

Development and Validation of the Scale of Psychosocial Factors in Economic Decision Making

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The main objective of this research was to develop and validate an indigenous self-report scale of psychosocial factors in economic decision-making. The sample consisted of 150 (men = 90, women = 60) business owners. Interviews were conducted through a self-constructed questionnaire. The items were derived from the transcripts of interviews. However, 36 items were selected for factor analysis. The 36 items were subjected to principal component analysis using the varimax rotation method. A total of 30 items defining cognitive, emotional, and social factors, which collectively accounted for 33.6% of the variance, were selected. Cronbach's alpha for the cognitive factor was 0.77; for the emotional factor, it was 0.75; and for the social factor, it was 0.69. The findings have implications for economists, psychologists, business professionals, and policymakers.

1. Introduction

Economic decision-making is a compound process of considering and consolidating different aspects of economic choices (Caplin et al., 2023; Mohr et al., 2010). It is the act of deciding on economic matters (Business Dictionary, 2013). However, decision-making is a set of conscious cognitive operations which involve ingredients from the environment with time and place specifications (Ferreira, 2023). It is the process by which a decision-maker identifies alternative courses of action and selects an appropriate alternative in each decision situation to achieve a result (Maćkowiak et al., 2023).

1.1 Economic Decision Making

Economic decision-making is a type of decision-making where the values of different choices are first compared, and the choice selected is that associated with the highest value (Weber & Johnson, 2009; Business Dictionary, 2013; Ji et al., 2023).

1.2 Theoretical Background

There are competing theoretical perspectives on the nature of economic decision-making. Traditional economic theory assumes that individuals make decisions rationally after having and processing full information, with well-defined preferences which are constant over time (Becker 1962; Simon 1982). The rational theories of economic decision-making assume individuals have all the information, negating the presence and influence of such factors in decision-making that are beyond human limitations (Gigerenzer, 2001). Whereas the non-rational theories assume individuals make their decisions partially under the influence of factors such as emotions, cognitive biases, etc. that are beyond human limitations. There are some other models of economic decision-making, like the Expected Utility (EU) model, which assumes that economic decisions are not based on expected value but on expected utility (Von Neuman & Morgenstern, 1944). Contrary to the Expected Utility Model, Markowitz (1952) proposed a model in economic decision-making which assumes people are not rational decision-makers, which was further developed by Kahneman and Tversky (1979) and suggested that people make decisions with a selective focus. This theory predicts the framing effects of decision-making. Accordingly, individuals are more likely to be risk-averse when outcomes are presented in terms of gains and more likely to be risk-seekers when outcomes are presented in terms of losses (Tversky & Kahneman, 1992). The risk-return models propose that decision-makers take decisions depending upon the determination of expected reward and associated risk with each of the available choice options (Bell, 1995).

These models also specify a third factor in decision-making, which is the delay between action and reward delivery (Laibson, 1997). Taffler and Tuckett (2002) gave a psychoanalytic perspective on economic decision-making, which described the behavior of investors as irrational regarding their economic decision-making. Economic decisions are made in psychic reality in the presence of feelings and emotions. In the case of perception of reality, feeling is primary, while reason is secondary. Under the effect of wish fulfillment, decision-makers see what they want to see (Maćkowiak et al., 2023).

1.3 Factors in Economic decision Making

There are numerous factors that may influence human economic decision-making, which range from cognitive heuristics and biases to individual demographics (De Bruin, Parker, & Fischhoff, 2007). These factors refer to two dimensions of experience: the psychological and the social (Backman, 2006).

1.3.1 Cognitive Factors

Decision-makers often take help from their past experiences and tend to compare new problems with past cases to derive useful information and determine future courses of action, which may lead to cognitive heuristics and biases (Chen, & Lee, 2003; Fendley, 2009). Heuristics and biases reveal the psychological processes which govern judgment and decision-making (Kahneman & Tversky, 1982). Often, flaws in decision-making do not arise from such factors as incompetence, inexperience, or lack of knowledge or intelligence but rather from the heuristics one uses when deciding (Roberto, 2009).

A heuristic is a mental shortcut which refers to the tendency of a decision-maker to make judgments depending on the similarity of current situations with those in the past (Read & Grushka-Cockayne, 2011). Humans use different cognitive heuristics and biases. The recognition heuristic has been found to be a frequent mental shortcut used by investors at the time of making their investment decisions (Ortmann et al., 2008). It is the tendency of decision-makers to give more weight to a recognized object than an unrecognized object at the time of deciding (Goldstein & Gigerenzer, 2002). A simulation heuristic is a mental shortcut by which a decision-maker accesses the probability of an event depending on their ability to picture the event mentally (Kahneman & Tversky, 1982). Intuition is taken as a heuristic that may lead to irrational biases (Tversky & Kahneman, 1974). Hammond (1996) suggested that intuitive decisions are usually taken without awareness or logical calculations (Mechera-Ostrovsky et al., 2022).

Projection bias and self-attribution bias affect economic decision-making (Welch, 2000). The overconfidence effect is a cognitive bias in which a person's judgments are much greater than their accuracy (Pallier, 2002). People also accept or reject an alternative based on their prior beliefs, as their decisions are influenced by their believability of conclusions rather than logic (Dube et al., 2010). The framing effect is a cognitive bias in which people tend to choose differently, which depends on the way it is presented (Tversky & Kahneman, 1981). Kahneman and Tversky (1983) also found the conjunction fallacy, the belief that contiguous events have a causal relationship, in decision-making. Assimilation bias leads decision-makers to make different interpretations of the same information, colored by their previously held views (Carlson & Russo, 2001). Mulligan and Hastie (2005) found that businesspersons tend to make their economic decisions based on stories about facts rather than the facts. Silvia (2011) found confirmation bias to be one of the most frequently occurring biases, which is a tendency in decision-makers to approve information that confirms their beliefs. Research found the tendency of a decision-maker to escalate commitment to previous investments even when evidence suggests that it is unwise to invest in that project (Beshears & Milkman, 2011). The recency effect refers to cognitive bias, which is when recent events have more influence over decisions than past events (Roberto, 2009).

Expectation bias refers to the tendency in people to do things because many other people do or believe the same (Colman, 2003). Hindsight bias is another empirically detected bias in human decision-making (Hilbert, 2012). Gilbert (2002) suggested that people usually rely on fast thinking or gut feelings when they must make decisions under specific time constraints. It can influence decisions due to some cognitive as well as emotional factors (Loewenstein et al., 2001).

Emotional Factors. Decision-makers are not free from the influence of their emotions (Ajmal et al., 2024). Immediate emotions can lead economic decisions in a different direction than expected emotions (Pfister & Bohm, 2008). Loewenstein et al. (2001) proposed that the emotions at the time of decision-making can influence the decision. Decisions are found to be impossible without the involvement of emotions (Damasio, 1994). Kaufman (1999) suggested emotional arousal as a cause of bounded rationality in economic behavior.

It was found that emotions such as stress and nervousness can change our economic behavior and our economic decisions (Lerner et al., 2015). Ego-involvement can influence the capacity of economic decision-making as it may enlarge the effects of stress (Peterson, 2007; Riess & Taylor, 1984). Mood can affect predictions about the future. Good moods increase people's tendency to be optimistic about the future, while bad moods may make them pessimistic about the future (Wright & Bower, 1992; Nofsinger, 2005). People in a depressed mood show less willingness to take risks in investments (Yuen & Lee, 2003). Shefrin (2002) suggests that emotions like greed, hope, and fear are most relevant regarding economic decision-making. Zizzo (2003) found anger to be one of the leading causes which can color economic decision-making.

Evidence suggests that relativity helps people make their decisions as people compare their lives to those of others, leading to jealousy, which is a hidden force that shapes their decisions (Ariely, 2008). Social factors, while interacting with emotional factors, can affect our decision-making (Wu & Xu, 2018).

Social Factors. Many economic theories discuss the influence of social forces on economic behavior (Becker & Murphy, 2000). Akerlof and Kranton (2000) found that social factors mold our identities, which have an impact on our preferences. Herding reflects the influence of social emotions and social norms, which act as sanctions when decision-makers do not conform (Onu et al., 2018).

Shiller (2000) suggested the media as an agent to generate an investment culture due to its involvement in stock market news. Fisher and Statman (2000) found that market sentiment can affect stock market movements, as a fall in sentiment can cause prices to fall. Indro (2004) suggested that market sentiment plays an important role in financial decisions. Moreover, social pressure for conformity can distort decision-making. People do not make their decisions in a vacuum; rather, their environment shapes the way they think and interact with others (Roberto, 2009). Averbek and Duchaine (2009) found that social perceptions can influence decision-making.

2. Literature Review

The impact of psychosocial factors in economic decision-making is a concept based on non-rational decision-making models and is a relatively newly explored area since behavioral

economists and psychologists started to rebel against traditional economic models of decision-making.

2.1 Cognitive Factors in Economic Decision-Making

Porac and Thomas (1990) suggested that decision makers view the business environment with their mental models, which are useful tools in simplifying complicated business affairs and thus facilitate their decision-making by reducing uncertainty and ambiguity. Tversky and Kahneman (1974) found that, in decision-making, humans use cognitive heuristics, which may lead to cognitive biases, that reduce the complexity of making judgments. Kahneman (2011) suggested two different thinking processes. The first generates feelings and inclinations; processes quickly and automatically, with no or little effort; neglects ambiguity and suppresses doubts; and is biased to believe and to confirm, while the second is characterized by slow thinking and is deliberate and controlled. Usually, both go side by side with each other in everyday life. Mehra and Sah (2002) found people behave as if their current risk preferences in economic decisions would be persistent in the future, just as they are today, while they found risk tolerance varies over time. Shiv and Fedorikhin (1999) suggested a specific interaction between cognition and emotion regarding consumer decision-making, as they found cognition to play a greater role than emotions when the resources are high and easily accessible.

2.2 Emotional Factors in Economic Decision-Making

Loewenstein and Lerner (2003) found the involvement of emotions throughout the decision-making process to be in leading, implementing a choice, and experiencing its outcome. Peters et al., (2006) suggested that emotions can lead to a handsome amount of distortion in practical decision-making. Bargh and Chartrand (1999) explored that investment behavior can be influenced by the emotions of investors, which are beyond their conscious awareness. Ajmal et al., (2024) suggested that emotional factors such as fear, and nervousness play a critical role in economic decision-making. McClure and others (2004) found an association between activity in brain areas controlling emotions and immediate monetary reward. Lo and Repin (2001) found that investors tend to experience emotional arousal and further argued that the investors' ability to make decisions while dealing with their emotions is necessary for decision-making. Best (2005) found investors who associate themselves with the information age are investing in internet stocks due to their personal attachment.

Social Factors in Economic Decision-Making

Prechter and Parker (2007) found that social learning is considered more important in economic decisions than individual learning. Imitation and herding may reflect social learning and are important in shaping economic decisions (Baddeley, 2010). Walter and Weber (2006) suggested that investors imitate the behavior of other investors because they think that others are doing so based on relevant information. Shiller (2000) found that investors tend to imitate the behaviors of other investors; consequently, they do as other investors do.

Economic decision-making is not always based on strict logic; rather, it is affected by different psychosocial factors. Although economic decisions cannot be made with zero involvement of these psychosocial factors, it is suggested to make economic decisions with as

much logic as possible (Kahneman, 2011). Moreover, gender, age differences, and personality traits are also found to affect economic decision-making (Ajmal et al., 2024).

3. Method

The objective of the study was to develop and validate an indigenous measure of psychosocial factors that affect economic decision-making.

3.1 Sample

A sample of 150 participants (men = 90, women = 60) whose ages ranged from 20 to 65 was drawn. The purposive sampling technique was employed with the following inclusion criteria to draw a sample:

1. Both male and female participants were included.
2. Participants who run their own businesses were included.
3. Only small and medium enterprises (SMEs) businessmen were included.
4. Participants with at least 5 years of business experience were included.
5. Participants with minimum matriculation qualifications were taken.
6. Only self-made businesspeople were included.

Table No 1: Demographic Characteristics of the Sample (N = 150)

Characteristics	Men (n=90)		Women (n=60)	
	M (SD)	f (%)	M (SD)	f (%)
Age	36.22 (9.18)		36.66 (8.95)	
Education				
Matriculation	40 (44.4%)		20 (33.3%)	
Intermediate	30 (33.3%)		20 (33.3%)	
Graduation	10 (11.1%)		10 (16.7%)	
Masters	10 (11.1%)		10 (16.7%)	
Business Experience	12.11 (6.90)		10.83 (6.79)	

4. Procedure for Scale Development

The psychosocial factors in economic decision-making scale was developed. The construction of the scale was based on the steps given as follows:

4.1 Item generation

The first step was to generate the items related to psychosocial factors in economic decision making on the basis of themes which were extracted from interviews conducted with business people. In this regard, the following procedure has been adopted:

4.2 Preparation of the interview questionnaire

A semi-structured questionnaire was used to conduct in-depth interviews to assess psychosocial factors in economic decision-making, which was prepared by reviewing existing literature (Farlex Financial Dictionary, 2012; Baddeley, 2010; Loewenstein, O'Donoghue, & Rabin, 2003; Heath, & Tversky, 1991; Katona, 1975; Tversky & Kahneman, 1974).

4.3 Procedure for the Interview

After informing them about the nature of the study, formal permission and consent were obtained from the individuals who met the given inclusion criteria. A formal introduction of the topic was also given to the participants, and a rapport was built before asking their views about the

variables under study. In this respect, some constructed and probing questions were asked of participants to get in-depth views about the variables, and the responses were recorded and transcribed. All interviews were conducted in person, and it took approximately 30 to 40 minutes to interview each participant.

4.3 Content Analysis

The method of conceptual content analysis was used to generate items as suggested by Smith (2008) as a valid tool for generating item pools in the social sciences.

Conceptual content analysis was run on the text of 15 interviews. After coding the text of interviews, categorization was done based on codes assigned by line-by-line coding. Then all line-by-line codes were merged into different categories based on their similar characteristics. Then, categories were merged into themes based on their distinguished characteristics.

Table No 2: Content Analysis of Interviews

Theme	f	%
Cognitive	77	39.28
To rely on one piece of information when making economic decisions	6	7.79
To select an option for which the probability of an outcome is known	6	7.79
To select an option because many other people are doing that	5	6.49
To believe in having complete and accurate information	5	6.49
To make economic decisions under the influence of recent events	6	7.79
To see past events as being predictable at the time those events happened	4	5.19
To favor information that confirms the existing beliefs	6	7.79
To make economic decisions based on readily available information	4	5.19
To make economic decisions based on similar situations in the past	5	6.49
To choose recognized stuff over unrecognized stuff	8	10.39
To make economic decisions based on the ease of comprehending an event	5	6.49
To take an economic decision if there is a 50 percent chance of profit	6	7.79
To invest more in a project just because of a prior investment in it	4	5.19
To give credit for profit to oneself and for loss to others	7	9.09
Emotional	72	36.73

To make economic decisions based on avoiding losses over acquiring gains	9	12.50
To choose a bargain with a less but certain payoff over a bargain with a more but uncertain payoff	8	11.11
To have an effect of fear on economic decisions	7	9.72
To have an effect of anger on economic decisions	6	8.33
To have an effect of jealousy on economic decisions	6	8.33
To have an effect of stress on economic decisions	7	9.72
To have an effect of disappointment on economic decisions	9	12.50
To have an effect of greed on economic decisions	7	9.72
To have an effect of hope on economic decisions	7	9.72
To have an effect of joy on economic decisions	6	8.33
Social	47	23.98
To take suggestions from others when making economic decisions	7	14.89
To have an effect of competition with others on economic decisions	6	12.77
To have an effect of social status on economic decisions	5	10.64
To have an effect of social pressure on economic decisions	5	10.64
To imitate others when making economic decisions	8	17.02
To have an effect of one's social observation on economic decisions	9	19.15
To have an effect of social learning on economic decisions	7	14.89

4.4 Construction of the Scale

Based on themes extracted by content analysis, a list of items was generated. The list contained 40 items. Through the discussion with experts, some amendments to some items were made. After amendments, 36 items were retained, and a scale was constructed in Urdu.

4.5 Readability and Conceptual Clarity

Prior to final compilation, the readability and conceptual clarity of the themes and items were checked. In this regard, some wordy changes were made to make items easier to understand. A few items were split into two halves, and a few with the same meanings were merged.

4.6 Analysis and Results

The Kaiser-Meyer-Olkin test for sampling adequacy was carried out (Kaiser, 1974), which brought a value of .70, showing the ratio of the number of the participants to psychosocial factors in economic decision-making scale items was excellent to carry out the principal component factor analysis (Field, 2013). The distribution of the responses of the participants was evaluated by Bartlett’s test of sphericity (Bartlett, 1954), and the result was found to be significant, $\chi^2 (1179.00) = p < .001$, showing the adequate distribution of data for the evaluation of potential factor structure. To examine the factor structure of the scale factor, principal component analysis with varimax rotation was employed. The open factor solution ended up with 12 factors, while the scree plot (Figure 1) suggested three, four, and nine factor solutions. This principal component analysis was run with three, four, and nine factors, which explained the variance of 29.14%, 34.23%, and 53.13%, respectively. The three-factor solution emerged as the most meaningful. These three factors explained the variance of 29.14% in the factor solution. Those items which had loadings equal to or more than .3 were retained, which were 30 in number, while six items with factor loadings less than .3 were excluded. The factor loadings of 36 items are given in Table No 3.

Figure No 1. Scree Plot of the Factor of Economic Decision Making

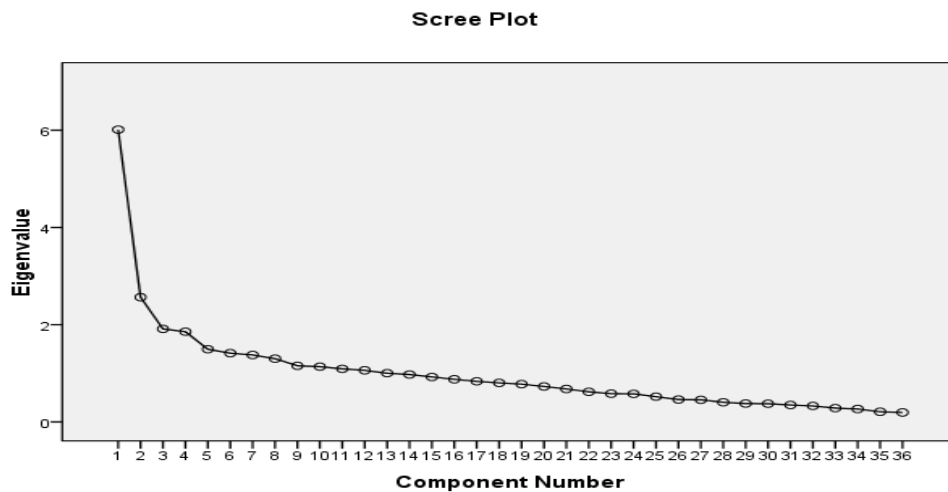


Table No 3: Factor Loadings of 36 items of Economic Decision Making (N= 150)

Serial No.	Item No.	Component		
		Emotional	Cognitive	Social
1	1	.51		
2	2	.47		
3	22	.47		
4	23	.69		
5	24	.46		
6	25	.72		
7	26	.59		
8	27	.36		



9	28	.39		
10	29	.47		
11	30	.39		
12	36	.35		
13	4		.60	
14	7		.53	
15	10		.43	
16	11		.44	
17	13		.32	
18	14		.56	
19	15		.57	
20	16		.51	
21	17		.32	
22	20		.55	
23	35		.64	
24	6			.58
25	8			.40
26	21			.38
27	31			.56
28	32			.44
29	33			.39
30	34			.49
31	3			
32	5			
33	9			
34	12			
35	18			
36	19			
Explained Variance		11.36%	9.55%	8.22%

After deleting six items, a three-factor solution was run on 30 items. The factor structure was the same as for the previous one. Three factors were named as cognitive, emotional, and social factors, with a total explained variance of 33.60%. The difference was just in the number of items on three scales: 11 items on the emotional, 11 items on the cognitive, and 8 items on the social scale. The factor loading for each item is given below.

Table No 4: Factor Loadings of 30 items of Economic Decision-Making (N= 150)

Serial No.	Item No.	Component		
		Emotional	Cognitive	Social
1	1	.48		
2	2	.46		
3	22	.52		
4	23	.61		
5	24	.47		
6	25	.72		



7	26	.60		
8	27	.43		
9	28	.39		
10	29	.52		
11	30	.35		
12	4		.61	
13	7		.54	
14	10		.43	
15	11		.45	
16	13		.30	
17	14		.57	
18	15		.57	
19	16		.49	
20	17		.35	
21	20		.57	
22	35		.66	
23	6			.69
24	8			.32
25	21			.38
26	31			.61
27	32			.52
28	33			.31
29	34			.62
30	36			.37
Explained Variance		13.46%	11.14%	8.99%

4.7 Reliability Analysis

After factor analysis, the questionnaire was finalized with 30 items (see Appendix E), in which three factors of economic decision-making, i.e., cognitive (11 items), emotional (11 items), and social (8 items), were retrieved. The first factor (emotional) explained 13.46% of the variance in the overall scale, while the second (cognitive) and third (social) factor explained 11.14% and 8.99% of the variance, respectively. The internal consistency of the scales was computed using Cronbach’s alpha. Internal consistency estimates produced a high alpha coefficient for three scales. The alpha coefficient for the cognitive factor was 0.77; for the emotional factor, it was 0.75; and for the social factor, it was 0.69.

Table No 5: Internal Consistency (α) of Each Factor (150)

Factors	Number of items	Min-Max Score	α
Emotional	11	.55-7.82	.75
Cognitive	11	.55-7.64	.77
Social	8	.25-7.25	.69



Table No 6: Item Total Correlation and Cronbach's Alpha if Item Deleted of 8 Items of Social Factor (N = 150)

Item no	<i>M</i>	<i>SD</i>	Item-Total Correlation	Cronbach's Alpha if Item Deleted
6	1.69	1.19	.38	.65
8	2.77	1.06	.30	.67
21	2.09	1.23	.20	.69
31	2.22	1.27	.50	.62
32	2.49	1.23	.41	.65
33	2.37	1.26	.40	.65
34	2.03	1.21	.46	.63
36	2.70	1.11	.33	.66

Table No 7: Item Total Correlation and Cronbach's Alpha if Item Deleted of 11 Items Cognitive Factor (N = 150)

Item no	<i>M</i>	<i>SD</i>	Item-Total Correlation	Cronbach's Alpha if Item Deleted
4	2.83	1.14	.48	.71
7	2.62	1.14	.39	.73
10	2.08	1.20	.24	.75
11	2.89	.91	.33	.73
13	2.84	1.07	.29	.74
14	2.82	1.10	.51	.71
15	2.81	1.14	.47	.71
16	2.86	1.03	.41	.72
17	2.65	1.05	.26	.74
20	2.52	1.16	.43	.72
35	2.85	1.03	.51	.71

Table No 8: Item Total Correlation and Cronbach's Alpha if Item Deleted of 11 Items Emotional Factor (N = 150)

Item no	<i>M</i>	<i>SD</i>	Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	2.61	1.10	.36	.75
2	2.93	1.12	.37	.75
22	2.31	1.25	.39	.75
23	2.60	1.19	.49	.74
24	2.13	1.30	.42	.75
25	2.63	1.16	.63	.72
26	2.59	1.09	.55	.73
27	2.33	1.31	.35	.75
28	2.52	1.12	.36	.75
29	2.56	1.18	.43	.74
30	2.86	1.16	.24	.77

4.8 Discussion

This study was designed to develop and validate an indigenous self-report scale of psychosocial factors in economic decision-making. There are different measures of decision-making, but none of them were developed with the indigenous population. Moreover, there was not even a single measure which was appropriate to assess psychosocial factors in economic decision-making. Sanz de Acedo Lizárraga et al. (2007) developed and validated the Decision-making Questionnaire (DMQ) on the Spanish population, to assess the factors in decision-making. DMQ consists of three factors: the task factor, the subject factor, and the environmental factor. Apart from this measure, there are a few other measures which assess different perspectives on decision-making.

The Career Decision-Making Self-Efficacy Scale (CDMSE; Betz, & Luzzo, 1996) is a 50-item scale which consists of five subscales: goal selection, planning, gathering occupational information, accurate self-appraisal, and problem solving (Betz, & Luzzo, 1996). The Assessment of Career Decision Making Scale (ACDM; Harren, 1978) assesses the three decision-making styles: dependent (D), intuitive (I), and rational (R). It is a 30-item measure by which each decision-making style is accessed on a separate 10-item scale (Harren, 1978; Al-Kalbani et al., 2011). The Rochester Participatory Decision-Making Scale (RPAD; Shields et al., 2005) assesses physician-patient participation in decision-making.

None of the above-mentioned measures are appropriate to assess psychosocial factors in economic decision-making due to several reasons. There is a large body of research which suggests cultural differences in basic economic patterns. Levinson and Peng (2007), while studying

populations across cultures, suggested dramatic cultural differences in financial value estimation and in economic decision-making. Henrich (1998) found that cultural differences may fundamentally affect basic economic patterns. Schramm-Nielsen (2001) study of the cross-cultural population of managers suggested clear cultural differences in the ways decisions are made. Moreover, there are a number of different factors that have been found to relate to different kinds of decision-making (Mechera-Ostrovsky et al., 2022), and no two different kinds of decision-making share common factors. These were the considerations behind developing and validating an indigenous scale to assess psychosocial factors in economic decision making rather than using already existing scales.

During the process of development and validation, the principal component analysis was run on a 36-item scale of psychosocial factors in economic decision-making to find out the factor structure. The 36-item scale of psychosocial factors in economic decision-making was factor-analyzed, and a principal component solution was taken. Items with loadings of .3 or beyond were retained, which were 30 in number, as most scales of decision-making were developed (Shin et al., 2022).

Reliability analysis was carried out, and it was found that the scale had high internal consistency, as Cronbach's alpha for the total scale was 0.83. The internal consistency of the three scales was further computed using Cronbach's alpha. Internal consistency estimates produced a high alpha coefficient for three scales. The alpha coefficient for the cognitive factor was 0.77; for the emotional factor, it was 0.75; and for the social factor, it was 0.69. These characteristics depict the scale as a validated and reliable instrument to study psychosocial factors in economic decision-making, as reported (Zakariya, 2022).

5. Conclusion

This scale is a valid and reliable tool to measure psychosocial factors in economic decision making. The content of this scale is consistent with the literature on economic psychology and behavioral economics, which suggests three factors, i.e., cognitive, emotional, and social, that affect economic decision-making. Moreover, this scale is developed based on a sample taken from the Pakistani population, making it the only reliable and valid tool developed so far to study economic decision-making in indigenous populations. Moreover, it is constructed in Urdu and is easy to use.

5.1 Recommendations

The present study has some limitations based on which some suggestions are given

1. Validity against existing measures could not be measured because of the non-availability of relevant scales.
2. The present scale was developed and validated on the data taken from small and medium enterprises' owners so it must be validated before administering it on big enterprises' owners and on salary taking managers.
3. This scale measures psychosocial factors in economic decision making; to measure the factors in any other kind of decision making this scale should be modified.

6. References

- Ajmal, A., Kausar, R. & Fatima, I. (2024). Psychosocial and Personality Factors in Economic Decision Making. *Journal of Applied And Professional Psychology*, 5(1), 34-46. Doi:10.52053/jpap.v5i1.247
- Akerlof, G. A. & Kranton, R. E. (2000). Economics and identity. *Quality Journal of Economics*, 115, 715-753. doi:10.1162/003355300554881
- Al-Kalbani, M. S. A., Salleh, A., & Mastor, K. A. (2011). Career decision making constructs and five-factor model in adolescents. *World Applied Sciences Journal*, 14, 34-39. ISSN 1818-4952
- Ariely, D. (2008). *Predictably irrational: The hidden forces that shape our decisions* (1st ed.). New York: HarperCollins.
- Averbeck, B. B. & Duchaine, B. (2009). Integration of social and utilitarian factors in decision making. *Emotion*, 9(5), 599-608. doi: 10.1037/a0016509.
- Backman, C. L. (2006). Psychosocial aspects in the management of arthritis pain. *Arthritis Research and Therapy*, 8(221), 1-7. doi:10.1186/ar2083
- Baddeley, M. (2010). Herding, social influence and economic decision-making: socio-psychological and neuroscientific analyses. *Philosophical Transaction of the Royal Society B*, 365, 281-290. doi:10.1098/rstb.2009.0169
- Baltes, P. B., Staudinger, U. M., Lindenberger, U. (1999). Lifespan psychology: theory and application to intellectual functioning. *Annual Review of Psychology*. 50, 471-507.
- Bargh, J. A. & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist*, 54, 462-479.
- Bartlett, M. S. (1954). A note on the multiplying factors for various chi square approximation. *Journal of Royal Statistical Society*, 16(Series B), 296-298.
- Becker, G. S. & Murphy, K. M. (2000). *Social economics: Market behavior in a social environment*. Cambridge, MA: Harvard University Press.
- Becker, G. S. (1962). Irrational behavior and economic theory. *The Journal of Political Economy*, 70(1), 1-13.
- Bell, D. E., (1995). Risk, return, and utility. *Management Science*, 41, 23-30.
- Beshears, J. & Milkman, K. L. (2011). Do sell-side stock analysts exhibit escalation of commitment? *Journal of Economic Behavior & Organization*, 77, 304-317.
- Best, K. (2005). Celebrity.com: Internet Finance and Frenzy at the Millennium. *Consumption, Markets and Culture*, 8(4), 361-378.
- Betz, N., & Luzzo, D. (1996). Career assessment and the career decision self-efficacy scale. *Journal of Career Assessment*, 4, 313-328.
- Business Dictionary. (2013). *Economic decision making*. USA: Web Finance, Inc.
- Caplin, A., Deming, D. J., Leth-Petersen, S., & Weidmann, B. (2023). Economic Decision-Making Skill Predicts Income in Two Countries. *NBER Working Paper No. 31674*. JEL No. D8,J24
- Carlson, K.A. & Russo, J. E. (2001). Biased interpretation of evidence by mock jurors. *Journal of Experimental Psychology: Applied*, 7(2), 91-103.
- Chen, J. Q. & Lee, S. M. (2003). An exploratory cognitive DSS for strategic decision making. *Decision Support Systems*, 36, 147-160.



- Colman, A. (2003). *Oxford Dictionary of Psychology* (pp. 77). New York: Oxford University Press.
- Damasio, A. (1994). *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Putnam.
- De Bruin, W. B., Parker, A. M., & Fischhoff, B. (2007). Individual differences in adult decision-making competence. *Journal of Personality and Social Psychology*, 92(5), 938-956. doi: 10.1037/0022-3514.92.5.938.
- Dube, C., Rotello, C. M., & Heit, E. (2010). Assessing the Belief-bias effect with ROCs: It's a response bias effect. *Psychological Review*, 117(8), 831- 863. doi:10.1037/a0019634. PMID 20658855
- Farlex Financial Dictionary, (2012). Farlex, Inc. Retrieved from: <http://financialdictionary.thefreedictionary.com/Focalism>
- Fendley, M. E. (2009). *Human cognitive biases and heuristics in image analysis department of biomedical, industrial and human factors engineering* (Published Thesis). Wright State University, USA.
- Ferreira, J. (2023). Economic decision-making needs communication between brain regions. *Lab Animal*, 52, 224-227. <https://doi.org/10.1038/s41684-023-01267-1>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications.
- Fisher, K. L. & Statman, M. (2000). Investor sentiment and stock returns. *Financial Analysts Journal*, 56, 16-23.
- Gigerenzer, G. (2001). Decision making: Non-rational theories. *International Encyclopedia of the Social and Behavioral Sciences*, 5, 3304–3309.
- Gilbert, D. T. (2002). Inferential correction In Gilovich, T., D.Griffin, & D. Kahneman eds, *Heuristics and biases: The psychology of intuitive thought* (pp.167-184). New York: Cambridge University Press.
- Goldstein, D. G. & Gigerenzer, G. (2002). Models of ecological rationality: The recognition heuristic. *Psychological Review*, 109(1), 75-90.
- Hammond, K. R. (1996). *Human judgment and social policy: Irreducible uncertainty, inevitable error, unavoidable injustice*. New York: Oxford University Press.
- Harren, V. A. (1978). *Assessment of Career Decision-Making (ACDM): Preliminary manual*. Unpublished Manuscript. Southern Illinois University.
- Harren, V. A. (1979). A model of career decision making for college students. *Journal of Vocational Behavior*, 14(2), 119-133. doi: 10.1016/0001-8791(79)90065-4
- Heath, C. & Tversky, A. (1991). Preference and belief: Ambiguity and competence in choice under uncertainty. *Journal of Risk and Uncertainty*, 4, 5-28.
- Hilbert, M. (2012). Toward a synthesis of cognitive biases: How noisy information processing can bias human decision making. *Psychological Bulletin*, 138(2), 211-237.
- Indro, D. C. (2004). Does mutual fund flow reflect investor sentiment? *Journal of Behavioral Finance*, 5(2), 105-115.



- Ji, M., Jiao, Y., & Cheng, N. (2023). An Innovative decision-making scheme for the high-quality economy development driven by higher education. *Journal of Innovation & Knowledge*, 8(2), 100-345. <https://doi.org/10.1016/j.jik.2023.100345>.
- Kahneman, D. & A. Tversky (1983). Extensional versus intuitive reasoning: the conjunction fallacy in probability judgment. *Psychological Review*, 90(4), 293-315.
- Kahneman, D. & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Making Under Risk, *Econometrica*, 47, 263-291.
- Kahneman, D. & Tversky, A. (1982). The simulation heuristic. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases*. New York: Cambridge University Press.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: John and Wiley Sons.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31–36.
- Katona, G. A. (1975). *Psychological economics*. New York: Elsevier.
- Kaufman, (1999). Emotional arousal as a source of bounded rationality. *Journal of Economic Behavior and Organization*, 38, 135-144.
- Laibson, D. (1997). Golden eggs and hyperbolic discounting. *Quarterly Journal of Economics*, 112, 443-477.
- Lerner, J. S., Piercarlo Valdesolo, Y. L., & Kassam, K. S. (2015). Emotion and decision making. *Annual Review of Psychology*, 66(1), 799-823.
- Levinson, J. D. & Peng, K. (2007). Valuing cultural Differences in Behavioral Economics. *The ICFAI Journal of Behavioral Finance*, 4(1), 32-47.
- Lo, A. W., & Repin, D. V. (2001). *The psychophysiology of real-time financial risk processing*. NBER Working Paper no. 8508.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, 127, 267-286.
- Loewenstein, G., & Lerner, J. S. (2003). The role of affect in decision making. In R. Davidson, K. Scherer & H. Goldsmith (Eds.), *Handbook of affective science* (pp. 619-642). New York: Oxford University Press.
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance* 7(1), 77-91.
- Maćkowiak, B., Matějka, F. & Wiederholt, M. (2023). Rational inattention: A review. *Journal of Economic Literature* 61(1), 226–273.
- McClure, S. M., Laibson, D. I., Loewenstein, G., & Cohen, J. D. (2004). Separate neural systems value immediate and delayed monetary rewards. *Science*, 306(5695), 503-507.
- Mechera-Ostrovsky, T., Heinke, S., Andraszewicz, S., & Rieskamp, J. (2022). Cognitive abilities affect decision errors but not risk preferences: A meta-analysis. *Psychonomic Bulletin & Review* 29(5), 1719–1750.
- Mehra, R. & Sah, R. (2002). Mood fluctuations, projection bias, and volatility of equity prices. *Journal of Economic Dynamics and Control*, 26, 869-887.



- Mohr, P. N., Shu-Chen Li, & Heekeren, H. R. (2010). Neuroeconomics and aging: Neuromodulation of economic decision making in old age. *Neuroscience and Biobehavioral Reviews* 34, 678-688.
- Mulligan, E. J. & Hastie, R. (2005). Explanations determine the impact of information on financial investment judgments. *Journal of Behavioural Decision Making*, 18, 10-18.
- Nofsinger, J. R. (2005). Social mood and financial economics. *Journal of Behavioral Finance*, 6(3), 144-160.
- Onu, D., Oats, L., & Kirchler, E. (2018). The dynamics of internalized and motivation in the ethical decision-making of small business owners. *Applied Psychology: An International Review*, 68(1), 177-201.
- Ortmann, A., Gigerenzer, G., Borges, B., & Goldstein, D. G. (2008). The recognition heuristic: A fast and frugal way to investment choice? In Plott C.R. & Smith V.L. (Eds), *The Handbook of Experimental Economics Results (vol.1, pp. 993-1003)*. Amsterdam: Elsevier.
- Pallier, G. (2002). The role of individual differences in the accuracy of confidence judgments. *The Journal of General Psychology*, 129(3), 257-299.
- Peters, E. (2006). *The functions of affect in the construction of preferences*. In S. Lichtenstein & P. Slovic (Eds.), *The construction of preference* (pp. 454-463). New York: Cambridge University Press.
- Peters, E., Västfjäll, D., Gärling, T., & Slovic, P. (2006). Affect and decision making: A hot topic. *Journal of Behavioral and Decision Making*, 19, 79-85.
- Peterson, R. L. (2007). Affect and financial decision-making: How neuroscience can inform market participants. *Journal of Behavioral Finance*, 8(2), 70-78.
- Pfister, H. & Böhm, G. (2008). The multiplicity of emotions: A framework of emotional functions in decision making. *Judgment and Decision Making*, 3(1), 5-17.
- Porac, J. F. & Thomas, H. (1990). Taxonomic mental models in competitor definition. *Academy of Management Review*, 15(2), 224-240.
- Prechter, R. R. & Parker, W. D. (2007). The financial/economic dichotomy in social behavioral dynamics: the socioeconomic perspective. *Journal of Behavioral Finance*, 8, 84-108.
- Read, D. & Grushka-Cockayne, Y. (2011). The similarity heuristic. *Journal of Behavioural Decision Making*, 24(1), 23-46.
- Riess, M. & Taylor, J. (1984). Ego-involvement and attributions for success and failure in a field setting. *Personality and Social Psychology Bulletin*, 10, 536-543.
- Roberto, M. A. (2009). *The Art of Critical Decision Making*. Boston, MA: Teaching Company.
- Sanz de Acedo Lizárraga, M. S., Sanz de Acedo Baquedano, M. T., & Cardelle-Elawar, M. (2007). Factors that affect decision making: gender and age differences. *International Journal of Psychology and Psychological Therapy*, 7(3), 381-391.
- Schramm-Nielsen, J. (2001). Cultural dimensions of decision making: Denmark and France compared. *Journal of Managerial Psychology*, 16(6), 404-423.
- Shefrin, H. (2002). *Beyond greed and fear: understanding behavioral finance and the psychology of investing*. UK: Oxford University Press.



- Shields, C. G., Franks, P., Fiscella, K., Meldrum, S., & Epstein, R. M. (2005). Rochester Participatory Decision-Making Scale (RPAD): reliability and validity. *The Annals of Family Medicine*, 3(5), 436-442.
- Shiller, R. J. (2000, 2005). *Irrational Exuberance*. Princeton: University Press.
- Shin, Y., Kim, C., Yoon, J. (2022). Development of a Scale to Measure Decision-Making Tendency in Human-Product Interactions. In: Bruyns, G., Wei, H. (eds) *With Design: Reinventing Design Modes*. IASDR 2021. Springer, Singapore. https://doi.org/10.1007/978-981-19-4472-7_11
- Shiv, B. & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research*, 26(3), 278-292.
- Silvia, J. E. (2011). *Dynamic economic decision making: Strategies for financial risk, capital markets and monetary policy*. Hoboken, New Jersey: John Wiley and Sons Inc.
- Simon, H. A. (1982). *Models of bounded rationality*. Cambridge, MA: MIT Press.
- Smith, J. A. (2008). *Qualitative psychology: A practical guide to research methods*. London: SAGE Publications.
- Taffler, R. J. & Tuckett, D. A. (2002). Anomalous valuations of internet stocks: A psychoanalytic interpretation of dot.com mania. *Sixth Annual Financial Reporting and Business Communication Conference*. Cardiff Business School: Wales, UK.
- Tversky, A. & Kahneman, D. (1974). Judgement under uncertainty: heuristics and biases. *Science*, 185, 1124-1131.
- Tversky, A. & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211, 453-458.
- Tversky, A. & Kahneman, D. (1992). Advances in prospect theory: cumulative representations of uncertainty. *Journal of Risk and Uncertainty*, 5(4), 297-323.
- Von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior*. New York: Wiley.
- Walter, A. & Weber, F. M. (2006). Herding in the German mutual fund industry. *European Financial Management*, 12, 375-406.
- Weber, E. U. & Johnson, E. J. (2009). Mindful judgment and decision making. *Annual Review of Psychology*, 60, 53-85.
- Welch, I. (2000). Herding among security analysts. *Journal of Financial Economics*, 58, 369-396.
- Wright, W. & Bower, G. (1992). Mood effects on subjective probability assessment. *Organizational Behavior and Human Decision Processes*, 52, 276-291.
- Wu, Z. & Xu, J. (2018). A consensus model for large-scale group decision making with hesitant fuzzy information and changeable clusters. *Information Fusion*, 41(C), 217-231.
- Yuen, K. S. L. & Lee, T. M. C. (2003). Could mood state affect risk-taking decisions? *Journal of Affective Disorders*, 75, 11-18.
- Zakariya Y. F. (2022). Cronbach's alpha in mathematics education research: Its appropriateness, overuse, and alternatives in estimating scale reliability. *Frontiers in psychology*, 13, 1074430. <https://doi.org/10.3389/fpsyg.2022.1074430>



Zizzo, D. J. (2003). *Anger, Rationality and Neuroeconomics. Discussion Paper Series, 182. BREB Unit, Department of Economics, University of Oxford, Oxford OX1 3UQ, UK.*