. Table 4, 5, and 6 presented the comparison of all 10 HEIs.

Table 4. Highest and Lowest Rank for Expectation

<i>HE Public/ Private</i>	<i>Highest Rank Expectation</i>	<i>Lowest Rank Expectation</i>
PB1	Empathy	Tangibles
PB2	Reliability and Empathy	Tangibles
PB3	Reliability	Tangibles
PB4	Assurance	Responsiveness
PB5	Responsiveness	Tangibles
PB6	Assurance	Empathy
PB7	n/a	Empathy
PR1	Responsiveness	Tangibles
PR2	Responsiveness	Empathy
PR3	Assurance	Responsiveness

In Table 4, the public and private HEIs are listed with the highest ranked quality dimension in the expectation scale for each one. Then another column was added for the least ranked dimension in the SERVQUAL expectation findings for each HEI.

Interpretation

It was observed that the public HEIs (PB1 → PB7) have in the first rank different dimensions which include Reliability, Empathy, and Assurance. Tangibles were never in the first rank of any of the public or private expectation priorities. These results indicate that it was not in the interest of students in either public or private HEIS to prioritize tangibles. Students did not consider a high priority much the facilities' equipment, building, and the appearances of staff. In public HEIs, students expected less from the dimension of Empathy along with tangibles. They did not expect individualized attention from faculty, staff, and administration.

With private HEIs (PR1 → PR3) the first ranked dimension was Responsiveness. The students expected prompt service from the institution's staff and faculty. Students paying tuition expected to receive swift and willing service from the staff and faculty.

4.3 Triangulation of the Highest and Lowest Rank for Perception

Table 5. Highest and Lowest Rank for Perception

<i>HE Public/ Private</i>	<i>Highest Rank Perception</i>	<i>Lowest Rank Perception</i>
PB1	Reliability	Responsiveness
PB2	Reliability	Responsiveness
PB3	Tangibles	Empathy
PB4	Reliability	Responsiveness
PB5	Assurance	Empathy
PB6	Responsiveness	Empathy
PB7	n/a	n/a
PR1	Assurance	Responsiveness
PR2	Reliability	Empathy
PR3	Assurance	Empathy

As with Table 4, Table 5 lists the first in rank for each HEI for perception. Perception is the received service and how student see it if it is sufficient enough or not from their perspective.

Interpretation

Perception of quality of service in public HEIs from the students' point of view was that they did receive trusted information and service (Table 5) which is considered under the dimension of Reliability. This dimension was perceived in the first rank of most of the public HEIs. Reliability is the trust and assurance of service. Moreover, Responsiveness and Empathy were the least perceived by students in public HEIs. Responsiveness is prompt service that is done quickly, willingly, with good-performance, while Empathy is the individualized personal help given to students.

The private HEIs had received Assurance, Confidentiality, and Securities of services, but did not receive a high assessment on the dimensions of Empathy and Responsiveness.

4.4 Triangulation of the Highest and Lowest Rank for Gap

SERVQUAL's main measurement is the gap values (Table 6). The gap value indicates the precise value from the point view of the stakeholder, the students. Therefore, findings of SERVQUAL are mainly the gap measurement and the level of negativity it measures. The measurement of the gap is the difference between Expectation and Perception (P - E). It views the gap as a more leveled value to consider. It relies on the dimension that has the highest gap and should be worked on for improvement in a quicker manner than with the other dimensions.

Similar to the above tables, Table 6 lists the negative gaps for each HEI. Observation was conducted to determine the triangulated findings comparison of the most negative result with each HEI and with the least.

Table 6. Highest and Lowest Rank for Gap

<i>HE Public/ Private</i>	<i>Most Negative Gap</i>	<i>Least Negative Gap</i>
PB1	Empathy	Reliability
PB2	Responsiveness	Reliability
PB3	Reliability	Tangibles
PB4	Responsiveness	Reliability
PB5	Responsiveness	Tangibles
PB6	Reliability	Responsiveness
PB7	Reliability	Assurance
PR1	Responsiveness	Reliability
PR2	Tangibles	Reliability
PR3	Assurance	Empathy

Interpretation

Public HEIs have a gap in Responsiveness and Reliability, two major service quality dimensions that need immediate improvement. It could be stated that such results are typical of governmental institutions where procrastination is the most flawed quality (Furusawa & Lai, 2011).

Public HEIs with governmental employees may lack promptness to student needs. Moreover, their service could be viewed as not reliable, depending on the competition of the intuition. However, the Reliability dimension could be least prioritized when a public institution is seen as dependable, assuring and confident. Moreover, students who are in public universities did not assess Tangibles as an essential issue.

Private HEIs have mixed gap dimensions that need to be improved ahead of other dimensions. However, it is interesting that Reliability and Empathy were the last on the list to be improved.

5 Discussion

5.1 Short Description of the Results

In our findings of the current research, all HEIs studied failed to have a positive gap between expectation and perception of quality services in the view of the students in public and private institutions. Quality of service was less than expected as perceived by the primary stakeholders, the students.

Moreover, students in public HEIs have cumulatively more expectations than students from private HEIs but have a greater value in the perception of services. On the other hand, the gap difference between cumulative perception and expectation was greater for public HEIs than with private HEIs. Quality of service needs more prioritized improvement in the public sector.

The dimensions of quality of service: Tangibles, Reliability, Responsiveness, Assurance, and Empathy were ranked for each HEI in the studies examined. Findings of the first in rank of quality dimension in each institution revealed that the expectation of students in public HEIs constitutes mainly with Reliability, Empathy, and Assurance. Tangibility is a dimension both in private and public sector that had no priority. Private institutions' first in rank was the Responsiveness dimension.

5.2 Discussing the Results & Research Question

The perception first in rank in public HEIs was Reliability. Students at public HEIs receive a better reliability quality of service in their perception, but less quality in Responsiveness and Empathy. Private HEI students, on the other hand, had perceived Assurance as number one for service and Empathy as the last ranking.

Reliability and Responsiveness have the highest ranking in the gap of service in public institutions. Both of these quality dimensions are needed to be improved and prioritized. Gap of service is the difference between perception and expectation of quality of service from the main stakeholders of the HEIs, the students. At the same time, Reliability was the least ranked dimension in certain public and private HEIs. As such, based on the findings from this study, public HEIs have shown a trend in specific dimensions that commonly needs improvement.

5.3 Authors' Opinion

Outside features of private and public institutions can be easily spotted; however service quality is not as easy to determine. The dimension of service quality remains questionable with the lack of proof to whether service is provided as expected from its customers. SERVQUAL helps in providing additional evidence with indications of which dimension of quality to improve.

6 Conclusion

6.1 Summary of the Results

In conclusion, findings from the dataset revealed that students' Perception was less than the Expectation in the quality of service provided. Public HEIs need to consider Reliability and Responsiveness as a priority and along with the other dimensions to improve service quality. SERVQUAL could be used to examine and measure students' perspective, measure it periodically, and the findings into the strategic objectives of higher education.

6.2 Contribution to the Profession

Service quality in higher education is a valuable competitive asset. As public and private HEIs are flourishing in numbers, their quality has to be in perspective to enhance and maintain competitiveness. Students' point of view has to be considered in the strategic plan of higher education institutions as quality is defined in achieving strategic goals and incorporated stakeholders' perspective in the strategic management of an organization.

6.3 Influence on Managers, Management and Organizations

Public HEIs have a shared context that differs from private HEIs. In this research, an attempt was made to see which quality dimensions are in priority to be improved by public HEIs. These results help the government and management of these institutions to make more educated choices of incorporating these dimensions in their strategic planning. Moreover, students always want reliable and responsive services from HEIs. Other quality service dimensions are needed as well. Student perception of quality service means incorporating all dimensions of service quality with the prominence of reliability and responsiveness in their strategic objectives.

6.4 Research Limitations

Limitations of the study are concerned mostly with the different data collected among different HEIs in different geographical regions. Triangulation of the same scale excluded many related studies which used different scale measures or further specified quality dimensions yielding fewer studies that could be triangulated.

6.5 Suggestions for Further Research

Further research considering SERVQUAL needs to be conducted in the same country with identical questionnaires for both public and private HEIs. Namely to parallel the findings as well as to conduct the study intermittently to measure the progress and change, which occurred overtime with HEIs.

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Appendix A: Questionnaire SERVQUAL adapted to higher education

	Expectation (E)	Performance (P)
Tangibility	<p>1 – Excellent Higher education institutions must have modern equipment, such as laboratories.</p> <p>2 – Higher education institution installations must be well conserved.</p> <p>3 – Employees and teachers at excellent institutions of Higher education must present themselves (clothes, cleanliness, etc.) in an appropriate manner for their position.</p> <p>4 - The material associated with the service provided in excellent institutions of Higher education, such as journals, printed matter, must have a good visual appearance and be up to date.</p>	<p>1 – Your Higher education institution has modern equipment, such as laboratories.</p> <p>2 – Your Higher education g institution installations are well conserved.</p> <p>3 – The employees and teachers at your institution of Higher education present themselves (clothes, cleanliness, etc.) in an appropriate manner for their position.</p> <p>4 - The material associated with the service provided in your institution of Higher education, such as journals, printed matter, has a good visual appearance and is up to date.</p>
Reliability	<p>5 – When excellent institutions of Higher education promise to do something in a certain time, they must do so.</p> <p>6 – When a student has a problem, excellent institutions of Higher education demonstrate sincere interest in solving it.</p> <p>7 – Excellent of institutions of Higher education will do the job right the first time and will persist in doing it without error.</p>	<p>5 – When your institution of Higher education promises to do something in a certain time, it does so.</p> <p>6 – When you have a problem, your institution of Higher education demonstrates sincere interest in solving it.</p> <p>7 – Your institution of Higher education will do the job right the first time and will persist in doing it without error.</p>
Responsibility	<p>8 – Employees and teachers at excellent institutions of Higher education promise their clients the services within deadlines they are able to meet.</p> <p>9 – The employees and teachers at excellent institutions of Higher education are willing and available during service providing.</p> <p>10 – The employees and teachers at excellent institutions of Higher education will always show good will in helping their students.</p> <p>11 – The employees at excellent institutions of Higher education are always willing to explain doubts their students may have.</p>	<p>8 – Employees and professors at your institution of Higher education promise you the services within deadlines they are able to meet.</p> <p>9 – The employees and teachers at your institution of Higher education are willing and available during service providing.</p> <p>10 – The employees and teachers at your institution of Higher education always show good will in helping.</p> <p>11 – The employees and teachers at your institution of Higher education are always willing to explain your doubts.</p>
Security	<p>12 - The behavior of employees and teachers at excellent institutions of Higher education must inspire confidence in the students.</p> <p>13 – Students at excellent institutions of Higher education feel safe in their transactions with the institution.</p> <p>14 - The employees and teachers at excellent institutions of Higher education must be polite to the students.</p> <p>15 – The employees and teacher at excellent institutions of Higher education must have the knowledge needed to answer student questions.</p>	<p>12 - The behavior of employees and teachers at your institution of Higher education inspire confidence.</p> <p>13 – You feel safe in your transactions with your institution of Higher education.</p> <p>14 – The employees and teachers at your institution of Higher education are polite.</p> <p>15 – The employees and teachers at your institution of Higher education have the knowledge needed to answer your questions.</p>
Empathy	<p>16 – Excellent institutions of Higher education must have convenient business hours for all students</p> <p>17 – Excellent institutions of Higher education must have employees and teachers who provide individual attention to each student.</p> <p>18 – Excellent institutions of Higher education must be focused on the best service for their students.</p> <p>19 – Excellent institutions of Higher education must understand the specific needs of their students.</p>	<p>16 – Your institution of Higher education has convenient business hours for all students.</p> <p>17 – Your institution of Higher education has employees and teachers who provide individual attention to each student.</p> <p>18 – Your institution of Higher education is focused on the best service for its students.</p> <p>19 – Your institution of Higher education understands the specific needs of its students.</p>

Appendix B: Example of Data Tabulation

	Expectations								Perceptions								(P-E)	
	Frequency of Responses							Average	Frequency of Responses							Average		
	1	2	3	4	5	6	7		1	2	3	4	5	6	7			
Tangibility	1	0	0	1	2	11	9	5	5.536	6	5	10	8	5	1	0	3.114	-2.421
	2	0	0	1	2	7	11	7	5.750	3	6	10	8	3	4	1	3.514	-2.236
	3	5	7	7	3	4	0	2	3.071	0	1	4	4	8	14	4	5.200	2.129
	4	1	2	2	3	9	6	5	4.964	0	2	2	9	11	9	2	4.829	-0.136
Average tangibility = -0.666																		
Reliability	5	0	0	0	0	10	7	11	6.036	0	2	7	5	8	11	1	4.647	-1.389
	6	0	1	1	5	8	7	6	5.321	1	2	5	10	8	7	2	4.457	-0.864
	7	2	1	3	5	6	8	3	4.714	1	1	6	10	11	5	1	4.371	-0.343
Average reliability = -0.865																		
Promptness	8	0	0	3	0	5	11	9	5.821	0	1	2	13	7	11	1	4.800	-1.021
	9	0	2	1	3	1	14	7	5.607	0	1	4	6	11	12	1	4.914	-0.693
	10	0	0	1	5	5	8	9	5.679	1	2	8	5	10	8	1	4.400	-1.279
	11	0	0	1	2	6	7	12	5.964	1	0	4	7	7	9	7	5.114	-0.850
Average promptness = -0.961																		
Security	12	0	0	1	2	4	16	5	5.786	2	0	3	10	11	6	3	4.657	-1.129
	13	0	0	2	2	5	10	9	5.786	0	1	1	9	9	11	4	5.143	-0.643
	14	1	1	2	7	10	4	3	4.714	0	1	5	6	15	3	4	4.765	0.050
	15	0	0	1	0	1	6	20	6.571	0	1	2	9	9	10	4	5.057	-1.514
Average security = -0.809																		
Empathy	16	1	1	2	3	9	8	4	5.071	7	2	6	4	9	4	3	3.857	-1.214
	17	4	4	2	5	10	2	1	3.821	2	0	9	8	8	5	3	4.343	0.521
	18	0	1	1	2	2	8	14	6.036	1	1	7	10	11	3	2	4.314	-1.721
	19	0	0	2	4	10	6	6	5.357	1	4	8	11	7	2	2	3.943	-1.414
Average empathy = -0.957																		
Overall average = -0.852																		

Povzetek:

Merjenje kakovosti storitev visokošolskih zavodov z modelom SERVQUAL

Raziskovalno vprašanje (RV): V tej raziskovalni analizi smo uporabili orodje SERVQUAL za merjenje kakovosti storitev visokošolskih zavodov (HEIs). Visokošolske zavode smo primerjali z namenom, da ugotovimo, katere so tiste dimenzije kakovosti storitev, ki so potrebne izboljšav v javnih visokošolskih zavodih ter pri zasebnih visokošolskih zavodih. Natančneje smo preučili ali obstajajo skupni trendi pri določeni dimenziji kakovosti storitev, ki jih študentje niso pričakovali in jih tudi manj zaznali.

Namen: Kakovost storitev visokošolskih zavodov je pomemben vidik, ki zagotavlja konkurenčnost in privlačnost na trgu. Študenti so primarni deležniki, zato morajo biti njihova pričakovanja in zaznavanje kakovosti storitev strateški cilj visokošolskega zavoda. Javni visokošolski zavodi imajo drugačno strategijo od zasebnih visokošolskih zavodov. V tej raziskavi smo preučevali to razliko z namenom ugotoviti ali se odraža v določeni dimenziji kakovosti storitev.

Metoda: Raziskava temelji na primerjalnem pregledu raziskovalnih študij, kjer se je uporabljal instrument SERVQUAL za merjenje kakovosti storitev v visokošolskih zavodih. Rezultati, pridobljeni s pregledom literature, so bili triangulirani in analizirani za dimenzije kakovosti storitev, ki so bile skupne pri javnih visokošolskih zavodih in so potrebni izboljšav.

Rezultati: Percepcija študentov pri zagotavljanju kakovosti storitev je bila nižja od pričakovanega. Javni visokošolski zavodi bi morali prednostno obravnavati zanesljivost in odzivnost ter skupaj z drugimi dimenzijami izboljšati kakovosti storitev. SERVQUAL se lahko uporablja za preučevanje in merjenje perspektive študentov, periodično merjenje ter za uresničitev strateških ciljev visokošolskega izobraževanja.

Organizacija in družba: Vpliv raziskave na organizacije in družbo je predvsem pri visokošolskih zavodih, njihovih vodstvenih delavcih ter njihovih načrtih in ciljih za izboljšanje kakovosti.

Originalnost: Ugotovitve na podlagi merilnega orodja SERVQUAL smo primerjali med različnimi visokošolskimi zavodi s pregledom literature s triangulacijskimi tehnikami.

Omejitve/nadaljnje raziskovanje: Omejitve raziskave se nanašajo predvsem na različne podatke, zbrane med različnimi visokošolskimi ustanovami, v različnih geografskih regijah. Triangulacija istega obsega je izključila številne povezane študije, ki so uporabile drugačna merilna orodja oz. dodatne dimenzije kakovosti, kar je onemogočalo vključevanje več raziskav, ki bi se lahko triangulirale. Nadaljnje raziskave bi lahko potekale z zbiranjem podatkov o javnih in zasebnih visokošolskih zavodih v isti regiji in času ter nato ponovitev v različnih časovnih presledkih, z namenom preučevanja napredka oz. spremembe.

Ključne besede: SERVQUAL, visoko šolstvo, javne visokošolske ustanove, triangulacija, kakovost storitev, strateški cilji, percepcije študentov, pričakovanja študentov.

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Effect of Age and Gender on Body Shape and Physical Activity

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Abstract

Research Question: What is the effect of ageing on body shape and physical activity between men and women?

Purpose: The purpose of the research is to study the different body shapes as well as activity levels against gender and age. The research value highlights the importance of Physical performance in maintaining a good shape and a good health especially for older people.

Method: A total quantitative meta-analysis was conducted on a pool of Lebanese adults (N=514), their body shapes were assessed individually and questions related to their weekly physical activity were analyzed accordingly. One-way Anova, Mann-Whitney and Kruskal-Wallis tests were performed to seek the correlation and significance between the variables.

Results: Younger adults, in particular women, have a better body shape and BMI. Ageing has a direct impact on weight gain and in particular on abdominal fat deposit which enhance the apple shape. Older people have less activity level which is more perceived among women.

Organization: The study points on the importance to consider the body shape when assessing the health level in order to reduce health cost through preventive methods.

Society: Abdominal fat, which encourage the apple shape, has a negative impact on health and hide economic cost directly and indirectly. Prevention is highly recommended through exercise and a diet therapy to reduce the risk of associated problems and increase the life-span in general.

Originality: The impact of the study concerns the Lebanese society and reflects a part of their lifestyle and explains some questions regarding their health status.

Limitations / further research: The sample is randomly selected from Lebanese adults (age above 19 years old) for both genders. Pregnant and lactating women are not considered in the sample. Further research, including other cultures and regions is recommended, to make comparative analysis with the results.

Keywords: age, gender, BMI, body shape, activity level, health, abdominal fat, apple shape.

1 Introduction

Exercise is widely regarded as one of the most valuable components of behavior that can influence body weight and therefore help in the prevention and management of obesity (Blundell, Gibbons, Caudwell, Finlayson, & Hopkins, 2015). The role of physical activity in maintaining good health and preventing insulin resistance, type 2 diabetes mellitus, obesity,

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metabolic syndrome, atherosclerosis, and other cardiovascular complications is well recognized (Christiansen, Bruun, Madsen, & Richelsen, 2007).

Physical performance is worse with increasing age decade. Although men performed better than women across all ages, the decrement by age group was similar between genders (Hall et al., 2017).

Body size and shape change as people grow older and these changes differ substantially between men and women (Winkler et al., 2015). As women age, a decline in sex steroid hormones which coincides with menopause, affects their body shape and composition, resulting in a more android fat distribution (Kirchengast, 2010). When younger, women tend towards an hourglass body shape with gynoid fat distribution, storing proportionally more fat at thighs and hip than around the waist. At a later age, often after menopause, women's fat storage shifts more upwards around the waist (Kuk, Saunders, Davidson, & Ross, 2009). In men, changes in body fat distribution are subtler than in women, showing a slow but steady increase in waist circumference with age. Thus, after the menopause, the sex-differences in body shape between men and women decrease (Wells, 2007).

The current emphasis on the body's appearance or the aesthetic body can be linked to a range of social, cultural and economic factors, including the expansion of health, leisure, cosmetic, beauty and fitness industries since the 1980s; all of which are key areas of focus in the broad field of physical cultural studies (Coffey, 2017). Along with the invitation to care about the body's appearance and to consume products to aid in the aesthetic improvement, a growing emphasis on individual responsibility for health is also central in understanding the rise in a concern of the body's appearance in general (Featherstone, 2010).

Body shape has not only an aesthetic importance but also, scientific studies has shown that it is associated with medical conditions and health issues; in fact, ageing is associated with progressive changes in total and regional fat distribution that have negative health consequences (Kuk et al., 2009). Body size and shape are independent risk factors for morbidity and mortality (Canoy et al., 2007). Abdominal obesity is associated with insulin resistance and type II diabetes (Uijl et al., 2016). Waist circumference is a good surrogate marker of visceral fat accumulation which stores excess energy and buffers against hyperglycemia and hyperlipidemia causing dysregulation of various molecules that lead to chronic inflammation and cardiovascular diseases CVD (Kihara & Matsuzawa, 2015). In fact, studies have shown that persons with more fat around their abdominal region have a higher chance of developing CVD and other associated diseases, such as diabetes and hypertension, than those who store fat around their hips (Wang et al., 2015).

On the other hand, central fat distribution is related to greater psychological vulnerability to stress and cortisol reactivity. This may be especially true among lean women, who did not habituate to repeated stress. Cross-sectional findings support the hypothesis that stress-

induced cortisol secretion may contribute to central fat and demonstrate a link between psychological stress and risk for disease (Epel et al., 2000).

Furthermore, ageing is associated with increased fat content within bone marrow, which exposes the elderly to fracture risk beyond that associated with low bone mineral density alone (Kuk et al., 2009).

2 Theoretical framework

The most common diagnosis of obesity is based on body mass index (BMI) levels, which represents the weight in kilograms divided by the square of the body height in meters (kg/m^2). The World Health Organization classified underweight individuals as those with BMI less than $18.4 \text{ kg}/\text{m}^2$, non-obese with BMI from 18.5 to $24.9 \text{ kg}/\text{m}^2$, overweight with BMI between 25.0 and $29.9 \text{ kg}/\text{m}^2$ and obese for individuals with BMI over $30 \text{ kg}/\text{m}^2$, class I with BMI from 30 to $34.5 \text{ kg}/\text{m}^2$, class II with BMI from 35 to $39.9 \text{ kg}/\text{m}^2$ and obese class III (severe obesity) with BMI over $40 \text{ kg}/\text{m}^2$.

Nevertheless, BMI does not distinguish between fat locations, when central or abdominal fat deposition is thought to be particularly perilous (Lumeng & Saltiel, 2011). In a recent study it was found that central obesity carries more health risks compared with total obesity assessed by body mass index (BMI). It has therefore been suggested that waist circumference (WC), a proxy for central obesity, should be included with BMI in a 'matrix' to categorize health risk (Ashwell & Gibson, 2016). In fact, a number of studies have found that Waist circumference (WC) predicted mortality risk better than BMI. In this context, WC has emerged as a leading complement to BMI for indicating obesity risk (Petursson, Sigurdsson, Bengtsson, Nilsen, & Getz, 2011). Abdominal obesity was defined as a waist circumference greater than 102 cm in men and greater than 88 cm in women (Ford, Maynard, & Li, 2014).

A body type with a high waist circumference or elevated waist-to-hip ratio (WHR), known as the "apple" body type, represents central/visceral obesity and is considered as an additional indicator of health, and a risk of developing serious health conditions (Ashwell, Mayhew, Richardson, & Rickayzen, 2014). Previous literature suggests the use of pre-specified cut-off points for defining central obesity; $\text{WHR} > 0.90$ in men and > 0.85 in women, in order to standardize comparisons within and between populations (Bacopoulou, Efthymiou, Landis, Rentoumis, & Chrousos, 2015). Abdominal adiposity measured by an elevated WHR is associated with visceral fat accumulation and an adverse metabolic profile (Cerhan et al., 2014). It is accepted that having a pear-shaped body, namely, carrying more of your weight around the hips and having a narrower waist with most body fat deposited subcutaneously, puts a person at a lower risk of developing diabetes, heart disease and other complications of the metabolic syndrome (Sahakyan et al., 2015).

The analysis of a person's body shape can be used to determine current and even potential health risks pointed out that body health is not only determined by body fat percentage but

also by how that fat is distributed throughout the body (Wang et al., 2015). This distribution leads to different body shapes such as apple, pear, triangle, hourglass and rectangle. (Sooklal, Hosein, & Teelucksingh, 2016)

For the purpose of this study, the following hypothesis is set: Young people, in particular women, tend to have a better body shape than older people; as getting older, apple shape is more developed. Physical Activity which is less common among women, decreases consecutively with ageing.

3 Method

3.1 Data Collection and Model of the research

The suggested quantitative method is applied using a questionnaire which is targeting a pool of random population of Lebanese adults N=514 (requirement to be above 19 years old), of both genders.

Analysis framework of the collected data from respondents is implemented using Statistical Package for Social Sciences (IBM SPSS statistics 22) and Microsoft Excel 2016.

Assessing the Body type was identified using a measuring tape, to determine the ratio and the proportion between waist, hips and shoulders, in order to presume the body shape type. As for the BMI calculation, the weight using a balance in kilograms and the height in meter were measured for this purpose. The questionnaire includes some demographic information like the age, gender and home / work address as well as different forms of activities weekly assessed.

The Age was categorized into six groups: 19-27, 28-36, 37-45, 46-54, 55-63, >64. The frequency as well as the proportion are shown in the graphs below:

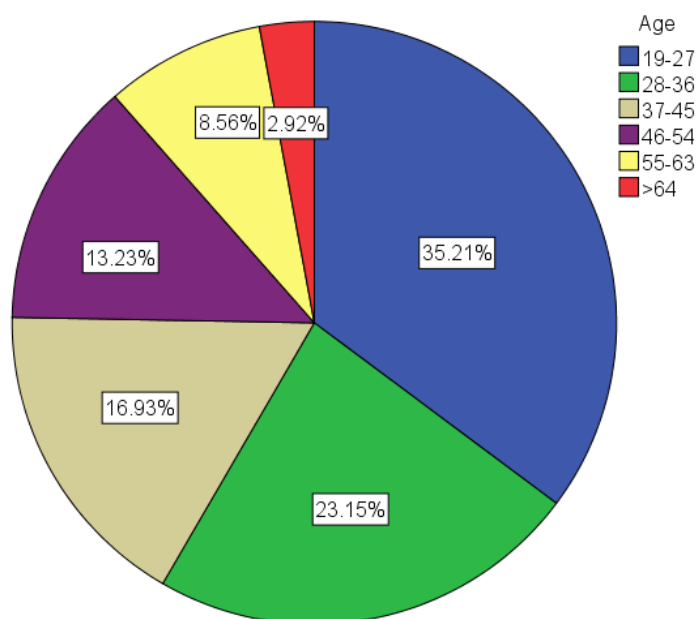


Figure 1. Percentage of Age ranges

Most of the respondents aged young between 19 and 36 years (58.36%) whereas 30.16% were between 37 and 54 years old and 11.48% were above 55 years old.

Among 514 respondents, 224 are male (43.6%) and 290 are female (56.4%).

The distribution between men and women is shown in the figure below where the main difference relies on the range of participants aging between 19 and 36 years' old for which we have 190 women versus 110 men.

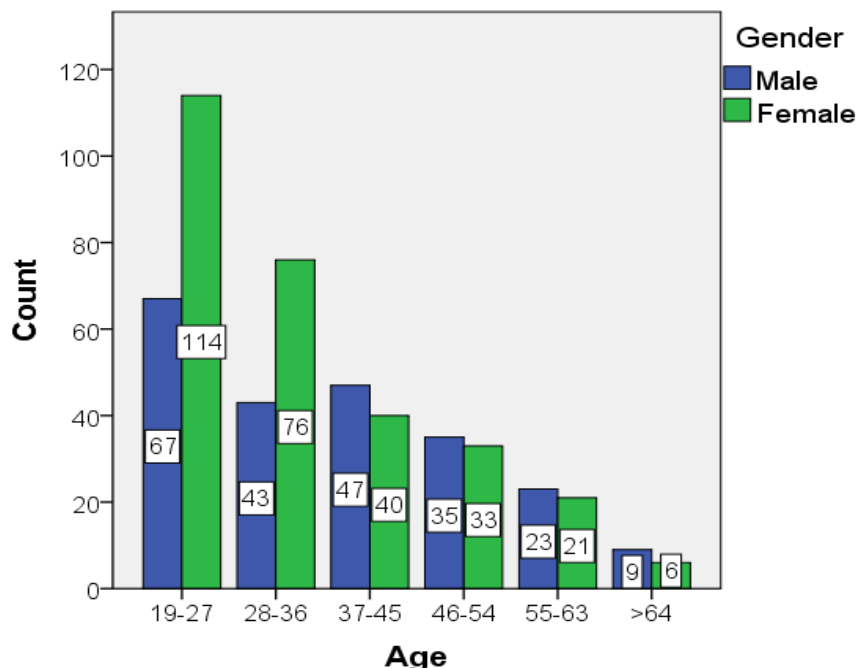


Figure 2. Frequency of Age Ranges relative to the Gender

Body Mass Index (BMI) was also categorized into five categories: Underweight ($BMI \leq 18.4 \text{ kg/m}^2$), Normal ($18.5 \leq BMI \leq 24.9 \text{ kg/m}^2$), Overweight ($25 \leq BMI \leq 29.9 \text{ kg/m}^2$), obese ($30 \leq BMI \leq 34.9 \text{ kg/m}^2$) for the ones suffering from obesity class I, and those with obesity class II and III were merged into one category named “morbid obese” ($BMI \geq 35 \text{ kg/m}^2$).

Table 1. BMI Means and standard deviation (SD) of age categories between men and women

Age	<i>Mean ± SD</i>	
	Male	Female
19-27	2.61 ± 0.797	2.16 ± 0.724
28-36	3.00 ± 0.951	2.39 ± 0.784
37-45	3.17 ± 0.789	2.45 ± 0.677
46-54	3.34 ± 0.802	2.7 ± 0.847
55-63	3.39 ± 0.839	2.71 ± 0.845
> 64	2.89 ± 0.928	3.83 ± 1.169
Total	3.01 ± .878	2.4 ± .814

Table 2. BMI categories with gender and age

Gender	Count of BMI				
	Underweight	Normal	Overweight	Obese	Morbid obese
Female	5.86%	61.72%	21.38%	8.97%	2.07%
Male	1.34%	27.68%	45.98%	18.75%	6.25%
Age	Underweight	Normal	Overweight	Obese	Morbid obese
19-27	7.73%	62.43%	20.44%	8.29%	1.10%
28-36	3.36%	51.26%	31.09%	9.24%	5.04%
37-45	0.00%	40.23%	37.93%	19.54%	2.30%
46-54	1.47%	26.47%	45.59%	20.59%	5.88%
55-63	2.27%	22.73%	47.73%	20.45%	6.82%
>64	0.00%	26.67%	40.00%	13.33%	20.00%
Grand Total	3.89%	46.89%	13.23%	32.10%	3.89%

46.89% of the total population is normal, 13.23% are overweight, 32.12% are obese and the same percentage of 3.89% is for underweight and morbid obese. The majority of males are overweight (45.98%) whereas the majority of females are in the normal range (61.72%). In general, the proportion shows a maximum normal BMI at the younger age between 19 and 36 years. Afterwards, the proportion decrease to reach 22.73% at the age 55-63 years. Then it increases for the age above 64 years old.

Table 3. Age versus BMI categorized into two groups: normal ($18.5 < \text{BMI} < 24.9 \text{ kg/m}^2$) and high ($\text{BMI} > 25.0 \text{ kg/m}^2$)

Age Range	Normal BMI	High-BMI
19-27	62.43%	29.83%
28-36	51.26%	45.38%
37-45	40.23%	59.77%
46-54	26.47%	72.06%
55-63	22.73%	75.00%
>64	26.67%	73.33%
Grand Total	46.89%	49.22%
Pearson r	-0.932	0.932
Sig (2-tailed)	0.007	0.007

After measuring and comparing the shoulders, waist and hips circumferences, the different body shape types were categorized into five:

- Apple / round shape: similar size of hips and shoulders, with broader waist circumference with slender legs.
- Pear shape: broader hips comparing to shoulders.
- Hourglass shape, similar sizes of hips and shoulders with a curved and slimmer waist.
- Rectangular shape: similar to the hourglass shape except that the curves are reduced.
- Inverted triangle: shoulders are broader than the hips.

Table 4. Body Shape types with Gender

	Hourglass	Inverted triangle	Oval / Apple	Pear	Rectangular	Total
Male	4.5%	21.0%	25.4%	5.8%	43.3%	100.0%
Female	46.6%	5.9%	10.3%	21.7%	15.5%	100.0%

Men show a higher percentage of rectangular shape (43.3%), whereas, women express a better percentage of hourglass shape (46.6%).

Table 5. Body Shape types with Age

Age	Hourglass	Inverted triangle	oval / apple	Pear	Rectangular
19-27	39.23%	16.02%	3.31%	10.50%	30.94%
28-36	31.09%	11.76%	17.65%	18.49%	21.01%
37-45	20.69%	12.64%	22.99%	11.49%	32.18%
46-54	20.59%	7.35%	25.00%	22.06%	25.00%
55-63	11.36%	9.09%	34.09%	18.18%	27.27%
>64	0.00%	6.67%	53.33%	13.33%	26.67%
Grand Total	28.21%	12.45%	16.93%	14.79%	27.63%
Pearson R	-.982	-.903	.960	.278	-.129
R square	.964	.815	.923	.077	.017
Sig (2-tailed)	.000	.014	.002	.594	.808

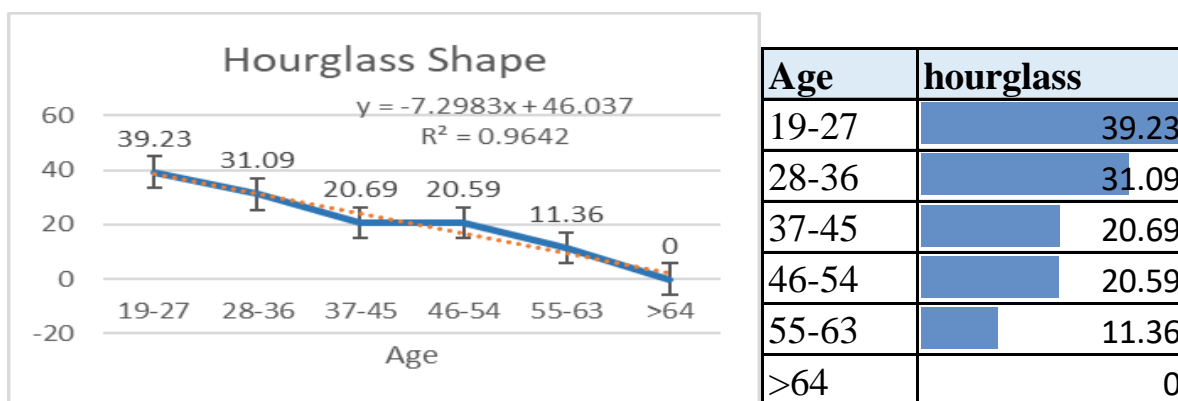


Figure 3. Age Range with Hourglass shape

The hourglass shape decrease with ageing starting at 39.23% at the age 19-27 years ending at 11.36% at >64 years old. There is a linear regression with a high, yet negative correlation $y = -7.2983x + 46.037$

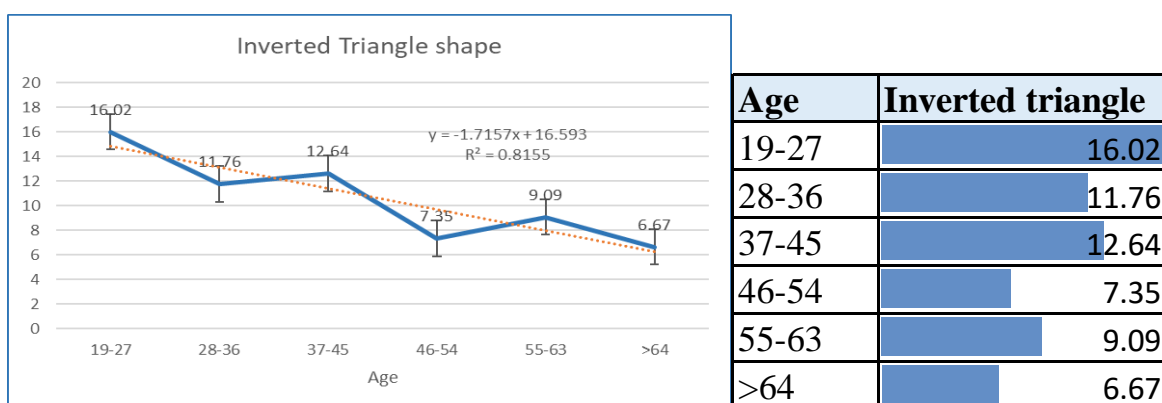


Figure 4. Age Range with inverted triangle shape

The inverted triangle shape decrease with ageing starting with 16.02% at the age 19-27 years ending with 6.67% at >64 years old. There is a linear regression with a high, yet negative correlation $y = -1.7157x + 16.593$

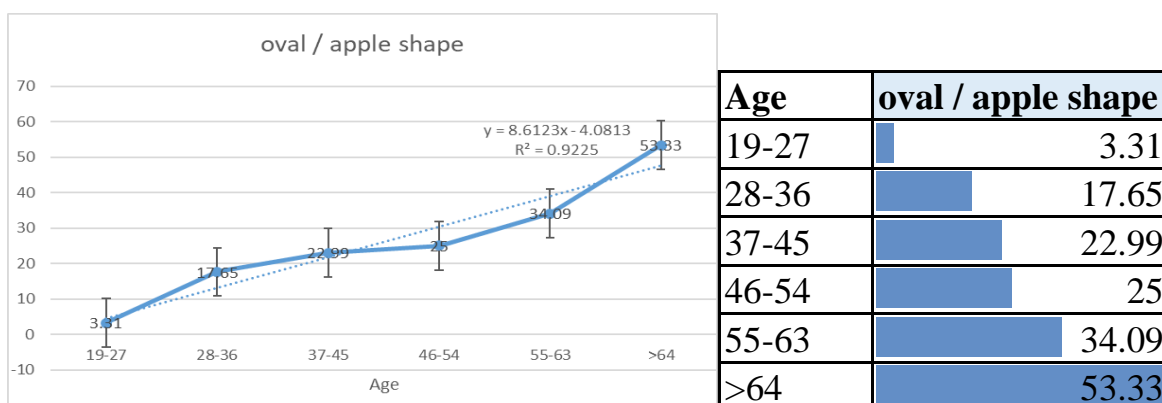


Figure 5. Age Range with apple shape

The oval or apple shape increase with ageing starting at the percentage of 3.31% at the age 19-27 years ending at 53.33% at an age above 64 years old. There is a linear regression with a high, positive correlation $y = -1.7157x + 16.593$

Table 6. Body shape types between gender compared with age ranges

		19 - 27	28 - 36	37 - 45	46 - 54	55 – 63	> 64
Most frequent Mode	Male	Rectangular				Apple	
	Female	Hourglass			Pear	Apple	

Men, ageing between 19 and 45 years old, show more tendency for a rectangular shape. Above this age, the most relevant shape becomes the oval or apple one. Whereas, women between 19 and 45 years present an hourglass shape, as for the ones aging 46 to 54, the shape becomes pear, then apple for the ones aging above 55 years old.

Table 7. Percentage of Weekly Physical Activity and its distribution between men and women

	Indoor	Outdoor	Gardening
None	62.8	49.8	73.7
1-2 times	15.4	29.8	15.2
3-4 times	13.6	11.7	5.8
5-6 times	5.8	4.7	1.9
7 times	2.3	4.1	3.3

Gender * Physical Activity per week						
	indoor physical activity per week					Total
	none	1-2 times	3-4 times	5-6 times	7 times	
% within Male	59.4%	14.7%	11.6%	10.3%	4.0%	100.0%
% within Female	65.5%	15.9%	15.2%	2.4%	1.0%	100.0%
Outdoor physical activity per week						Total
% within Male	52.7%	24.1%	11.6%	6.3%	5.4%	100.0%
% within Female	47.6%	34.1%	11.7%	3.4%	3.1%	100.0%
Gardeing activity per week						Total
% within Male	67.0%	17.9%	6.3%	3.6%	5.4%	100.0%
% within Female	79.0%	13.1%	5.5%	.7%	1.7%	100.0%

62.8% of the respondents don't make any indoor physical activity, 49.8% have no outdoor activities and 73.7% don't work outside like doing gardening for example. The ratio decreases gradually as the frequency of weekly activity increases. The same pattern is expressed when comparing male and female toward their weekly physical activity with a difference between the genders.

Table 8. Mean \pm SD (Standard Deviation) of the different Physical activities (Indoor, outdoor, gardening), categorized into five depending on their weekly frequency, with Age categories

Age	Indoor	Outdoor	Gardening
19 - 27 (n = 181)	1.87 \pm 1.15	2.04 \pm 1.137	1.41 \pm 0.843
28 - 36 (n = 119)	1.82 \pm 1.03	1.71 \pm 0.903	1.24 \pm 0.563
37 - 45 (n = 87)	1.64 \pm 1.011	1.78 \pm 1.115	1.55 \pm 1.076
46 - 54 (n = 68)	1.38 \pm 0.947	1.72 \pm 1.118	1.59 \pm 1.011
55 - 63 (n = 44)	1.36 \pm 0.892	1.7 \pm 1.047	1.61 \pm 1.224
> 64 (n = 15)	1.2 \pm 0.561	1.53 \pm 0.743	2.2 \pm 1.612
Total (n = 514)	1.69 \pm 1.057	1.83 \pm 1.07	1.46 \pm 0.938

The total weekly Physical Activity (N=514) has an average of: 1.69 \pm 1.057 for the indoor activity with a highest mean at the age 19-27 years, 1.83 \pm 1.07 for the outdoor activity with the highest mean reached also at the age 19-27 years as well and 1.46 \pm .938 for the gardening activity with a highest mean for the elderly respondents (above 64 years).

Table 9. Percentage of working outside versus the population's address of home and work

Home address / work address	none	work outside per week (gardening)			
		1-2 times	3-4 times	5-6 times	7 times
mountain / mountain	56.8%	10.8%	10.8%	2.7%	18.9%
mountain / city	70.9%	15.2%	2.5%	3.8%	7.6%
village/ village	62.9%	25.7%	8.6%	0.0%	2.9%
village / city	69.2%	16.5%	9.9%	3.3%	1.1%
city / city	82.3%	12.2%	3.8%	1.3%	.4%

Table 10. Absence of Physical Activity with Age

Age	Absence of indoor PA	Absence of outdoor PA	Absence of Gardening
19-27	54.14 %	39.44 %	74.03 %
28-36	53.78 %	52.10 %	82.35 %
37-45	64.37 %	56.32 %	72.41 %
46-54	82.35 %	58.82 %	64.71 %
55-63	81.82 %	56.82 %	72.73 %
>64	86.67 %	60.00 %	53.33 %
Pearson R	.948	.839	-.758
R square	.914	.704	.574
Sig (2-tailed)	.004	.037	.081

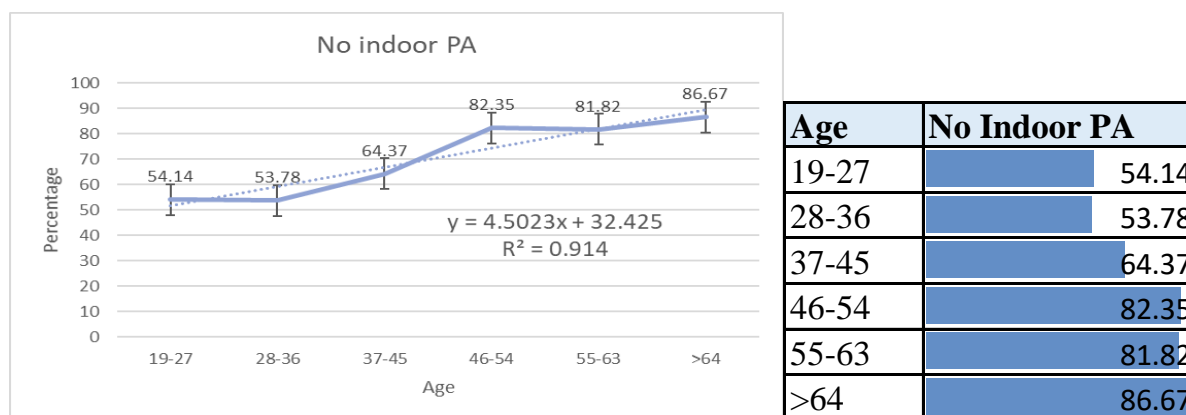


Figure 6. Absence of Indoor Physical Activity with Age

Around 54% from respondents aging between 19 and 36 years old present no activity whereas the percentage increases to reach 64% from the age 37-45 years old and 82% for the range 46-63 years old and finally, the percentage goes up to 87% for the respondents that are over 64 years' old with a positive linear regression $y=4.5023x + 32.425$.

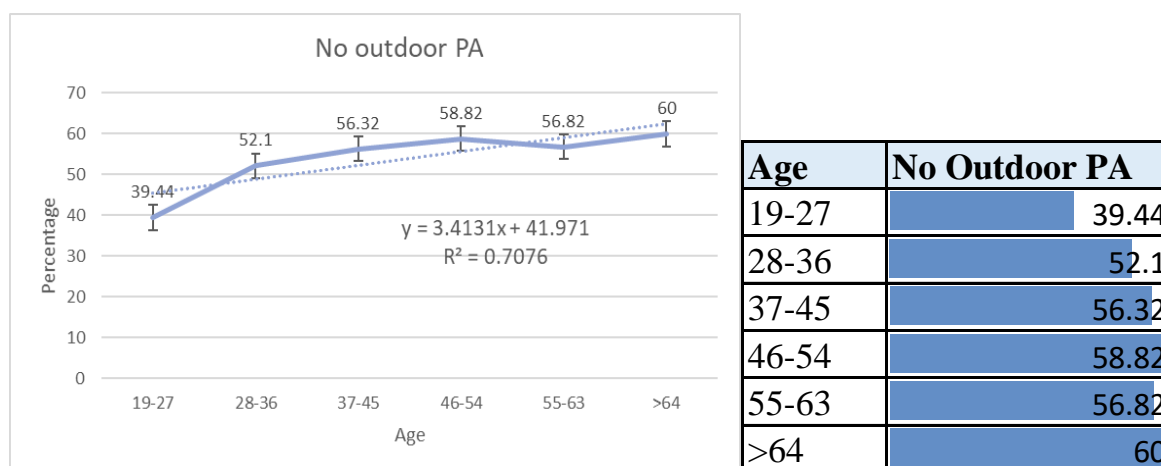


Figure 7. Absence of Outdoor Physical Activity with Age

39.44% from respondents aging between 19 and 27 years old lack activity whereas the percentage increases to reach 60% for the respondents that are over 64 years' old with a positive linear regression $y=3.4131x + 41.971$.

3.2 Data Analysis

3.2.1 Effect of Age and Gender on BMI

Table 1 shows the age ranges between male and female against their BMI in terms of mean and standard deviation. The mean of BMI increases with age starting $2.33\pm.781$ at the youngest age (19-27 years) to reach 3.27 ± 1.100 for the age above 64 years. In the same context, the trend of BMI in mean increases when men and women age but with a slide difference between them; women have a lower mean of BMI than men at all age ranges except for the age > 64 years where men have a lower mean of BMI than women.

As shown in Table 2, females have better normal BMI than males (61.72% to 27.68%) and in general, almost half of the population has a normal BMI. This ratio is distributed between the age ranges in a display, where 62.43% of the young adults (19-27 years) have the higher percentage of normal BMI. This percentage decreases continuously with age, inversely, the percentage of obesity and overweight increases with age. Results indicate an inverse relationship between Age and normal BMI and a positive relationship between age and high-BMI; which means that when age increases, normal BMI level decreases and inversely, high BMI increases. The correlation between these two variables in table 3 was found statistically significant ($|r| (6) = 0.932, p < 0.01$, two-tailed).

3.2.2 Effect of Age and Gender on Body shape type

Effect of Gender: Table 4 shows the distribution of body shape types against gender; Although men have higher percentage in rectangular form (43.3%), the inverted triangle and apple shapes for men are high when compared with females, (21% to 5.9%) and (25.4% to 10.3%) respectively. Similarly, the percentage in hourglass shape (46.6% to 4.5%) and pear shape (21.7% to 5.8%) is dominant for females when compared with males.

Effect of Age: The analysis in Table 5 shows clearly that the younger population (19-27 years old) have better body shape type since it has a greater percentage for the hourglass and rectangular shapes. The other range of age has a well distributed proportion among the different body shapes, but it is obviously clear that the apple shape which is considered as the least recommended shape due to its negative effect on health, is strongly highlighted after 55 years old for both genders. When comparing the age of the respondents to their body shape; it was found that oval / round or apple shape increases when ageing with a strong Pearson correlation of $r (6) = +.960, p < 0.01$, one-tailed. Whereas each of the hourglass and inverted triangle shapes has an inverse relationship with age respectively $r (6) = -.982, p < .001$, two-tailed and $r (6) = -.903, p < .05$, two-tailed. As for the correlations between both variables, pear and rectangular shapes with age was found not significant $r (6) = .278, p = .594$ and $r (6) = -.129, p = .808$ respectively.

From table 6, one can assume that, men show a rectangular shape when they are young, and apple shape when they get older. Similar for women, who start with an hourglass shape then pear shape to have finally an apple shape which is a common shape for the advanced age for both men and women.

3.2.3 Effect of Age and Gender on Physical Activity

The physical activity rates within the pool of respondents show a general low activity level (Table 7), These proportions indicate a favorable sedentary lifestyle in the general population.

Effect of Gender:

As for the difference between men and women, for the indoor as well as the outdoor physical activity, women present higher percentage than men when it comes to moderate weekly exercise, but the percentage compared to men becomes lower when facing a more intensive one. As for the gardening activity the percentage are lower for women than men.

In addition, it was also found that the percentage of women who don't practice at all, for both indoor and gardening, is much greater than men (65.5% to 59.4%) and (78% to 67%), respectively. On the other side, in the outdoor activities, this percentage is less for women than men (47.6% to 52.7%).

Effect of Age:

The results presented in Table 8 show clearly that the most popular sports stand for the outdoor one which attracts basically the youngest (19-27 years old) with an average of 2.04 ± 1.14 and the less popular one is the indoor physical activity for older people (>64 years) reaching an average of $1.2 \pm .57$. Inversely, for the same age group, we found the highest average in weekly gardening with a value of 2.2 ± 1.61 although this type of Physical activity is the less popular one among all ages especially the youngest (19-27 years old) with an average of $1.41 \pm .84$; the reason might be attributed to the fact that most respondents live in the city where it's not common to have gardens. In this context a comparison was followed between respondents' address with weekly gardening (Table 9). The results showed that 82.3% of the ones who live and work in the city have no interest in gardening whereas around 56.8% of the ones living and working in the mountains show interest in gardening.

The relationship between absence of activity and age in Table 10 shows a gradual increase in the lack of both indoor and outdoor activities from 54.1% to 86.7% and 39.4% to 60% respectively. When assessing the percentage of respondents regarding absence of indoor and outdoor physical activities against age (fig. 6 and 7), Pearson correlation was found significant [$r(6) = 0.952, p < .001$, two-tailed] and [$r(6) = 0.841, p < .05$, two-tailed] respectively. Whereas when assessing the percentage of respondents regarding the absence of outside physical activity like gardening (Table 10), the correlation was found not significant $r(6) = -0.758, p=0.081$.

4 Results

BMI and Body shape:

In the Data analysis of the pool of population investigated, it was found that, women present a lower BMI than men. BMI is positively related to age; as ageing follows the weight increase for both genders leading to an increase in BMI while the distribution of fat is more relevant in the abdominal area leading to a more developed apple shape form, which is the least accepted body shape. Inversely, the ideal body shape for women (hourglass) and the inverted triangle shape for men, both decrease in percentage when age increases. The apple shape, which is

more predominant for women at an advanced age (after 55 years old), can be linked to the hormonal imbalance that follows menopause, as many researches had already proven.

Physical Activity and Age:

One-way Anova test was conducted to compare the means of the three forms of physical activity against age. There is a significant effect of age on indoor activity and gardening at the $p < .001$ [$F(5,508) = 4.264, p = .001$] and [$F(5,508) = 4.093, p = .001$] respectively. Instead, there is no significant effect of age on outdoor physical activity [$F(5,508) = 2.210, p = .052$]

Table 11. One-way ANOVA test

		Sum of Squares	df	Mean Square	F	Sig.
indoor physical activity per week	Between Age Groups	23.079	5	4.616	4.264	.001
	Within Age Groups	549.966	508	1.083		
	Total	573.045	513			
outdoor sports activity	Between Age Groups	12.494	5	2.499	2.210	.052
	Within Age Groups	574.449	508	1.131		
	Total	586.944	513			
work outside	Between Age Groups	17.488	5	3.498	4.093	.001
	Within Age Groups	434.154	508	.855		
	Total	451.642	513			

Note. df = degrees of freedom, F= F-test, Sig = significance

A Kruskal-Wallis H test showed that there is a statistically significant difference in body shape scores between both gender and age, ($\chi^2(4) = 176.230, p = 0.000$) and ($\chi^2(4) = 65.092, p = 0.000$) respectively with a mean rank for gender and age scores of 201.12 to 354.84 for oval shape, 325.54 to 284.57 for pear shape, 351.78 to 205.92 for hourglass shape, 193.94 to 251.24 for rectangular shape, 180.77 to 223.77 for inverted triangle shape.

Table 12. Kruskal-Wallis H test

	Body shape	N	Mean Rank
Gender	oval / apple shape	87	201.12
	Pear shape	76	325.54
	hourglass shape	145	351.78
	rectangular	142	193.94
	Inverted triangle	64	180.77
	Total	514	
Age	oval / apple shape	87	354.84
	Pear shape	76	284.57
	hourglass shape	145	205.92
	rectangular	142	251.24
	Inverted triangle	64	223.77
	Total	514	
Test Statistics ^{a,b}			
	Gender	Age	
Chi-Square	176.230	65.092	
Df	4	4	
Asymp. Sig.	.000	.000	
a. Kruskal Wallis Test			
b. Grouping Variable: body shape			

Note. N= Numerous, df = degrees of freedom, Asymp. Sig = Asymptotic significance

Physical Activity and Gender:

Non-parametric Mann-Whitney U test was conducted to determine whether there was a difference in physical activities between men and women. Results of that analysis indicated that indoor Physical activity as well as gardening were statistically significantly greater for men than for women [($z = -2.087, p = .037$) and ($z = -3.250, p = .001$)] respectively.

Table 13. Mann-Whitney U test

Ranks				Test Statistics ^a				
Gender		N	Mean Rank	Sum of Ranks	indoor physical activity per week	outdoor sports activity	work outside	
indoor physical activity per week	Male	224	270.93	60689.00	Mann-Whitney U	29471.000	32161.000	28293.000
	Female	290	247.12	71666.00				
	Total	514						
outdoor sports activity	Male	224	256.08	57361.00	Wilcoxon W	71666.000	57361.000	70488.000
	Female	290	258.60	74994.00				
	Total	514						
work outside	Male	224	276.19	61867.00	Z	-2.087	-.207	-3.250
	Female	290	243.06	70488.00				
	Total	514						
					Asymp. Sig. (2-tailed)	.037	.836	.001

a. Grouping Variable: Gender

Note. N= Numerous, Z = Z-test, Asymp. Sig = Asymptotic significance

On the other side, the outdoor physical activity between men and women was not found significant ($z = -.207, p = .836$)

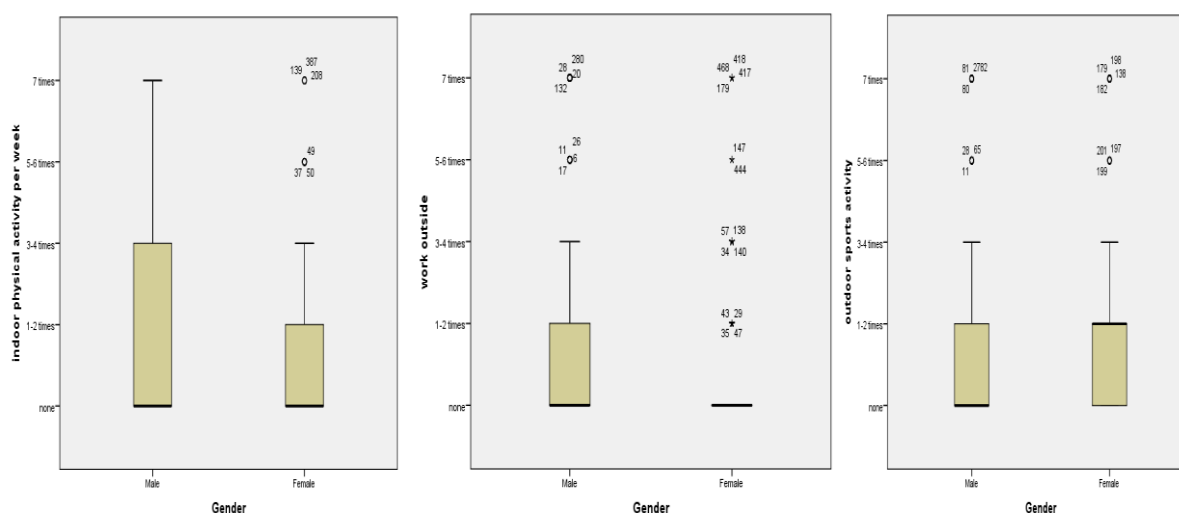


Figure 8. Comparison between men and women in different Physical Activities (Indoor, Gardening, outdoor)

5 Discussion

5.1 Short description of the results

The questionnaire was made among Lebanese people, so the results might reflect a uniformed culture in the context of the subject to be tackled. The data that was collected from Lebanese adult people reflects the sedentary lifestyle that is common nowadays. Even though the BMI, which stands for the body mass index, is normal for half of the population, especially among women, which most of them present also a defined hourglass shape, the level of physical activity in all forms is low and gets lower while aging as the apple body shape develops and increase accordingly. The lack of activity level increases significantly with age for the indoor

and gardening activities. In general, the proportion of active men is much greater than women especially in the gym and gardening activities which is emphasized for respondents living in rural regions.

The effect of age and gender against outdoor activities like hiking, jogging, climbing and cycling was not found significant, so there was no significant difference in the proportion between men and women for the outdoor activities in a general point of view, but the proportion is still greater for women when the physical activity is moderate and less than men, when the workout is intensive, on a weekly basis. The proportion of gardening activities was statistically greater for men than for women, whereas in the indoor activities, men are significantly more than women, nevertheless, women proportion is greater when the indoor activities are moderate on a weekly basis.

5.2 Discussing the results

Hypothesis regarding the effect of age on body shape was accepted. There is a difference in body shape between men and women, such difference is not significant at an advanced age as both genders showed a tendency for a common apple shape.

As for the hypothesis related to the physical activity, it was only rejected for the outdoor sports activity; Gardening and indoor physical activity level were inversely related to ageing.

In addition, Females show a better body shape especially when they are young although their level of activity is low in general and much lower than males; this outcome may be due to their eating pattern and other factors such as stress and medical conditions, which are not discussed in this study; in this context, further researches adding other aspects, that may influence the problems related to body shape and low physical activity are to be followed.

6 Conclusion

In conclusion, the research shows a pattern that reflects an unhealthy lifestyle in the context of physical activity, which is one of the factors that may contribute to the fat deposition and distribution in the body. Sports culture in Lebanon should be more spread and encouraged especially among females, and one can consider youth and children for the reason of the continuity of this lifestyle through ages, starting with the schools' programs that are to be assessed to include more activities in this perspective.

In order to maintain a good well-being and prevent problems in health, one should pay attention to his body shape and increase his physical activity especially when getting older.

The contribution of this study emphasize the community to maintain and enhance a healthy lifestyle and consider the ecosystem by caring more to environment and preserving it.

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Povzetek:

Vpliv starosti in spola na telesno obliko in fizično aktivnost

Raziskovalno vprašanje: kakšen je učinek staranja na tip postave ter na telesno aktivnost moških in žensk?

Namen: Namen raziskave je razumevanje različnih postav in telesne aktivnosti v razmerju do spola in starosti. Raziskava osvetljuje pomen telesne aktivnosti za potrebe ohranjanja telesne podobe in zdravja, posebno pri starejših.

Metoda: celostna kvantitativna meta analiza je bila izvedena na vzorcu odraslih Libanoncev (N=514). Telesna podoba posameznikov je bila ocenjena za vsakega posameznika, ki je sočasno izpolnil tudi vprašalnik o tedenski telesni aktivnosti. Z namenom iskanja korelacij med posameznimi spremenljivkami so bili izvedeni sledeči statistični testi; One-way Anova, Mann-Whitney in Kruskal-Wallisov test.

Rezultati: Mlajši odrasli, posebno ženske imajo boljšo telesno podobo in indeks telesne mase. Staranje ima neposreden učinek na pridobivanje teže, še posebno na področju trebuha, kar povzroča povečanje deleža posameznikov s telesno obliko jabolka. Starejši ljudje, posebno ženske so manj telesno aktivni.

Organizacija: Študija opozarja na pomen telesne oblike v razmerju do zdravstvenega stanja z namenom nižanja zdravstvenih stroškov s preventivnimi metodami.

Družba: trebušna maščoba, ki rezultira v jabolčni telesni obliki ima negativen vpliv na zdravje in skrite neposredne in posredne ekonomske stroške. Priporočena oblika ukrepanja so preventivne dejavnosti v smislu telesne aktivnosti in ustrezne prehrane z namenom zmanjševanja problemov vezanih na debelost in splošnim povečevanjem življenjske dobe.

Originalnost: vpliv študije je vezan na Libanonsko družbo in odraža del njihovega življenjskega sloga ter odgovarja na nekatera vprašanja njihovega zdravja.

Omejitve/nadaljnje raziskovanje: Vzorec je naključno izbran med odraslimi Libanonci (nad 19 let) obeh spolov. Noseče in doječe matere niso vključene. Nadaljnjo raziskovanje se priporoča v smeri primerjave z drugimi kulturami in regijami za potrebe primerjalne analize rezultatov.

Ključne besede: starost, spol, indeks telesne mase, telesna oblika, aktivnost, zdravje, trebušna maščoba, jabolčna oblika.

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Procesi avtopoieze: kvalitativni pristop za obvladovanje organizacije v temeljnih procesih

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Povzetek:

Raziskovalno vprašanje (RV): Sprašujemo se, kateri procesi avtopoieze sovpadajo z temeljnimi procesi organizacije?

Namen: Osnovni namen raziskave je poiskati sovpadanja temeljnih avtopoietskih procesov in pristopov, v smislu pomembnosti za samo-delovanje organizacije.

Metoda: Uporabili smo kvalitativne metode v raziskovanju. Izhajali smo iz metodološkega orodja »Informacijski graf avtopoieze«. Analizo teoretičnih predpostavk smo izvedli v programskem orodju Atlas.ti.

Rezultati: Iz kvalitativne razberemo, da se avtopoietski procesi: povezovalni, metabolični in miselni, sovpadajo s temeljnimi procesi: nadzorni, pospeševalni in vzdrževalni. Znotraj potrjenih procesov, pa so delujoči principi: samo/so-spoštovanje, samo/so-zavedanje in samo/so-organizacija.

Organizacija: Zavedanje, da je organizacije živa materija, ki se samo/so-proizvaja, če ima zato ustrezne pogoje. Ugotovljamo, da prevladuje še vedno mehanistična paradigma, ki »duši« razvoj živih procesov v organsko-humano organizacijo.

Družba: Ne moremo pričakovati, da je družba odgovorna, če za to ne vzpostavimo ustreznih pogojev v človeku, ki ustvarja organizacijo.

Originalnost: Z kvalitativnimi metodami raziskujemo kvaliteto procesov, ki so potrebni, da preidemo v organsko-humano paradigmo.

Omejitve/nadaljnje raziskovanje: V raziskavi smo se omejili na analizo teoretičnega teksta. Raziskovanje bomo nadaljevali s prenosom temeljnih teoretičnih izhodišč v praktično okolje.

Ključne besede: avtopoietski procesi, temeljni procesi, samo/so-spoštovanje, samo/so-zavedanje, samo/so-organizacija.

1 Uvod

V vsakdanji praksi organizacije se srečujemo z vrsto kompleksnih dejavnikov, ki jih vsakdo skuša razumeti po svojem poznavanju organizacije in strokovnem znanju. Za globlje poznavanje organizacije smo proučevali temeljne procese v organizaciji. Bojujemo se proti razpadanju organizacije in vlagamo nenehne napore, da preprečimo procese dezorganizacije (Ivanko, 2004). Zanima nas, kako v organizaciji spodbuditi procese samo-delovanja, da bi s tem pripomogli k delovanju bolj spontane organizacije.

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Proučujemo avtopoiezo in avtopoietske procese, zato nas je zanimalo kako sovpadajo s temeljnimi procesi v organizaciji. »Autopoiesis« je mreža procesov proizvodnje, kar navajajo številni avtorji (Maturana in Varela, 1980; Capra 2002; Janstch, 1980; Ovsenik, 1999; Lauc, 2000 in drugi), na podlagi proučevanj tega naravnega principa, z različnih zornih kotov in znanstvenih področij. Predpostavljamo lahko, da gre za procese proizvodnje, so to procesi, ki imajo temeljno funkcijo v organizaciji. Kar pa ne pomeni, da so samo nekje spodaj, kot nekakšen »temeljni kamen«. Gre za živo dinamiko v neprestaninem gibanju po povratnih zankah. Vse to je v človeku, ki je živ dejavnik dogajanja v dveh vlogah: kot opazovalec in kot akter. V bistvu nam je Narava podarila vse principe, da lahko zavestno delujemo in ustvarjamo živi svet. Kako? S svojim opazovanjem lahko nenehno opazujemo dogajanje v okolici in če nas to dogajanje dotakne oziroma smo pozvani v določeno aktivnost lahko: zavestno, spošljivo in organizirano razmišljamo, usmerjamo in delujemo (Balažic, 2018). V raziskavi smo se osredotočili posplošitve avtopoietskih procesov in principov v treh nivojih, ki jih (Ivanko, 2014) razvrsti na: vzdrževalni, pospeševalni in nadzorni. V te tri nivoje je usmerjeno naše raziskovanje avtopoietskih procesov. Zakaj? Radi bi dokazali, da gre za procese, ki so osnovni za delovanje človeka in organizacije (Maturana in Varela, 1980; Capra 2002; Janstch, 1980; Ovsenik, 1999; Lauc, 2000 in drugi).

Z raziskavo želimo seznaniti in opozoriti so-delujoče akterje v organizacijah, kako pomembni so temeljni avtopoietski procesi, na katere bi se morali osredotočati v organizacijah za delovanje v smeri organsko-humane organizacije. Praksa kaže drugače, da smo še vedno »ukalupljeni« v mehanistični organizaciji, ki duši žive procese že v sami strukturi, ter posledično živi procesi nimajo prave vodstvene podpore, da bi jim posvečali pozornost. Ovsenik & Ovsenik (2017), ugotavljata, da sedanje krizno obdobje še dodatno spodbuja kritično razmišljanje. Pravita, da je poudarek na pozornosti zavestnosti, ki jih lahko najdemo »znotraj človeških dejanj«.

Za avtopoiezo vemo, da gre za krožni življenjski princip, ki vnaša v organizacijo harmonijo človeških odnosov, ki pa v sodobni organizaciji še ni našla pravega mesta, čeprav so že bili podani krovni koncepti z vgrajenimi avtopoietskimi pristopi (Bača in sod. 2007). Pavuna (2017) predpostavlja, da zdravo dinamiko človeka zagotavlja ljubezen v neprestani akciji in tukaj se odpirajo še nadaljnja področja raziskovanja avtopoieze.

2 Teoretična izhodišča

Avtopoietske procese sta odkrila Maturana in Varela (1980), ko sta definirala izvor proizvodnje živega v celici, kot osnovni življenjski enoti. Ugotovila sta, da večplastnost mreženja omogoča medij, ki se operativno zapira in informacijsko odpira v sistemski mreži. Njihovo razkritje avtopoieze kot krožno organizacijo živih sistemov, predstavljata novo perspektivo kot novo paradigmo. Morgan (2004) pri nadaljnjem proučevanju avtopoieze izpostavlja: neodvisnost, krožnost in samo-referenčnost. Ovsenik (1999) je ugotovitve biologov prenesel v teorijo organizacijske misli, kjer izpostavi proces spoznavanja in opazovanja. Čilenska avtorja poudarjata, da gre pri avtopoietskih sistemih za temeljno razliko

med organizacijo in strukturo. Odkrjeta strukturo komplementarnega delovanja in se dotakneta socialno-etičnega vidika. V spoznavnem procesu definirata poslušalca in opazovalca, kot celoto, ki ustvarja v perspektivi celote. Izpostavita procese: konceptualnega mišljenja, govora in samo-zavedanja (Maturana & Varela, 1980).

Že antičnim Grkom se je odkrila filozofija (Aristotel, 2013), da gre pri življenjskem ciklu za procese nenehnega gibanja, ki se kaže v nastajanju in propadanju. Konstruktivisti trdijo, da je vsa resnica ujeta v kreativni krog in da se procesi bivanja kažejo v dinamičnem okolju (Kordeš, 2004). Z epigenetskimi procesi lahko potrdimo odprto evolucijo, s katero se srečujemo na vsakem koraku (Jantsch, 1980). Bojujemo se proti razpadanju organizacije in vlagamo nenehne napore, da preprečimo procese dezorganizacije (Ivanko, 2004), namesto, da bi uporabili sposobnost upiranja in se prepustili zakonu prepuščanja, ki omogoča prost pretok informacij (Lasan, 2006).

Pri Laucu (2000) ugotavljamo, da je v proces odločanja vključil transformacijski proces: občutenja, mišljenja, govorjenja in delovanja. Živo se opredeljuje s procesom metabolizma, rastjo in reprodukcijo, ter organizacijo organizacije, kot je njegovo razumevanje izvornih avtorjev. Osrednja vloga postavljata živčni sistem, ki se širi na proces abstraktnega mišljenja in proces usmerjajočega komuniciranja. Velik poudarek namenjata razmerijskih aktivnostim, ki v neprestanih interakcijah vzpostavljajo združbo razmerij, ki so tako notranji kot zunanji in pomembni za samo-ohranitev. Proces samo-nastajanja v območju stalnih interakcij, pa organizem vodi v kontinuirano in usmerjeno obnašanje. Stanje samo-zavedanja pa človek kot živo bitje ustvari skozi krožne procese: mišljenja, jezika, pomnjenja in učenja. Biologa zaznata tudi dinamičen proces individualizacije in so-delovanja, s čimer se poveča kompleksnost med organizmi. Predstavita fenomen biološko zaprtega in socialno odprtega sistema (Maturana & Varela, 1980). Morgan (2004) je ugotovitve Čilencev in njihovo idejo avtopoieze prepoznal kot združljive z organizacijskimi zakoni, kot del samo-referenčnih procesov. Čilenceva sta šla dalje, ko sta uspela definirati kontinuiran proces transformacije, ki se neprestano odvija kot proces postajanja, ki je odraz nenehnega procesa učenja in procesa življenja. Tudi Capra (1997) se zaveda, da proces spoznavanja temelji na samo-spoznavanju. Lauc (2000) dodaja, da so avtopoietični procesi možni če človek sam vzpostavi cilje da je družbeno racionalen, naraven, učinkovit in human – kar opredeli da so lastnosti avtopoietičnega človeka.

Maturana in Varela (1998) sta v teoriji avtopoieze spoznala, da je so-žitje z drugimi ljudmi prvenstveno in da smo potopljeni v mrežo interakcij. Pravita še, da je spoznavni krog v bistvu spoznavni proces, ki je odraz našega notranjega doživljanja sveta. Zaznala sta, da živimo v svetu ustaljenih kulturnih tradicij in omejitev, ki nas usmerjajo v to kaj in kako vidimo, občutimo, ravnamo in prikrivamo, kar omejuje naš proces ustvarjanja. Opozarjata na etiko, katera ima referenčno točko v zavesti in v človeški refleksiji. Na kar opozori tudi Ovsenik (1999) s svojim modelom »Sinusoida«, kjer s krogom oziroma valom ponazori miselni proces. Morgan (2004) je kritičen, da se Maturana in Varela (1998) nista dotaknila socialnega vidika, čeprav zasledimo da pogledata iz široke perspektive in poudarita dopuščanje so-

človeku možnost porajanja skupnega sveta. Socialni fenomen procesov med ljudmi izpostavi tudi Ovsenik (1999), ko se sprašuje po obstoju socialne organizacije kot »socio-autopoiesis«. Maturana in Varela (1998) izpostavita proces sprejemanja in dajanja, kar opredeljuje proces ljubezni in poudarita, da brez ljubezni ni socialnih procesov in tudi človečnosti ne. Pravita, da je ljubezen biološka dinamika, ki ima globoke korenine. Njihovo definicija termina »autopoiesis«, razumemo kot vrsto samo-organizacije, ki je organizirana kot mreža procesov proizvodjanja.

Procesi proizvodjanja in njihova dinamika, nas je vzpodbudila, da predstavimo koncept avtopoietske organizacije iz procesnega vidika, kar je hkrati naš motivator za osrednji del raziskave. Možina in Kordeš (v Maturana in Varela, 1998) na razumljiv in berljiv način povzameta pionirsko delo biologov, ki je zahtevno branje. Pritegnila nas je etika spoznanja, ki ga podajamo v štirih procesih spoznavanja: svobodo (samo-uravnavanje), odgovornost (samo-odgovornost), ljubezen (so-žitje in so-bivanje) in toleranco (spoštovanje), kot navajata avtorja. Razumeti je, da se na »*Drevesu spoznanja*«, Maturane in Varele (1998), samo-umevno prepletajo biološka spoznanja z etičnimi posledicami. Sporočilo razumemo, da ni dovolj da se nečesa zavedamo, ampak da v tej smeri tudi nekaj storimo in da sledimo avtopoietskemu procesom. Naše razumevanje procesov v Naravi se sovпада z ugotovitvami Capre (1986), da je zdravje človeka vpliv medsebojnih procesov na ravni posameznika, družbe in ekosistema proti holističnim ekološkim konceptom. Prigogine je prvi definiral disipativne strukture, Capra (2002) pa je tudi raziskoval v tej smeri. Iz njegovih zaključkov disipativnih struktur se lahko naučimo, da je to pot, ki nas pelje do roba ali točke razcepa. V tej najbolj oddaljeni točki lahko najdemo nov zorni kot in širino vpogleda in lahko rečemo, da se tukaj začne proces ustvarjalnosti, ki pa nima konca in se poraja v vedno v novih oblikah. S procesom ustvarjalnosti je povezan metabolični proces, ki zagotavlja nenehen tok energije, da se struktura prestrukturira, ko se le ta približuje razpadu.

Pomembnost energije za vzdrževalne procese v organizmu pa najdemo pri Djurdici (2013), saj je energija pogoj za izvajanje življenjskih procesov. Z zanimanjem sledimo Capri (2002), ki komplementarno povezuje procese in strukture. Ovsenik (1999) komplementarnost omenja kot pomembno kategorijo, katero obstoječa teorija organizacije še ne sprejema. Lahko rečemo, da imamo zelo podoben zorni kot opazovanja, in povzemamo njegovo trditev, da je organizacija krožni proces, ki se neprestano vrti v krožno-spiralnem procesu. Pri Capri (2002) še zasledimo, da govori o: vzorcih, materiji in procesih. Strukturne spremembe razumemo, kot spoznavni proces, ki se odvija v procesu konceptualnega razmišljanja in razloži, da proces omogoča dvig zavestne izkušnje. Ko iščemo piramido perspektiv življenja le to najdemo pri Capri (2002) in ta vrh poimenuje »Smoter«.

Nekateri avtorji za podobo organizacije uporabijo metafore: Capra (2002) ji pravi »živa organizacija«, pri Morganu (2004) pa zasledimo »metaforo toka in transformacije«, kamor avtor uvršča tudi avtopoietsko organizacijo. Zanimivo ugotovitev najdemo pri Capri (2002), ko omenja kapital kot metaforo, ki gre skozi proces učenja in proces ustvarjalnosti. Iz te metafore se lahko razumemo, če se kapital ustvarja z učenjem, govorimo o človeku, kot

ustvarjalnem potencialu. Učenje lahko iz njegovih ugotovitev okrepimo, tako, da uporabimo samo-generativna socialna omrežja, kot »žive mreže«, da se spodbuja so-delovanje. Kot pomembno navaja refleksijo zavesti, ki je posledica sistematičnega razumevanja.

Capra (2002) tudi trdi, da je kreiranje znanja individualni proces, pri ojačenju in spodbujanju pa preidemo v socialni proces. Za boljše razumevanja organizacijskega samo-učenja kot kontinuiran proces, nam predlaga obnovitev lekcij razumevanja življenja, da lahko dosežemo kot rezultat kolektivno ustvarjalnost. Dimovski (2005) nam ponudi novost molekularnega pristopa, da vsaka sprememba vpliva na ostale elemente. Kjer je potrebno zavedanje organizacije, da ima pri procesu samo-učenja, posameznik osrednji pomen. Tudi Capra (2002) se je zavedal tega pojava, ko razmišlja o učečih kulturah, kjer je pomembna vzpostavitev povratne zanke, kot povratni proces o dogajanju v posameznem procesu. Izpostavi ustvarjanje klime zaupanja in lahko govorimo o procesih emocij. Ko Capra razmišlja o ekonomskem vidiku poudari humanost posameznikov in proces kakovosti, kjer je odločilna refleksija zavesti in opozori na dehumanizacijo organizacij. Razumemo ga, da bo potrebno spremeniti ekonomski red in proizvodne procese na vseh ravneh. In tukaj ne gre zgolj za humane organizacije, temveč preživetja človeka in razvoj kulturne civilizacije.

Dotaknili in kritično smo proučevali predvsem spoznavanje spoznavanja in etiko etike, kot procese, ki se dogajajo globoko v človeku samem in so vidni v so-delovanju v organizacijah. Kot značilnost ekosistema Capra (2002) izpostavi princip so-delovanja in da ni nihče izključen, da vsak lahko so-deluje in so-ustvarja sistem. V obstoječem svetu prevladujejo destruktivni naboj, ki je nevzdržen in mora biti re-definiran, kritično ugotavlja Capra (2002). Hammer in Champy izpostavita, da so ključnega pomena korenite spremembe s pomočjo novega gibanja, kar razumemo, da je potrebno narediti globoko spremembo v dinamiki procesov in obenem zagotoviti celovit pogled. Za tovrsten podvig pa potrebujemo proces sprememb kot ugotavljajo (Ambrož in Lotrič, 2009; Bukovec, 2009 in drugi).

Procesna dinamika je ključ, da se doseže humanistični vidik v organizaciji, da se z neprestano dinamiko ravnovesja entropije v sistem dovaja novosti po nelinearnem krožnem procesu. Jantsch (1980) govori tudi o avtokatalitičnih procesih samo-obnove, kot metabolične procese, ki vpliva metabolično evolucijo na vseh ravneh delovanja. Omenja evlucijske procese v holističnem sistemu z etičnimi in moralnimi vrednotami. Lahko rečemo, da gre za evlucijske procese, katerih osnovne količine sta definirala že Malić (1976) in Jantsch (1980). Kjer pa gre Jantsch (1980) še dlje in predstavi model vertikalne in horizontalne informacije v nulti točki, ki jo razumemo kot izvor procesov ko-evolucije.

Luhmann (1995) umešča avtopoiezo v socialni sistem in ugotavlja, da komunikacijski procesi ustvarjajo informacije za delovanja procesov. Poleg tega je za delovanje avtopoietkega koncepta kot samo-delujočega sistema odločilna binarna struktura, ki je bit za ponavljanje in vztrajnost sistema, kot razumemo Luhmanna (1995). Za samo odpiranje in zapiranje avtopoietkega sistema pa avtor navaja, da je imunski sistem tisti, ki vzdržuje procese

avtonomnega sistema. Tudi Ovsenik (1999) se pridružuje s trditvijo, da mora človek sam najprej sam sebe ustrezno usposobiti in razviti. Tako razumemo, da če človek uporabi opazovalni proces s široko perspektivo je lahko njegovo delovanje in obnašanje vsestransko, saj ga povezuje z miselnim procesom. Da bi razumeli pomen odnosa v organizaciji nam je Ovsenik (1999) vseskozi ponavljal, da organizacija brez razmerij ne obstaja. Kot končen cilj tudi pri njemu prepoznamo kulturno preobrazbo družbe. Le-ta pa je odvisna od razvoja lastne misli, kjer je znanje, volja in hotenje vloga aktivnega opazovalca. Lauc (2000) ima podobna spoznanja in večkrat poudari, da so volja, znanje in hotenje predpogoj za kvaliteten proces dela. S samo-ustvarjanjem novih možnosti, piše Ovsenik (1999), je ustvarjalni proces način ustvarjanja nove paradigme sveta in nas opozori, da se to ne dogaja prav pogosto. Tako smo lahko počaščeni, da živimo v tem času in da lahko so-ustvarjamo v dobi menjave paradigme.

Kako menjati paradigmo? Je zanimalo tudi Lauca (2000), ko ustvari model avtopoietske organizacije, kot pogoj za ustvarjanje osebne, organizacijske, ekonomske in kulturne kulture. Kajti avtopoiezo povezuje s proizvodnimi procesi dobrega, resničnega in lepega, ki so proizvodi interdisciplinarnih moralnih timov. In brez re-procesiranja skozi filtre: estetike, ekologije, etike, ekonomije in ekumenizma ne gre. V tej dinamiki procesov vidi tudi možnost re-procesiranja in restrukturiranje iz alopoietske v avtopoietsko organizacijo. Lauc nam še predlaga, da se učimo od biosfere, saj je le-ta predpogoj za noosfero. V kateri Malič (1976) vidi kibernetško-termodinamične procese kot prepletanje področij fizike, biologije in informatike, ki jih Lauc (2000) razširi še na področje psihologije, tehnologije, ekonomije in prava. Kot predhodniki se je zavedal metaboličnega procesa, kot ključnega za preobrazbo in samo-organizacijo. Razumemo lahko, da je predpostavil horizontalno in vertikalno povezavo sinergij v ničelni točki. V tej točki se ojača ljubezen, poštenje in svoboda, kot proces srca, kjer šteje morala posameznika.

Kot kibernetški proces razumemo tudi teorijo »botton-up« in »top-down«, da prepoznavamo, osvajamo znanje, se razvijamo in se spreminjamo. Za samo-organizacijske procese predlaga da jih dosežemo z vlaganjem v samo-zavestnosti in samo-osvoboditve dela in ljubezni, kar predpostavlja kot avtopoietsko silo razvoja. Kar najdemo tudi pri Tesli (2013), da samo-zavedanje kot del samo-spoznavanja lahko treniramo z veliko volje. Za pretočnost procesov nam Jantsch (1980) predstavi energetska pretočnost, kot glavni faktor za ko-evolucijo in udejanjanje procesov sprememb. Lauc (2000) razvije tezo, da samo-referenčno bitje temelji na osnovnih procesih: samo-vzgoje, samo-učenja in samo-organizacije, v odsotnosti strahu in jeze, ter z veliko radosti.

V organizaciji nas je v povezavi s avtopoietskimi procesi zanimala stopnja entropije. Ivanko (2004, str. 58). ugotavlja, da kadar se v organizaciji srečujemo z neuskkljenimi poslovnimi procesi, povzroči nastanek entropije. Prepričan je, da večja usklajenost oziroma sinergija v poslovnem procesu ustvarja manjšo entropijo in obratno, manjšo usklajenost oziroma disenergija spremlja entropija. Izpostavi sinergijo kot silo med posredovalci v poslovnem sistemu in jih deli na tri temeljne procese: nadzorne, pospeševalne in vzdrževalne. Z

nadzornimi posredovalci izoblikujemo samo-vzdrževalni sistem in proženje povratnega učinkovanja, ter popravljanje neželenih odstopanj procesa. Pospeševalni posredovalci so ukrepi, ki se nanašajo na zmanjševanja trenja in povečujejo učinkovitost procesa. Z vzdrževalni posredovalci pa želimo preprečiti motnje trenja, med ljudmi in napravami. V shematski model temeljne organizacije želimo umestiti procese avtopoieze:

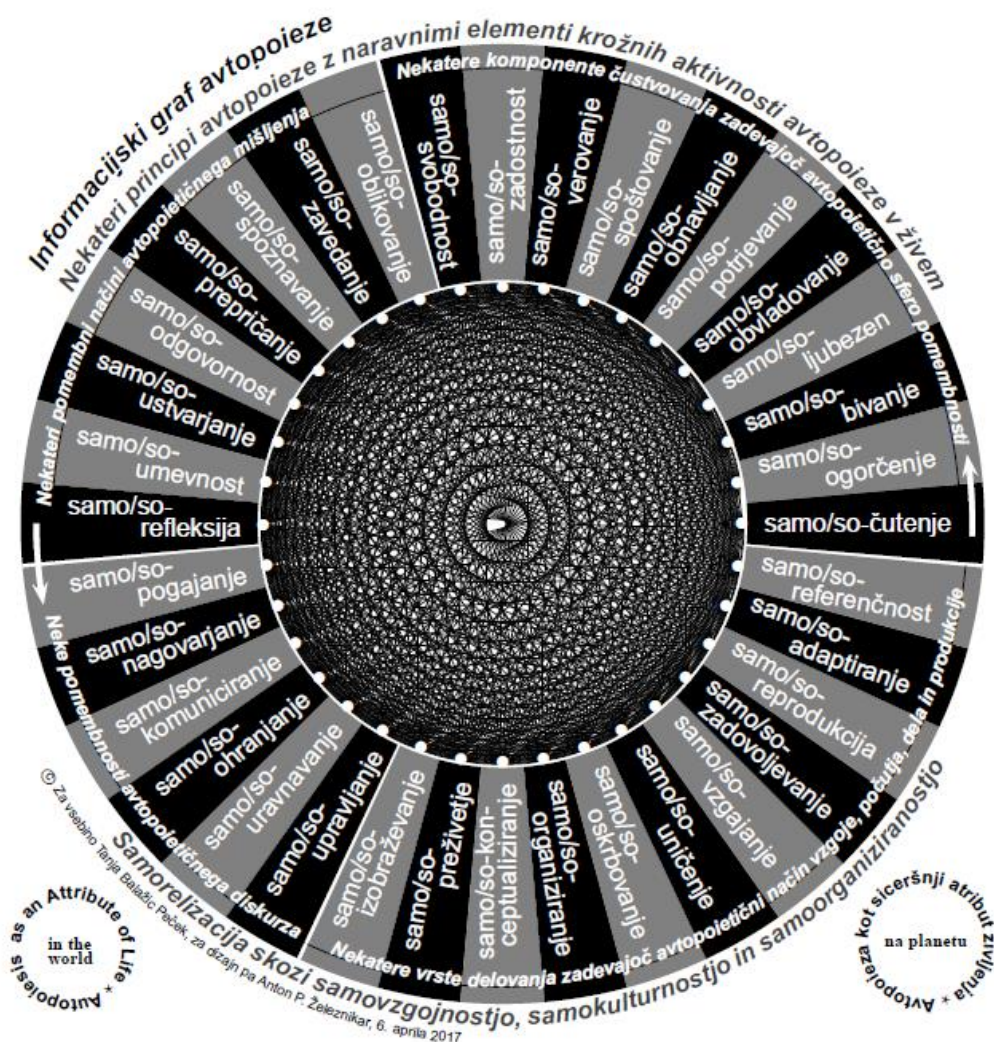
- **nadzorni** – samo-nadzor, samo-preseganje do **samo-samospostovanja**,
- **pospeševalni** – samo-vzgojnost, samo-kulturnost do **samo-zavedanja**,
- **vzdrževalni** – samo-obnova in samo-razvoj do **samo-organiziranost**.

Sprašujemo se, kateri procesi avtopoieze sovpadajo z temeljnimi procesi organizacije?

3 Metoda

V raziskavi smo uporabili kvalitativne metode v raziskovanju. Sledili smo usmeritvam Meseca (1998), ker nas zanima tako namen, potek kot razmerje med raziskavo in teorijo. Avtor pojasni, da je značilnost tovrstnih raziskovanj radovednost za poznavanje celote in bogatega razumevanja, ki nas usmerja k praktičnemu delu. Avtopoieza je neprestana dinamika v krožnem gibanju. Za izhodišče in povezovalna začetna razmišljanja v raziskavi smo uporabili informacijsko orodje »Informacijski graf avtopoieze - IGA« (Železnikar, 2016 in 2017a).

Raziskava avtopoieze v organizacijah temelji na interdisciplinarnosti abstraktnih pojavov in medsebojnem prepletanju. Iz pregledane literature avtorjev Mesec (1998), Mali (2006) in Ambrož in Colarič-Jakše (2015) ugotovimo, da je za raziskovanje abstraktnih pojavov potrebno slediti ontološkemu procesu raziskave, za znanstveno vrednotenje in potrditev pa uporabiti predvsem kvalitativno metodo raziskovanja. Kordeš (2014) pravi da je kvalitativno raziskovanje sistematičen pristop, kadar nas zanimajo fenomeni, pojavi in procesi. Ponavadi za te sprememljivke še nimamo kvantitativnih meril, saj nas ne zanima toliko rezultat, ampak sama dinamika notranjega dogajanja. Opozarja, na uporabnost metode, da pa se mora raziskovalec zavedati, da je to večina, ki jo moramo podpreti s konkretnim delom. Zlasti, ker raziskovalec želi dobiti celosten vpogled v proučevano z logiko in pravili. Za raziskovalca pravi, da je glavni merilni instrument raziskave (str. 11-15).



Slika 1. Informacijski graf avtopoieze
(so-delovanje T. Balažic Peček in A. P. Železnikar)

4 Rezultati

4.1 Priprava tabele s procesi za obdelavo

Iz »Informacijskega grafa avtopoieze« povežemo nekatere principe tako s temeljnimi procesi organizacije kot avtopoietskimi procesi. Izbrali smo: **samo/so-spostovanje**, **samo/so-zavedanje** in **samo/so-organiziranje**.

Tabela 1. Sinteza in umeščanje procesov avtopoieze v temeljne procese organizacije

Nivoji organizacije	Temeljni procesi (Ivanko, 2004, str. 58)	Teoretični koncept avtopoieze	»Informacijski graf avtopoieze«
1. nivo	Vzdrževalni proces	Povezovalni procesi	samo/so-spoštovanje
2. nivo	Pospeševalni proces	Metabolični procesi	samo/so-zavedanje
3. nivo	Nadzorni proces	Miselni procesi	samo/so-organiziranje

Z metodo primerjanja smo poskušali poiskati razmerja in podati strukturo kot model temeljnih procesov po Ivanku (2004) in povezati s procesi avtopoieze, ki smo jih pridobili z analizo v programskem orodju Atlas.ti.

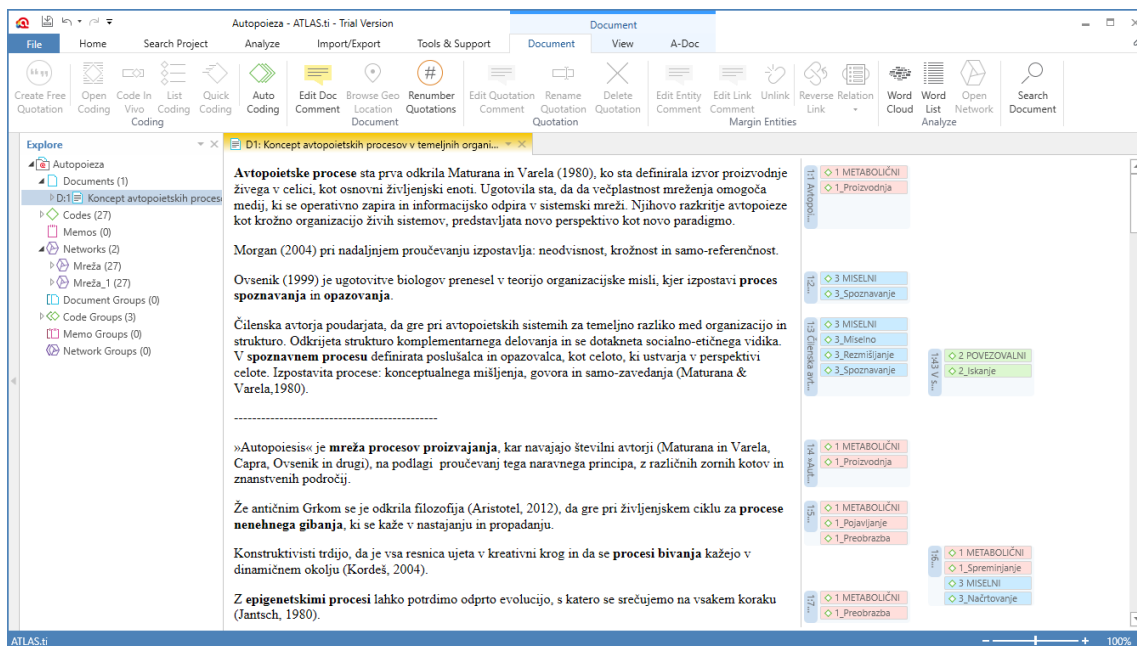
Iz teorije avtopoieze smo na podlagi utemeljitev avtorjev izbrali tri procese, ki v temeljih organizaciji predstavljajo nekašno ogrodje procesov v organizmu in organizaciji. Gre za **metabolične procese, povezovalne procese in miselne procese**, ki jih bomo skušali potrditi z analizo tekstov v Atlas.ti. Za ta namen smo pripravili tekst avtorjev: Maturana in Varela, Capra, Jantsch, Luhmann, Ovsenik, Lauc, Ambrož (s soavtorji) in drugi, iz teoretičnega dela disertacije, tako da smo besedilo strnili v povzetek teorije avtopoieze. Predpostavljamo, da so **povezovalni, metabolični in miselni proces** umeščeni v temeljih organizacije. Za kodiranje procesov smo pripravili tabelo glavnih kod, skupine kod (kategorije kod) in pod-kode za kodiranje pripravljenega teksta o teoriji avtopoieze, ter iskanje povezav – Tabela 2.

Tabela 2. Tabela za kodiranje temeljnih procesov organizacije v Atlas.ti

Proces - koda	Pod-koda za kodiranje teksta
Povezovalni	povez-, razumev-, iskanje-, prilagaja-, komuniciran-, razmerij-, prilagodljiv-
Metabolični	metaboli-, proizvodn-, ustvarjan-, transform-, ohrani-, preobraz-, reprod-, spreminjan-, delov-, pojavljan-
Miselni	miselni-, kognitiv-, razmišlj-, spoznav-, mišljen-, opazov-, načrtov-

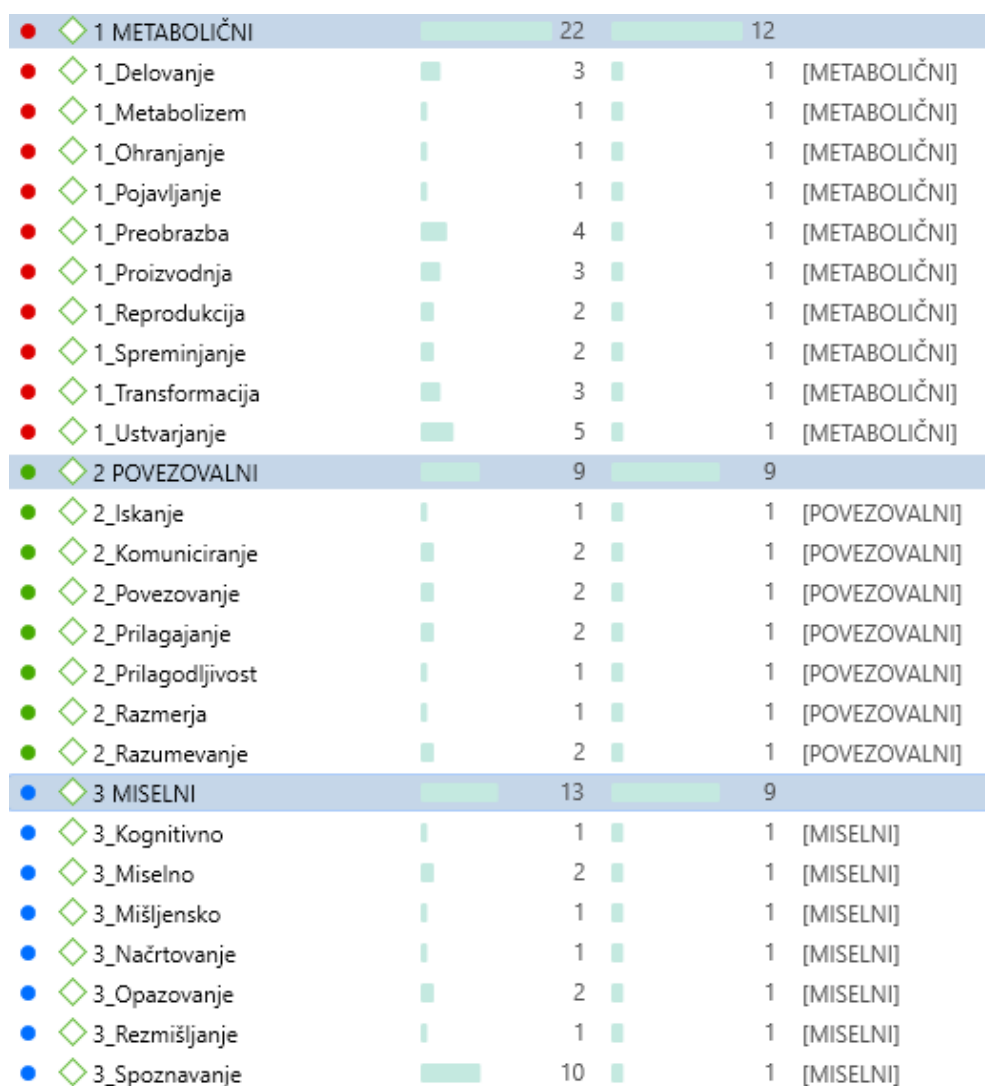
4.2 Obdelava podatkov v Atlas.ti

Na sliki 2 je prikazan del besedila s pripadajočimi kodami. Kode zapisane z velikimi črkami (Povezovalni, Metabolični in Miselni) so kategorije kod.



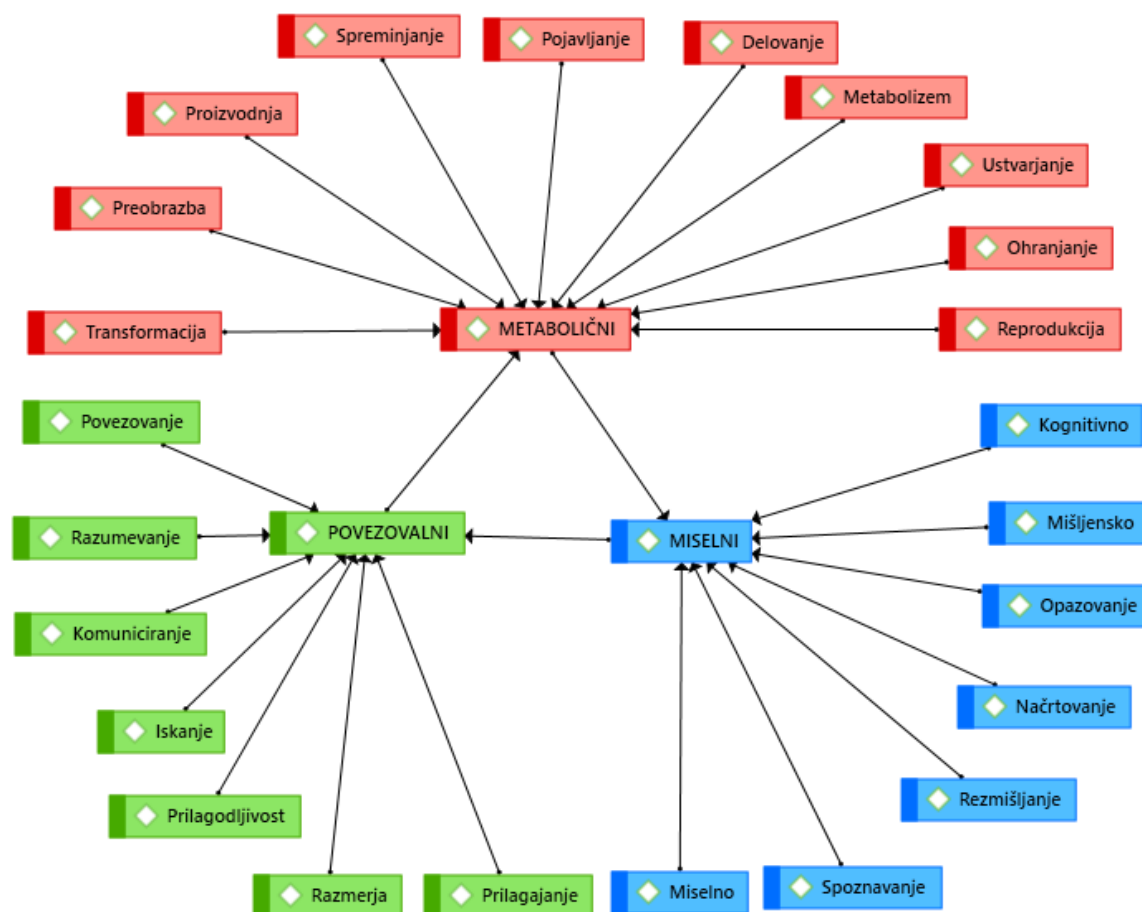
Slika 2. Prikaz kodiranja v programu ATLAS.ti.

Na sliki 3 so prikazane kategorije kod in same kode. Kategorije kod združujejo kode, oz. kategorija je pripadajočim kodam nadrejena. Frekvence pojavljanja kod so merilo pomembnosti posamezne kode. Kode z zelo nizko frekvenco so praviloma manj »pomembne« kot kode z višjimi frekvencami.



Slika 3. Kode in skupine kod s frekvencami

Slika 4 prikazuje vstopanje kod v kategorije in odvisnost med kategorijami: Povezovalni, Metabolični in Miselni.



Slika 4. Sovpadanja avtopoietskih procesov (rezultati kodiranja Atlas.ti)

5 Razprava

Pri iskanju procesov v temeljih organizacije smo povzeli in izpostavili avtopoietske procese iz teorije avtopoieze, kot jih navajajo različni avtorji. Ugotavljamo, da avtorji, ko proučujejo dinamiko proizvodnje v osnovni celici, govorijo o procesnem delovanju. Kot pomembne izpostavijo proces opazovanja in spoznavanja kot možnost delovanja človeka kot subjekta, ki se odraža z miselnim procesom. Notranje procese v živi celici opredeljuje proces metabolizma, ki samo-ohranja in omogoča samo-razvoj. Jantsch (1980) samo-organizacijo opazuje kot neprestano mikro in makro naravno dinamiko procesov, ki v neprestanem gibanju ustvarjajo ko-evolucijo, kjer navaja, da je brezpogojni in skrajni cilj humanistični vidik. Dodaja še, da je potreben nov koncept ekosistema, kot ne-redukcionistični vidik na samo-organizacijo evolucije. Razmišljamo, da glede na to ali prevlada proces prejetanja ali dajanja, kjer ima pomembno vlogo ljubezen. Preneseno na organizacijo, lahko rečemo, da je od tega notranjega vidika odvisno ali se bo celica samo-organizirala ali des-organizirala.

Razumemo, da je metaboličen proces povezan s procesom ustvarjalnosti, ki mora imeti zagotovljen tok energije, da se struktura lahko prestrukturira. Tukaj pa lahko že govorimo o vzdrževalnih procesih, ki celici, organu, organizmu, organizaciji zagotavlja stik, interakcija in komunikacija z ostalim svetom. Na ta način smo opredlili tri procese, ki smo jih umestili v strukturni koncept: miselni, metabolični in povezovalni proces. Naše razumevanje in sklepanje smo še potrdili z analizo v orodju Atlas.si, tako, da smo povzeto besedilo ustrezno kodirali, da smo dobili kvalitativno analizo tekstov.

S pod-kodami procesov: miselni, povezovalni in metabolični dobimo miselni model procesov, ki se medsebojno povezujejo in prepletajo. Avorji se različno izražajo, ko pojasnjujejo procese: opazovanja, spoznavanja, razmišljanja, načrtovanja in druge, ki se povezujejo v miselnem procesu. Glede na pod-kode povezovalnega procesa je le-ta skupen za procese: prilagajanju, razmerja, iskanja, komuniciranja in razumevanja. Kot najštevilnejši s pod-kodami in frekvencami je metabolični proces, ki zajema: transformacijo, preobrazbo, ohranjanje, delovanje, spreminjanje, pojavljanje, ustvarjanje, reprodukcija in druge, ki pomenijo proces metabolizma ali presnavljanja. Ugotavljamo, da se pod-kode ločene in hkrati povezane v treh avtopoietskih procesih, ki se sovpadajo in jih lahko povežemo z tremi temeljnimi procesi, kot jih definira Ivanko (2004), so to: vzdrževalni, miselni in nadzorni. Lauc (2000) razvije tezo, da samo-referenčno bitje temelji na osnovnih procesih: samo-vzgoje, samo-učenja in samo-organizacije, v odsotnosti strahu in jeze, ter z veliko radosti. Poda tudi praktične rešitve odkrivanja distinkcije nepravilnosti, laži, strahu in jeze, ki se v realnosti izkazuje kot alopoieza, ali kot odsotnost ljubezni in svobode človeka, na vseh ravneh človekovega delovanja. Ambrož in Bukovec (2015) predstavita tveganje na osebni in kolektivni ravni, kot »kulturo strahu«, ki je predpogoj za plodno, ustvarjalno okolje. Poudarita, da vsaka grožnja ne sme predstavljati strahu in s tem problem v človeku, ter da sprejmemo to kot izziv oziroma, da znamo kontrolirati vplive na lastno kulturo. S procesi avtopoieze se lahko človek bolje samo-organizira z samo-zavedanjem in samo-spoštovanjem, kot rezultat obvladovanja svoje lastne harmonije ustvarjalnosti.

6 Zaključek

Z raziskavo smo naredili povezavo med temeljnimi procesi in avtopoietskimi procesi. S kvalitativno analizo smo dokazali, da se avtopoietski procesi sovpadajo s temeljnimi procesi: nadzorni, pospeševalni in vzdrževalni, kateri se sovpadajo s procesi avtopoieze: povezovalni, metabolični in miselni, kar potrjuje kvalitativna analiza Atlas.ti. Znotraj potrjenih procesov, pa delujejo principi: samo/so-spoštovanje, samo/so-zavedanje in samo/so-organizacija.

Z raziskavo smo poskušali izluščiti temeljne avtopoietske procese in principe, ki bi jih prenesli v vsakdanjo prakso delovanja človeka v organizaciji. Ugotavljamo, da bi s tem lahko organizacija uporablja že uporabljene modele za obvladovanje sistemov. V temelju vsakega modela pa priporočamo uporabo temeljnih procesov s temeljnimi principi za zavestno, odgovorno ravnanje vsakega človeka v organizaciji, na eni strani. Na drugi strani pa avtopoietska dinamika preprečuje entropijo v organizaciji, kar pomeni, da ustvarjamo žive

processe s principi avtopoieze z naravnimi elementi krožnih aktivnosti avtopoieze v živem. Le-ti pa temeljijo na zaupanju, komunikaciji in uresničevanju notranje dinamike ljubezni v akciji. Lahko bi rekli, da gre za samo-realizacijo skozi samo-vzgojnost, samo-kulturnost in samo-organiziranost. Človek sam, tako vrača dinamiko življenja v organizacijo, ko obvladuje sebe obvladuje tudi procese organizacije.

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Dr. Tanja Balazic Peček je l. 2001 diplomirala iz organizacije in managementa ter l. 2008 specializirala iz projektnega managementa na Fakulteti za organizacijske vede (FOV) Univerze v Mariboru. Na Fakulteti za organizacijske študije (FOŠ) je v letu 2018 doktorirala z disertacijo »Gradniki avtopoieze v 4.0 organizaciji« in s tem postavila temeljni koncept ter gradnike avtopoieze za nadaljne raziskovanje avtopoietiske organizacije v vseh razsežnostih. Deluje na delavnicah izgradnje samo-podobe in naravnega zdravljenja, ter v letu 2013 pridobi status terapevtke. Njeno raziskovalno zanimanje je človek v organizaciji, kvalitativno raziskovanje, etično-ekološki koncepti, organska-humana paradigma v povezavi s fenomenom »autopoiesis« v organizacijskem in družbenem okolju. Je avtorica prispevkov na znanstvenih konferencah in člankov v strokovnih ter znanstvenih revijah. V letu 2017 je bila izbrana v tim »odličnosti FOŠ«. Od leta 2018 je predsednica alumni kluba FOŠa.

Doc. dr. Franc Brcar je univerzitetni diplomirani inženir strojništva, magister informacijsko-upravljaljskih ved in doktor menedžmenta kakovosti. Dalj časa je bil zaposlen v večjem avtomobilskem podjetju. Na začetku je delal kot specialist na področju operacijskih sistemov in baz podatkov. Sledilo je delo na področju uvajanja in vzdrževanja sistemov za računalniško konstruiranje in ERP rešitev. V zadnjem obdobju se raziskovalno ukvarja z menedžmentom, menedžmentom informacijskih tehnologij, menedžmentom poslovnih procesov, inovativnostjo in kakovostjo. Je predavatelj na več fakultetah na visokošolski, magistrski in doktorski stopnji. Izvaja individualne konzultacije in organizira seminarje za skupine iz statistike (R, SPSS, SAS, Lisrel, ...), analize kvalitativnih podatkov (ATLAS.ti) in pisanja strokovnih in znanstvenih del (raziskovalne metode, Word, Excel, PowerPoint, Windows, Linux, ...).

Abstract:

The Process of Autopoiesis: Qualitative Approach of Organization Management in Basic Processes

Research Question (RQ): We ask ourselves, which processes of autopoiesis are connected with the basic processes of organization?

Purpose: The basic purpose of research is to find the connection between the basic processes of autopoiesis and the autopoietic principals for self-organization.

Method: We used qualitative methods in the research. Our starting point arose from the methodological tool which is called “The Information Graph of Autopoiesis”. We made an analysis of theoretically assumption in the program tool Atlas.ti.

Results: We found out from qualitative analysis, that the autopoietic processes are: connecting, metabolic and mind, which are connected with basic processes: supervision, accelerating and maintenance. within the set processes there are functioning operative processes: self/co-respect, self/co-awareness as also self/co-organization.

Organization: Awareness, that an organization is a live matter, which is self/so-produced, if it has favorable conditions. We find out, that mechanistic paradigm still dominates, which “smothers” the development of the life processes in an organic-human organization.

Society: We can not expect, that this society is responsible, if we do not establish relevant conditional in a human being for this, who is creating an organization.

Originality: With quantitative methods we are researching the quality of processes, which are essential, to pass in to the organic-human paradigm.

Limitations / Future Research: We limited ourselves to research only the on analysis theoretical text. We will continue the future research by transferring the basic theoretical starting points in to a practical environment.

Keywords: autopoietic processes, basic process, self/co-respect, self/co-awareness, self/co-organization, organic-human organization.

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