

Emotional Intelligence and Resilience, an Applied Study in the City of Arequipa, Peru

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Abstract: - This article aims to show the development of positive and effective adaptation skills in decision-making only if emotional intelligence and resilience construction with appropriate stress management is achieved. This study uses validated psychometric tests, such as Baron's Emotional Quotient Inventory (EQI), to measure emotional intelligence and the Wagnild and Young (RS) resilience scale to measure resilience. The research approach is qualitative and applied with a design of non-experimental analysis. A stratified sample of agents of the city was made in three sectors: Rulers / Politicians, University Professors / Academics, and Businesspeople, as institutional decision-makers in the city of Arequipa. The low individual and collective construction of emotional intelligence and resilience in the different strata of the city of Arequipa significantly decreases adaptive capacity, so agents tend to make linear decisions in complex environments that affect their stress levels and uncertainty management. This study has not been done before since it develops and explains how agents and individuals are recognized as essential elements to generate value from the construction of emotional intelligence and resilience, linking them as fundamental constructs to positive adaptation or effective decision-making to the changing environment forming intelligent networks.

Key-Words: - Decision-making, Adaptation, Stress management, Knowledge-based development, Flexible human networks.

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1 Introduction

Economics, as a normal science, has overestimated the management of value, anchoring it in the maximization of production, competitiveness, and growth, focusing on optimizing the means of production to ensure economic growth and development. Because of this, new approaches to knowledge propose the interaction of intangible elements or components previously unrelated to each other in economic studies. Thus, the city of Arequipa is the ad hoc scenario for the research team to study the synergies and interrelation of the predominant elements and agents that lead, guide or direct the city's development. The research work is developed in four sections: in the first section, the introduction of the research is presented, which exhibits the construction of the state-of-art that allows the development of the research value proposition. This is where it is shown that the classical economic approach has left the human being out of the development equation, although the human being is the essence of economic processes since he adds value to them through decision-

making. The second section shows the methodological approach that models and operationalizes the research. The third section shows the results obtained from applying psychometric tests of emotional intelligence and resilience, according to the methodological process of data collection and theoretical interrelation presented previously in state of the art. Finally, in the fourth section, the conclusions are detailed

2 Components of Positive and Effective Adaptation: Emotional Intelligence and Decision-Making Resilience

The dominant production economy of the last centuries - based on the free market, profit maximization, and mass production - has lost its human character. Economic science, characterized as a science of tools and goals, has developed an impersonal character through quantitative modeling and future flows through past economic data.

Classical economic science has focused on generating value through productive means and agents, thus seeking market equilibrium and optimal growth. Therefore, it has given primary importance to the tangible elements of production, conceiving structures, processes, and products as the creation of value for human development.

However, the classical economic approach has been the subject of debate in recent years, which has brought to light new orientations and models that characterize and operationalize development through tangible and intangible categories. Consequently, the economy where value was found in the physical factors of production has been relegated; thus, every intangible asset -especially knowledge- is now the DNA of science. This leads to the creation of value, which is dynamized by exchanging information and operationalizing knowledge. Thus, knowledge becomes a fundamental asset for creating value and, through it, the engine of development. Like this, the knowledge economy emerges, linking economic science with knowledge markets, and promoting different development models, [1].

In this sense, each of the categories that theorize and operationalize the knowledge-based models represents an exogenous and endogenous force that, by strengthening, uniting, and integrating the human capital, generates value through knowledge management and later development based on knowledge. Thus, development is made viable through sustainable balance, emphasizing behavior and decision-making based on the regeneration of the system and environment through the articulated construction of the same, consolidated in culture and reconciliation between systemic welfare and the economy, [2].

Global wellbeing, in this way, implies sustainable development in the complex environment; it promotes the capacity for effective and positive adaptation of individuals and decision-making agents in their contexts and realities. First, however, it is necessary to detail that, when entering into the adaptive capacity of agents, reference is made to an integral approach, thus addressing factors such as human behavior identified as the axis for development through decision-making.

In this regard, [3], about human behavior, recognizing that people act as potential drivers of irrational and emotional changes that lead to decision-making. This leap from classical economic science to behavioral economics denotes a holistic and interdisciplinary approach, which allows broadening the view from objective science to complex dynamics. Decision-making agents are

then driven to issue agile and adaptive responses. They must understand and identify significant events facing environmental uncertainty by deploying the design, execution, and application of processes through flexible human networks. This will manage the dynamics towards intelligent alignment and empowerment of agents, aiming at knowledge-based development, [1].

Knowledge-based development is an approach of particular interest to the research team because the city of Arequipa 2017 received the award of Emerging Knowledge City, a recognition granted by the World Capital Institute. The fact motivated the research emphasizing the study of the city's value generation through decision-making, allowing mapping factors, components, or elements that articulate the city's valuable assets. It is then that the study focuses on the city of Arequipa under the knowledge-based development approach, addressing the main limitations in decision-making, seeking to enhance components that shorten the gaps to achieve adaptation and generate value generation so that Arequipa can obtain the recognition of the City of Knowledge.

The generation of value through the operationalization and development of knowledge places the human being as the strategic axis to generate human networks strengthened by positive, flexible, innovative, and intelligent connections. Thus, adaptive networks are created, individually and collectively, to manage the uncertainty of the environment. This allows value creation through integrated intangible assets, and the articulated networks become the foundations of the capacity to adapt and make positive decisions. In this way, it is not only organizational productivity generated but also positive articulation and agile response to the dynamic environment.

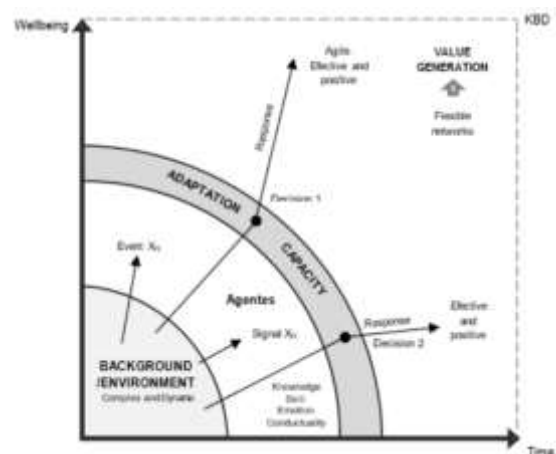


Fig. 1: Knowledge-based development (KBD) value generation through decision-making.

Source: Emotional quotient inventory (EQI) of BarOn applied in the city of Arequipa, [26].

For this reason, it is important to emphasize that, at present, social actors seek ad hoc strategies to achieve their goals; however, as mentioned above, the environment in which all elements of society coexist is complex and dynamic, which emits significant signals and events (see Figure 1) that, if not identified and addressed on time, will turn into failed opportunities in the city's development process. Because of this, it is necessary that society's agents - according to their knowledge, skills, emotions, and behavior - identify these events, signals, and signs of the environment to issue agile and effective responses that allow the transformation of the event into a potentially value-generating resource through their effective response. This will be possible only if decision-makers develop the capacity to adapt, which provides individuals with the means to articulate knowledge and reality by consolidating flexible value-generating networks.

Adaptation goes beyond the decision-making of individuals, which implies focusing on human capabilities that allow the interpretation of environmental signals and characteristics. In this way, it is essential to point out that agents move and interact in a complex environment characterized by uncertainty, which determines that they are rarely in equilibrium. This climate causes stress, which prevents adaptation as an agile and positive response to constant environmental changes, [4]. In other words, all those environmental demands or problems are condensed into situations that drive the human being towards distress. Furthermore, constant innovations in technology, offshoring, time, duration, quality, the number of tasks, responsibilities, and risks are some of the organizational changes that have radically affected the daily chores of humanity, intensifying stress levels, [5].

However, most studies showed some positive effects of the intervention on stress management. Thus, it is evidenced that self-reported stress leads to satisfaction and personal growth. Therefore, self-reported stress is referred to as "eustress" because it represents positive responses to external stressors. Eustress is primarily the result of a positive perception of stressors. Therefore, it was proposed to maximize the components of eustress by arguing that it had an adaptive and motivational role in agents, materialized in positive responses acting as a mediator between organizational change and resistance to change. Consequently, stress management defines the management of the

uncertainty of the environment, favoring a positive response to change, [6]. It is important to emphasize that stress management depends on building emotional intelligence and resilience for adaptation to be effective. In this sense, these two factors will allow the agents' positive adaptation resulting in an agile and effective response to the changing environment.

Emotional intelligence, coined by Peter Salovey and John Mayer in 1990 and popularized by Daniel Goleman in 1996, proposes an interconnection between thought and emotions according to the experiences of each individual. In this principle, the importance of studying emotions lies as a component of the development of agents and individuals. The sense of organizational belonging is then fostered as a guarantee to promote the formation of social capital as an internal force. As a result, this will make it possible to increase productivity, enhancing human skills and capabilities, [7].

Although human emotions were conceived as disruptive and chaotic, today, it is gaining prominence thanks to new theories explaining their indispensable character for consolidating human networks. Thus, emotional intelligence is identified as a component that allows the development of leadership capabilities and social skills, creating complex and integrated networks within organizations, [8]. This way, it directs, organizes, motivates, and guides human activity in the productive process. Experience has then recognized the construction of emotional intelligence (EI) for conflict resolution, becoming an instrument that positively restructures social coalitions within the work environment. This strengthens the exchange and management of knowledge between organizations while enhancing intra- and inter-organizational development, [9]. Thus, the increase in organizations' social capital is evidenced, positively relating organizational productivity directed towards innovation and regeneration of the environment; this becomes positive and agile, leading to the sustainable development of human capital in the political, economic, and social spheres, [10].

Therefore, the proper management of emotions facilitates good performance, which refers to a person's ability to direct them toward constructive activities and responses. A person competent in this dimension of emotional intelligence can encourage themselves and others to improve continuously when making decisions and to have a clear, positive, and productive direction. Researchers have found that employees' emotional intelligence positively

relates to their work, satisfaction, and performance, [11]. Employees who are "smart" about their emotions are more efficient in interacting with the work environment and their co-workers. Using emotions to enhance performance will positively impact the self and others, [12]. People with high capacity in this dimension actively direct their emotions towards good results (high productivity and performance). However, it should be noted that until a few years ago, intelligence, in general, was materialized through the intelligence quotient (IQ). Consequently, this test presents a bias by characterizing intelligence as linear and privileging the realities of developed economies standardized in cognitive intelligence. Furthermore, this test is unidimensional, although broad criteria argue that academic performance is multidimensional, [13].

A case that shows the literature reviewed above is given in a computer company where instruments were applied to measure the employees' work performance. Thus, even though general mental ability endows human beings with cognitive intelligence components, the results showed that emotional intelligence conferred workers with adaptive and flexible skills that exponentially favored organizational work performance compared to those with a high IQ. Therefore, the proper management of emotions facilitates good performance, which refers to a person's ability to use their emotions to direct them toward constructive activities that generate value, [14]. Thus, emotional intelligence enhances the adaptation of human beings, reflected in the agile and effective response in a complex environment. Additionally, a component that allows human beings to develop the capacity to adapt; is called resilience.

A characteristic of resilience is the positive result of the development of people with high vulnerability. It comprises effective coping with strictly cumulative and stressful life events and circumstances. In context, it is presented as a total positive understanding, competitive and effective management in response to risk or hostility. Resilience allows individuals to develop, in essence, the capacity to understand processes; it also has a substantial potential to increase their understanding of events or situations that pose a risk to themselves, [15]. In the organizational context, building resilience in corporate agents allows them to interact optimally in the flow of turbulence, allowing the organization to read, understand and respond quickly and effectively to significant changes. This is made possible by deploying resilient networks that articulate organizational intelligence, adapt,

lead, and strategically align the value components embedded in the organization, [16].

As the business environment becomes increasingly dynamic and chaotic, it demands resilient workers. The organization is thus driven to evolve by emphasizing sensitivity to signals and positive decision-making in the face of potential events and risks that may impact it. In this way, at the same time, a holistic stance is achieved that strengthens the agents in the internal and external domains, [17], [18], [19]. Then some interactions link resilience through network transformation at the organizational and global level, leading toward sustainability, well-being, and adaptation. This is contextualized in the theoretical and practical synergies between resilience, transformation, regeneration, and adaptation, through which a holistic approach of socioeconomic and ecological integration is achieved, opening the system's evolution through the adaptation of the agents to the environment and its regeneration, [20].

In this sense, and as the reviewed literature argues, it is through emotional intelligence and resilience, with adequate stress management, that the effective and positive adaptation of the agents is pursued after determining the right time for decision-making. It is thus evident that the construction of these components generates internal and external value (see Figure 2), which allows individuals to create flexible human networks, capable of adapting, motivated, empathetic, intelligent, and productive, suitable for generating knowledge and innovation that impact the development of the different cities.

Therefore, to operationalize adaptive capacity through emotional intelligence and resilience, psychometric measures were applied with validated psychological tests to obtain an accurate measurement of adaptation and better decision-making.

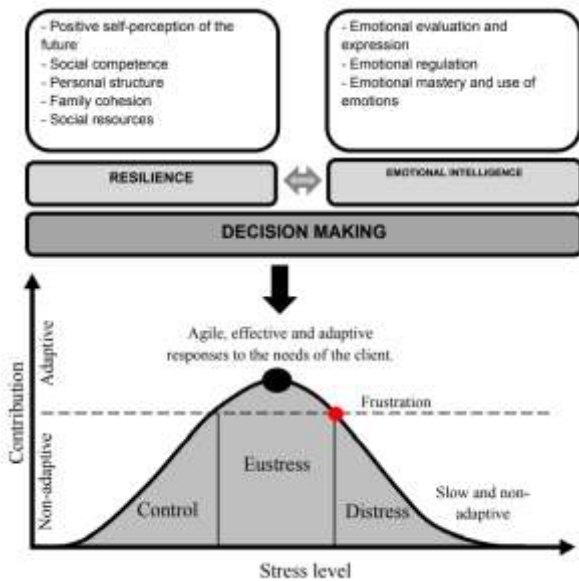


Fig. 2: Scheme of emotional intelligence and resilience in decision making.

Source: Emotional quotient inventory (EQI) of BarOn applied in the city of Arequipa, [26].

3 Methodology

The present research is of an applied type, with the design of a non-experimental analysis, as it does not require laboratory analysis or modification of variables. Regarding its approach, the research is qualitative, so it interprets reality subjectively and inductively, guaranteeing researcher neutrality, [21]. The process of obtaining data has been developed through "field research," applying two psychometric tests which, by their background, have been validated, [22], and through which the answers given in each instrument follow the assessment of the Likert scale with defined statistical processes.

These instruments will measure emotional intelligence and resilience in the dominant agents of the city of Arequipa, offering a measurable perspective of the city's assets and adaptive capacities, which is currently the second city with the greatest potential for economic growth in Peru, [23], and is of great interest to the research team. Because of the award received in 2017, calling it: an "emerging city of knowledge," the articulation and approach of the present research were determined. Like this, it can identify which components and capacities have been developed and institutionalized in the city of Arequipa; among them, the generation of value through a decision-making process with the integration of the components of emotional intelligence and resilience (Figures 01 and 02) in the agents that direct the political and social institutions of the city and, therefore, those who have the

responsibility to guide the development of such an important city. Consequently, it is necessary to recognize and analyze each of these components and capacities of decision-makers in the city through business and government organizations, as well as their ability to identify significant events or signals in the dynamic environment, which in turn recognizes the adaptive capacities of the actors, whose functions include economic and social leadership, as well as the responsibility to promote the development of the city, directing actions and strategic regional development projects.

For the study, it was considered to carry out a stratified random statistical process, which allows direct interviews with decision-makers of institutions: Rulers/Politicians, academic authorities, and executive directors of the leading companies which contribute socially and economically to the growth and development of the city. Therefore, the statistical population shown in Table 1 was first determined to determine the objective sample of the interviews.

Table 1. Population distribution

Strata	Population
Rulers / Politicians	30
Businesspeople	306
University professors / Academics	72
Total population	408

Source: Authors' own creation

From Table 1, it is revealed that in the city of Arequipa, the process of knowledge-based development focuses on three fundamental sectors, such as social gears that generate value through intelligent integration networks: governments, who direct public institutions and promote legal guidelines for citizen participation, in addition to the promotion of strategic public investment; entrepreneurs as leaders of the productive private sector, which generate annual jobs for the local population and contribute financially to the city's indicators; and, finally, the academy through its authorities and university teachers who carry responsibility for education, teaching and transmitting knowledge to new social actors, both in the public and private spheres.

The population universe of the public sector of Arequipa is delimited by the number of institutions that make up the national government structure and that annually receive direct transfers from the Ministry of Economy and Finance, which, in addition, oversee local planning and investment

actions. Thus, the decentralized local government consists of 29 districts and one provincial municipality. In the productive private sector, a total of 306 companies are attached to the Peruvian Export and Tourism Promotion Commission (Promperu) register, an entity under the Ministry of Foreign Trade and Tourism, which promotes the development of private investment and the strengthening of entrepreneurship. Of these, 23 are considered large enterprises, 36 are medium-sized, 82 are small, and 165 are micro-enterprises. It is also important to explain that there are a large number of informal companies in the private sector which are not considered in the analysis of data and interpretation of results by their very nature. Finally, referring to the group of the academy, it was recorded that in the city, there are eight universities licensed by the National Superintendence of University Higher Education (SUNEDU), an agency attached to the Ministry of Education, whose purpose is the licensing, quality supervision and control of the university higher education service. The universities in Arequipa are divided into faculties and professional schools, having 72 directors or deans responsible for the directives of institutional order in higher education.

Consequently, with the determination of the study population, and as detailed in the statistical procedure for determining the sample, we obtain:

$$(1) n = \frac{k^2 qpN}{e^2(N-1) + k^2 pq}$$

From where it is established that N represents the population quantity or the universe determined previously and is constituted by the margin of error of the responses obtained; k symbolizes the confidence level of (95% value k = 1.96), that is to say, the probability of certainty of responses; p the probability of success as a proportion of respondents in the population with a specific characteristic and, finally, the probability of failure of individuals who do not possess a specific characteristic is determined as (1-p). This sample selection criterion is a conventional statistical and research design practice, [24].

Therefore, and according to the research purposes, once the population quantity is determined, the finite sample quantity is obtained:

$$(1) n = \frac{1.96^2(1-0.5)(0.5)*408}{0.05^2(408-1)+1.96^2(0.5)(0.5)}$$

$$(2) n = 198$$

In a stratified random sampling procedure, we obtained a sample size of 198 interviewees, with a confidence level of 95%. With this, we can calculate the size of the subsamples or stratified samples with the respective procedure, both proportional to the stratum's size and proportional to the variability of the stratum, according to Requena, [25].

$$(1) Coefficient = \frac{sample}{Population}$$

$$(2) Coefficient = \frac{198}{408}$$

$$(3) Coefficient = 0.485$$

The resulting coefficient reflects the percentage value to be taken according to the total population quantity of each stratum (see Table 2).

Table 2. Statistical distribution of the sample: selection proportional to the size of the stratum

Strata/laye rs	Population	Coefficien t	Sample
Rulers / Politicians	30	0.48	14.6
Businessp eople	306	0.48	148.5
University professors / Academic s	72	0.48	34.9
Total population	408		198

Source: Authors' own creation

According to the percentage of the total contribution of the population and its proportional contribution to the sample, the value is the same (see Table 3).

Table 3. Statistical distribution of the sample: selection proportional to stratum variability

Strata/layers	Population	Coefficient	Sample
Rulers / Politicians	30	0.07	14.6
Businesspeople	306	0.75	148.5
University professors / Academics	72	0.18	34.9
Total population	408		198.0

Source: Authors' own creation

Once the sample of each stratum is determined, the structure of the applied psychometric tests is detailed, as well as their respective constructs and measures. Therefore, as stated in the revised literature, it is argued that through emotional intelligence and resilience, the development of adaptive capacity can be achieved through agile, effective, and positive responses by decision-makers and therefore materializing in the city development process.

To operationalize emotional intelligence, the Baron ICE test, also known as the Baron emotional quotient inventory, [26], was used to measure the construction of emotional intelligence in people, denoting emotional skills and abilities to overcome and positively align the environment. In this psychometric measure, five components of emotions are described, which are: intrapersonal intelligence, interpersonal, stress management, adaptability, and mood. The test is applied to measure a person's success with societal demands and pressures in their work environment. As a result, the emotional intelligence quotient (CEQ) is obtained to differentiate which people are successful and who are not in dealing with the pressure and social demand, [11].

The resilience scale (RS) of Wagnild and Young, [27], was also applied, consisting of 25 items that identify the degree of individual resilience, Likert scale ranging from 1 to 7, composed of two dimensions: personal competence and acceptance of self and life. The RS is a reliable and valid tool for measuring resilience, [27]. It has thus been used with a wide range of study populations and has been considered the best evaluation method due to its good psychometric properties and applications in various groups. According to previous studies, the resilience measured by the RS has a positive correlation with life satisfaction, self-esteem, self-evaluation, health, self-realization, stress

management, and social support, as well as a negative correlation with depressive symptoms and anxiety, [28].

4 Results

Based on the application of the BarOn ICE, here are the results obtained after the statistical process:

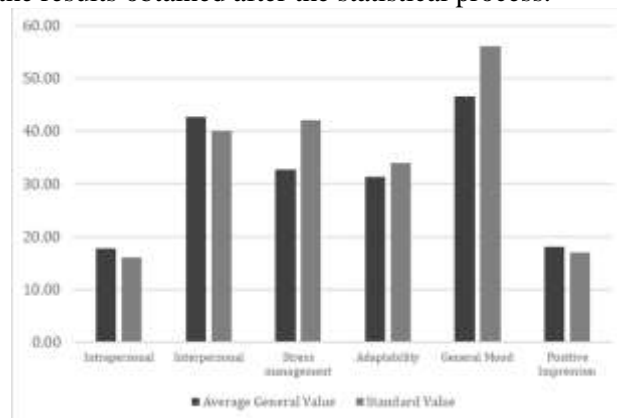


Fig. 3: Emotional Quotient Inventory (EQI) BarOn for a sample in the city of Arequipa
 Source: Emotional quotient inventory (EQI) of BarOn applied in the city of Arequipa, [26].

At a specific level and emphasizing certain constructs of the results presented (see Figure 3), it can be asserted that the agents interviewed in the city of Arequipa do not have adequate management of stress. Consequently, they present a non-adaptive reaction to the continuous changes in their respective work environments; that is, they show resistance to change, constituting a barrier to the creation of interconnected networks of cooperative work, intra- and inter-organizational. Furthermore, because their capacity for individual intelligence is diminished, there is an impediment to productivity and innovation in the human work networks of each organization. In addition, they have a positive over-impression when making decisions, making flexibility and adaptation of each individual and the human group impossible. Thus, although they have the necessary resources (average IQ, machinery, technology, and information) to achieve the creation of value within the process, there is a gap in the construction of the emotional intelligence of the people who manage human groups that prevent individuals from adapting effectively and positively.

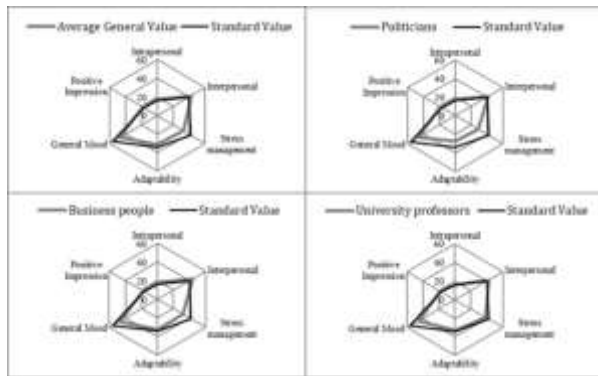


Fig. 4: BarOn's emotional quotient inventory (EQI)
 Source: Emotional quotient inventory (EQI) of BarOn applied in the city of Arequipa, [26].

Based on the general results presented (see Figure 3), the results obtained from the application of the BarOn ECI were detailed by strata or sectors, making a comparative analysis between the sectors interviewed and the standard level of development of each criterion or construct. It is then specified that the stress construct is of greater interest to the research team, notwithstanding the development of certain constructs, such as intrapersonal intelligence, interpersonal intelligence, and positive impression. This is because it is a construct where all the interviewees had the greatest problem since they presented resistance to change and impulsivity when handling stress and making decisions. Thus, cooperative work relationships are interrupted, fractioned, and impeded, which means barriers to managing positive human networks. In other words, maladaptation is reflected in reducing flexible networks between agents and organizations. However, it is important to point out that none of the three strata or sectors analyzed have the same stressors (environment and reality), both internal and external.

When specifying the results at each level of the sector analyzed, it is shown that (see Figure 4) the stratum called "University Professors/Scholars" presents an advantage in the stress construct, which allows us to affirm that this stratum has an advantage over the other two, positively influencing the development of adaptive capacity, even though stress management is not optimal. However, there is a disadvantage in interpersonal and intrapersonal construction and general mood; this breaks down the human networks in which they interact, creating barriers to the development of adaptive capacity. In the case of the "Businesspeople" stratum, the results show that the inter- and intrapersonal construct is adequate, as well as the positive impression; however, they do not handle stress adequately,

which significantly affects the general mood construct and leads to a decrease in their adaptation. Finally, in the stratum called "Politicians," the constructs of general and interpersonal attitude are the most developed, which positively drives them to achieve adaptive capacity; however, they present problems in the intrapersonal construct, positive impression, and stress management, constructs where they obtained the lowest score, thus affecting their ability to adapt effectively and positively.

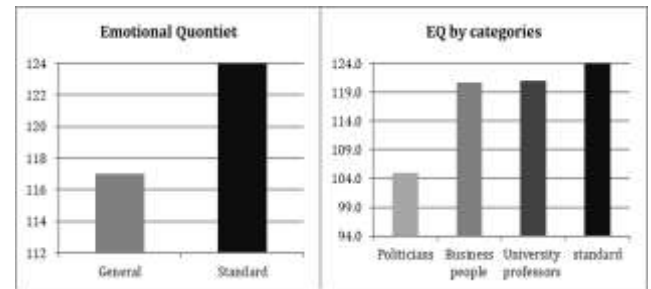


Fig. 5: Emotional quotient (EQ) in the city of Arequipa

Source: Emotional quotient inventory (EQI) of BarOn applied in the city of Arequipa, [26].

Like this, the results of the application of the test of intelligence in the city of Arequipa have made it possible to provide the emotional quotient of the agents of the city of Arequipa; based on this, the data were statistically analyzed, making a comparison between the average or standard emotional quotient and the value of the emotional quotient of the agents interviewed by strata or sectors (see Figure 5). It is shown that the stratum corresponding to "Politicians" shows a lower emotional quotient compared to the other strata and the standard value of the test; this confirms the disarticulation of the networks and the linearity in the understanding of the environment and provides maladaptive responses by creating barriers in the interaction and development in the city. On the other hand, the strata corresponding to "Businesspeople" and "University Professors/Academics" present a higher emotional quotient, approaching the expected value; they thus represent a moderately successful response to the environment, which allows for strengthening cooperative networks and building adaptive capacity. However, it is important to point out that none of the three strata shows an average value of emotional quotient due to the stress construct, which is not adequately managed, leading to a lack of collaborative, reliable, flexible, and innovative human networks in the city of Arequipa. Consequently, the adaptive capacity of the city's

agents still needs to be operationalized and developed.

The application of the resilience test complements the stated results. To determine whether the groups interviewed are resilient or not, the resilience scale test (RS) by Wagnild & Young, [27] was applied, which is made up of 25 items on a Likert-type scale ranging from 1 to 7, composed of two dimensions: personal competence and acceptance of oneself and one's life. For their respective analysis, correction values were taken from the Peruvian adaptation, [29], and we evidenced the values obtained from the sample:

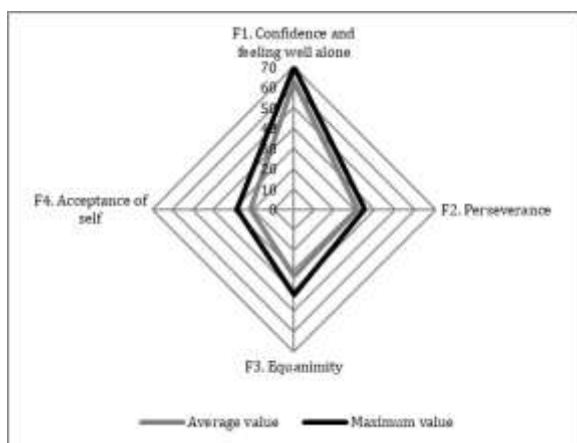


Fig. 6: Level of resilience in the city of Arequipa
 Source: Wagnild and Young resilience scale applied in the city of Arequipa, [17].

The general level of the application of the resilience test showed development problems in the construct of self-acceptance, which also influences the intrapersonal construct of each individual. A gap is then opened to reach the resilient development of the agents. Of course, an important barrier is created at the level of management and articulation of resilient networks. (Figure 6)

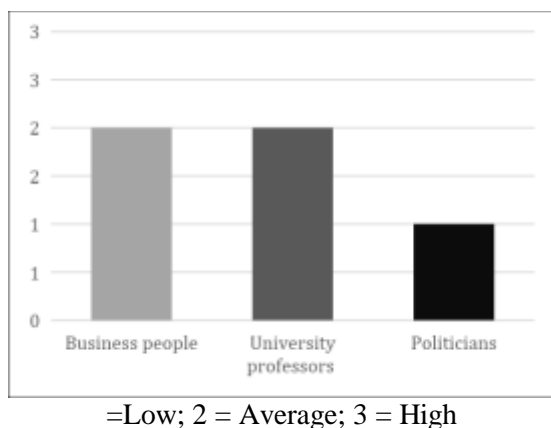


Fig. 7: Levels of resilience by strata
 Source: Wagnild and Young resilience scale applied in the city of Arequipa, [17].

Table 4. Resiliency Scale

Category,	Average Resiliency
Businesspeople	AVERAGE
University professors	AVERAGE
Politicians / Rulers	LOW

Source: Authors' own creation

According to the results obtained from the application of the resilience test to the strata or sectors interviewed (Figure 7), it is evident in general that they have a medium or low level of resilience that limits the level of development of their adaptive capacity, with these results recurring in senior managers of different organizations. Thus, it can be inferred that the decisions they can make are not necessarily the optimal ones, specifically in the "Business people" stratum; and, regarding the "University Professors/Scholars" stratum, a medium level of resilience was obtained as a result, which denotes equanimity and self-confidence, providing them with individual capacities and strengths that will allow them to articulate resilient and flexible collective networks to achieve a positive adaptation capacity to the environment, providing agile responses and, therefore, optimal decision-making. But the stratum called "Politicians" presents a low level of resilience, which highlights the impulsiveness and lack of self-confidence that prevent positive decision-making; in this sense, individually and collectively, they fragment the networks established not only at the institutional level but also at a macro level (city of Arequipa). This prevents positive articulation and the development of adaptive capacity in this sector.

5 Discussion of Results

The results obtained detail the level of decision-making effectiveness in the city of Arequipa. Therefore, it is evident that the constructs of Emotional Intelligence and Resilience are moderately developed by decision-making agents, which affects a poor and weak response. Added to this, the little control of stress as a collective and individual component; exposes a strong gap in the articulation, mobilization, and operationalization of the components of Knowledge-based Development. [30]

Consequently, the results are decisive in terms of the existence of important gaps that diminish or limit the interaction and generation of value in the city of Arequipa; due to the little development of the constructs in the different strata analyzed. Showing

a latent problem for the execution of Knowledge-Based Development due to poor understanding of the environment, management of uncertainty, and timely management of stress.

6 Conclusion

The adaptive capacity of the city of Arequipa is diminished in all strata analyzed by the little construction and scope of proper stress management, turning the agents' decisions into impulses and behaviors resistant to change. Consequently, the cooperativity and flexibility of the human networks developed in the formal and informal areas of the city are negatively affected. Significant barriers to knowledge-based development are then deployed as organizations respond maladaptively and linearly to the complex and dynamic environment. This fact alters the effective and positive interaction between agents and the environment. Therefore, the complex dynamics need to be understood and managed. Thus, agents give responses that deteriorate and limit knowledge management.

There are also significant limitations in the administration and management of uncertainty, which reaches levels of individual and collective distress, which has led to the deterioration of the welfare of the networks and the integral development of Arequipa. In this sense, it is necessary to enhance emotional intelligence and resilience factors that allow the development of adaptation; in such a way that value is developed based on knowledge and operationalized in the articulation of networks for the systemic development of the city. Only in this way will factors and components (emotional intelligence and resilience) be aligned toward the development of adaptive capacity, regeneration of the city, and the system through agile and effective responses. This is how this study contributes to demonstrate the adaptive capabilities of the city through the development of constructs that will allow the optimal administration, mobilization, and operationalization of tangible and intangible assets that determine and characterize Knowledge-Based Development involving a comprehensive multidimensional value generation system capable of articulating systemic, effective, and resilient networks that promote the economic and social regeneration of the city.

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- Glenn Arce, was project advisor
- Angela Portugal, carried out the methodology and drafting of the manuscript
- Giancarlo Torres, performed data conservation
- Wendy Ugarte, did the conceptualization
- Harold Angulo, wrote and edited.

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