Analyzing the impact of business ethics in rationalizing investment decisions using PLS-SEM

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Summary: This study addresses the impact of the relationship between the existence of ethical principles in the behavior of managers and rationalization of investment decisions, to achieve the desired goals, we conducted a field survey on a sample of active economic enterprises in the industrial zone of Bordj Bou Arreridj, where we used SPSS and Smart-PLS software to test the validity of the hypotheses, after ensuring the quality of the model.
The results of the study showed that business ethics have a statistically significant effect on rationalizing investment decisions, as we concluded that there is an indirect effect of the three dimensions of ethics, which are discipline, integrity and honesty, while equality had a non-statistically significant effect, thus it has no effect in rationalizing the investment decisions.

Keywords: Business ethics ; investment decisions ; PLS-SEM modeling ; industrial enterprises.
Jel Classification Codes : C12 ; D14 ; D63

I- Introduction :

The financial crises that confronted USA companies led to the emergence of a series of business scandals that were its basis lack of commitment to ethical behavior, for examples international companies Enron and World that shook the global economy through its collapse due to financial manipulation and fraud that were behind the good reputation Interface. This is what made the world accelerate to establish laws that stipulate the need for companies to adhere to ethics and impose penalties for violating them.

Currently, ethics are considered the main driver in business domain, especially after the scandals and violations that caught the attention of countries where about it appeared the need to adopt ethics, this is what led to the development and anchoring of moral values and principles in institutions through ethical codes and training courses. However, the aim of these practices is not the moral frontage of the institutions but having these ethical values and principles in the behavior of managers and employees.

In addition, the executive managers have ethical behavior that contributes to facing related pressures to profit-making methods which means the decisions taken are more ethical and rational. Among the most important taken decisions are long-term investment decisions that are a mortgage to the institution, where these decisions relate by choosing the optimum solution for the investment project. Due to the great importance gained by investment decisions and ethics, this research paper was focused on studying dimensions of business ethics and the extent of their contribution to rationalizing investment decisions.

I.1.previous study

the study of Fleming, J. E, entitled: A Suggested Approach to Linking Decision Styles with Business Ethics(1985). This research paper attempts to explore the relationship between the manager's preferred decision style and the ethical decision criteria that he chooses, where these criteria differ between the relative objectivity of law obedience and the comparative subjectivity of

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the values of the decision-maker. This study found a model that enables us to analyze and explain the differences in the choice of ethical standards, as decisions are made based on these criteria.

the study of Lewis, P. V, entitled: Ethical Principles for Decision Makers: A Longitudinal Survey (1989). This paper seeks to find out the extent to which CEOs, middle managers, and students rely on ethical principles in decision-making, where fourteen principles were chosen for this survey, based on a five-year study. Finally, the study concluded that ethical decision-making depends on the correct and fair behavior that results in some general good for others.

the study of Fritzsche, D. J, entitled: A Model of Decision-Making Incorporating Ethical Values(1991). This study contributes to an understanding of the role ethics play in the decision-making process, this is by designing a model that describes the process which decision-makers follow when they encounter problems that have moral dimensions. Where the starting point for this model was the set of personal values held by the individual decision-maker, it is what has made the model more inclusive than other modern ethical models.

the study of Bommer. et al, entitled: A Behavioral Model of Ethical and Unethical Decision Making (1987). The purpose of this paper is to suggest and describe a conceptual model of ethical and immoral behavior in organizations. Through this model, the various factors are identified and linked which influence managers decisions, Including social, governmental, legal, industrial and professional environments and even the personal Features of the decision-maker.

the study of Woiceshyn. J, entitled: A Model for Ethical Decision Making in Business: Reasoning, Intuition, and Rational Moral Principles (2011). This paper seeks to suggest a dual model of thinking and intuition for ethical decision-making in business, in addition to using rational egoism as a fundamental moral component of the model, which included the following rational aspects: productivity, honesty, justice, independence, integrity and pride. After finding the model, a new ethical code has been proposed for the business managers toolkit for long-term business success.

I. 2. Literature Review

Ethics is a set of principles and values that classify human behavior to "wrong" or "right"; "good" or "bad". Where it was classified in this paper into four basic principles. The first value is the discipline that means diligence, efficiency, and training self-control on correct behavior for respecting the system in the organization and striving to achieve its goals. Also, discipline applies to stakeholders like other employees[1]. Secondly, equality which means that all individuals working in the enterprise have the same opportunities, rights, status, and non-discrimination between them, And there can be high levels of equality in the enterprise by adopting the three dimensions of equality which are equality of opportunity, equality of conditions and equality of result[2]. Thirdly, honesty that is telling the truth, fidelity at work, doing it transparently, it means not faking reality to get value for self-interest[3]. Finally, integrity which is strict adherence with a set of ethical values and principles like honesty, fairness and justice[4].

The presence of these ethical principles in the behavior of managers enhances the status of the enterprise by maintaining its growth and continuity through financial decisions that seek to achieve the goals of the enterprise and maximize its value. Among the most difficult decisions are the investment decisions because it relies on a prediction, which creates risks. So the decision-maker should avoid these risks by rationalizing the investment decisions.

Regarding the investment decisions, they are rationalized through choosing the best alternative among the alternatives or solutions offered for the investment project. Where all solutions are evaluated by estimating the cost and duration of the investment. After that, the optimal solution is chosen that achieves the objectives of the project, and creates wealth for stakeholders.

Structural equation modeling (SEM) is widely used in the social sciences as a statistical technique from the second generation, where this technique is considered a method that estimates models of the complex cause-effect relationships of the latent variables in business research [5]. As it can be considered a generalization of a wide category of multivariate modeling techniques [6]. Among these techniques is the partial least squares (PLS), which allows using the reflective and formative measurement models regarding the measurement of latent variables [7] . As for a PLS methodology, it is used to perform a causal predictive analysis of cases that have high levels of complexity and a low theoretical information. Furthermore, this methodology is considered relatively robust with unusual data as well as small sample sizes[8].

Moreover, among the most important features of PLS modeling is discrimination between measurement models, where the reflective measurement is used to describe the common factor model, while that factor represents an unobservable variable that is relied upon by a set of observed variables that have high correlations between them, with placing the appropriate restrictions on the remaining differences between them [9]. Thus the direction of the arrow in the model is from the latent variable to the observed variable[10] (indicator), Also, changing or dropping one of these indicators does not affect the conceptual meaning of the construct[11]. As for the formative measurement which has been suggested by Curtis and Jackson (1962) who have challenged the characteristic of positively correlated measures as a necessary condition[12]. Where this model is used to study constructs that combine multiple dimensions, examine the linkages between specific and general constructs, or summarize relationship involving several conceptually related dimensions in terms of a single parameter. In combination, these forces are likely to attract increasing numbers of management researchers toward formative measurement[13], which may include causal indicators or formative indicators. The main difference between them is that the causal indicators correspond with the theoretical concept of the study meaning that they constitute in their entirety a conceptual unity, whereas formative indicators form a compound variable in their entirety and it does not require conceptual compatibility of variables[14].

Reflective measurement models are evaluated by indicators (see table 1) that differ from those used to evaluate formative models (see table 2). In addition to indicators of quality evaluation of the structural model (see table 3).

II– Methods and Materials:

For the purpose of reaching the desired results, the questionnaire was used to collect data, because it is the most consistent tool with the subject of the study, It included two axes, where the phrases of the first axis were expressing the moral dimension which included four dimensions, while the second axis was about rationalization of investment decisions, where the answers were according to the Likert scale that comprises to five-point, from strongly agree (5), agree (4), neutral (3), disagree (2) to strongly disagree (1). This study targeted the active economic enterprises in the industrial zone in Bordj Bou Arreridj, where 122 questionnaires were distributed randomly to 13 economic enterprises, 105 questionnaires were retrieved, and after counting 6 were excluded because they were not valid, so we got 99 questionnaires that are valid for statistical analysis. To ensure the validity and reliability of the study instrument; we extract the alpha-Cronbach coefficients for the study variables through the SPSS V.23 program, As the value of the Alpha Cronbach coefficient was ($\alpha = 0.839$) as shown in table 4, which is greater than 60%. Thereby, it can be concluded that the instrument of the study has good validity and reliability.

After confirming the validity and reliability of the study, the Properties of the sample were recognized, as shown in table 5, that most of the sample's members are male, where they represent 68.70%, while female members is 31.30%, Regarding the predominant age group it was ranging from 31 years to 40 years, and the proportion of this group reached 50.50%, followed by the group of individuals over the age of 40 with a rate of 25.30%, which corresponds to the years of experience where most of the sample's members had experience ranging from 6 years to 15 years at 51.50% which contributes to more rational decisions, as well the academic level where most decision-makers have university degrees.

Furthermore, PLS software was used to extract the relationship between variables depending on the partial least squares structural equation modeling method (PLS-SEM). Where the reflective-formative measurement model of the business ethics (Independent variable) was chosen because the principles that are discipline, integrity, honesty and equality jointly constitute the ethics, as for the dependent variable was represented by a reflective measurement model.

III- Results and discussion :

III-1 Results

In this research paper, the reflective and formative measurement models were evaluated separately as a first step to evaluate the quality of the model using the PLS method, as for the second step which is to evaluate the structural model.

Evaluation of reflective models:

The quality of the measurement models is confirmed through Convergent and discriminant validity. Firstly, **Internal consistency and convergence validity** whereby they were measured through the Alpha Cronbach standard (CA) which its values for all latent variables were greater than 0.7, also, the composite reliability (CR) values exceeded 0.7. Further, the Rho De Joreskog values for the latent variables were all greater than 0.7. Therefore, it can be concluded that the model has good internal consistency reliability. Regarding the reliability of the indicators, all outer loadings were greater than 0.7 except for the indicators QRID6 and QRID7, Their values were 0.696 and 0.584, but they were not deleted because they did not affect the quality of the model, Contrary to indicators which its outer loadings were less than 0.7 and affected the model, so they were deleted. Finally, the average variance extracted values (AVE) exceeded 0.5 and these values are statistically acceptable, thus, the latent variables have high levels of convergence reliability and the reliability of internal consistency (see table 6).

Secondly, **discriminant validity** that proves the indicators differ from each other, which means it measures various phenomena that are not repeating and not overlapping among them. Discriminated validity is evaluated through the Fornell-Larcker index, in addition, heterotrait-monotrait ratio (HTMT) index to confirm the results because some recent research has indicated that the Fornell-Larcker index is not effective in under some particular circumstances and the possibility of his weakness in testing discriminant validity[15]. We found through the result (see table 7), that the diagonal values of the matrix are higher than the correlations of the latent variable with other variables, and this shows the existence of differentiation between the latent variables. As for the HTMT indicator values were all below the value 0.85, this supports the existence of good discriminatory validity of the model.

Evaluation of Formative models

We assess convergent validity through the values of the correlation between the formation latent variable and the reflective latent variables that are translated to R^2, where these values were less than 0.5 which means the model has convergent reliability. As for, the Collinearity level of the latent variables was acceptable because all VIF values were below the critical level 5, also, the statistical t-values were greater than 1.96 and the P-Values were less than 0.05, therefore, the formative indicators have a statistical significance. So it can be concluded that the formative model has an excellent quality (see table 8).

Evaluation of the structural model

After confirming the quality of the measurement models, we proceed to the second step to test the quality of the model which is to evaluate the structural model (see Figure 1), from the most important indicators used in measuring the structural model is Coefficient of determination R^2 which is used to measure the predictive power of the model where its value was 0.127 that is less than 0.25 so it has a weak value (see table 9), this means that the moral dimension explains 12.7% of the rational investment decisions, further, the predictive relevance index Q^2 of the model whose value was greater than 0 (see table 9), this indicates that the latent dependent variable has predictability. Regarding the indicator of the effect size f^2, its value reached 0.145, which is a value close to 0.15 (see table 10), thus, there is an average effect of the ethical dimension on rational investment decisions.

In addition to the existence of the Goodness-of-fit index that is used to validate a PLS path model, where the researchers Henseler and Sarstedt proved conceptually and empirically that the GOF is not suitable for separating valid models from invalid models, thereby it misleads the researchers and prefers not to use it[16] .

We studied the correlation between latent variables to know the strength and direction of the relationship between them, where the strongest relationship is between discipline and the moral dimension which its value 0.863, that is a direct relationship, as for as the weakest relationship it was between equality and rationalization of investment decisions, that is an inverse relationship. While the relationship between the ethical dimension and rationalization of investment decisions is 0.365, which is an intermediate direct relationship (see table 11).

When we studied the direct effect, we found that the moral dimension had a statistically significant effect in rationalizing investment decisions because the statistical t-value was 2.004, which is above 1.96, also that P-Value was less than 0.05 (see table 12). Regarding indirect effects, we found three dimensions of ethics that have an indirect and statistically significant effect in rationalizing investment decisions which are discipline, integrity and honesty, Where the statistical t-values for these effects were greater than 1.96, also the P-Values were less than 0.05. As for

equality, it had a non-statistically significant effect due to the statistical t-value that was less than 1.96, In addition to the P-Value was above 0.05 (see table 13).

III-2 Testing Hypotheses

Testing The First Hypothesis

The first hypothesis states there is a statistically significant effect of the ethical dimension on rational investment decisions in industrial enterprises in Bordj Bou Arreridj. This hypothesis was tested by using PLS modeling, after verification of the results, we accept the hypothesis this means that ethics affects the behavior of managers, which is reflected the validity of investment decisions and thus their rationalization (see table 12).

The Second Hypothesis

The second hypothesis states there is a statistically significant indirect effect of discipline on rational investment decisions in industrial enterprises in Bordj Bou Arreridj. Through the presented results (see table 13), we accept this hypothesis. Where discipline is one of the most important ethical principles that must be in the organization and in the behavior of the managers in particular. This ethical principle contributes in rationalizing the investment decisions through diligence in evaluating investment alternatives and undertaking adequate studies to choose the optimal alternative.

The Third Hypothesis

The third hypothesis states that there is a statistically significant indirect effect of integrity on rational investment decisions in industrial enterprises in Bordj Bou Arreridj. We found this hypothesis acceptable (see table 13) this means, when the manager has integrity, he selects the optimal investment alternative justly by making decisions that contribute the continuity and the growth of the institution, and also achieve interests in a balanced manner among the stakeholders.

The Fourth Hypothesis

The fourth hypothesis states that there is a statistically significant indirect effect of honesty on rational investment decisions in industrial enterprises in Bordj Bou Arreridj. We found this hypothesis acceptable (see table 13). Therefore, honesty in the manager's behavior contributes to gain an excellent reputation, thus attracting investors, clients, colleagues, and even competitors, they prefer honest dealings which are creating confidence between them, this is what makes the information related to making investment decisions honest and transparent, which makes it more rational.

The Fifth Hypothesis

The fifth hypothesis states that there is a statistically significant indirect effect of equality on rational investment decisions in industrial enterprises in Bordj Bou Arreridj. Through the presented results (see table 13), we found that equality has no statistically significant indirect effect on the rationalization of investment decisions, thus this hypothesis is rejected. Where equality assist the decision-maker in creating competencies by motivating employees to present their ideas and creativity which is giving them equal opportunities, as it contributes to create safety, stability and strengthens the relevance between employees and the institution, this means that equality does not affect the rationalization of investment decisions, but makes the institution’s internal environment more ethical.

IV- Conclusion:

The Investment decisions are considered the most important and complex decisions in the enterprise, it represents the mainstay of the institution's continuity and growth. To rationalize these decisions, the decision-maker must use resources rationally to maximize returns, and this creates pressure on them which leads to carry out abuses and violations to achieve high financial returns. These violations happened because of the weakness of ethical principles in decision-maker behavior. This issue affects the institutions and the global economy, so we did this research paper, which addressed the important dimensions of business ethics and its impact in rationalizing investment decisions.

This study provided a clear vision of ethics and its role in rationalizing investment decisions. Based on the findings, we concluded that it is necessary to adopt ethical principles in the behavior of managers because each principle contributes to rationalize the investment decisions from a different side from the other. Therefore, enterprises must have an ethical code that is used by employees and managers, meaning that it does not constitute an interface for the moral reputation

of the enterprise without using it. As for these principles must also be strengthened by organizing targeted training courses to anchor ethics.

- Appendices:

Table (1): Evaluation indicators of reflective models

Evaluation of reflective models		
Validity Type	Criterion	Description
Internal Consistency Reliability	Cronbach Alpha Composite Reliability	The values of the criteria should be > 0.70.
Convergent validity	Indicator reliability	• The outer loadings should be > 0.70. • If the outer loadings are between (0.4-0.7), the indicator is removed on condition its deletion increases composite reliability and AVE value.
	Average variance extracted	The AVE should be > 0.50.
Discriminant validity	Fornell-Larcker criterion	The square root of the AVE of each construct should be higher than its highest correlation with any other construct.
	HTMT	The values should be < 0.85.

The source: SPSS23

Table (2): Evaluation indicators of formative models

Evaluation of Formative models		
Validity Type	Criterion	Description
Assess Convergent Validity	Redundancy analysis	The index is evaluated by examining its correlation with a reflective index or a global single item; the value should be ≥ 0.80.
Collinearity of indicators	Variance inflation factor	VIF value should be higher than 0.20 and lower than 5.
Assess the significance of the Formative Indicators	outer weight and p-value	When an indicator's weight is significant, Continue in the interpretation. the outer weight is non-significant: • Outer loading is > 0.5 keep the indicator. • Outer loading is < 0.5 delete the indicator.

The source: SPSS23

Table (3): Evaluation indicators of structural models

Evaluation of the structural model		
Validity Type	**Criterion**	**Description**
Structural Model Evaluation	Coefficient of Determination	0.25 < R^2<0.50 Weak values 0.51 < R^2<0.75 moderate values 0.75 < R^2 large values
	The effect size	0.02 < f^2<0.15 small effect 0.16 < f^2<0.35 medium effect 0.36 < f^2 large effect
	Predictive relevance	The Q2 values larger than 0.

The source: SPSS23

Table (4): Coefficient of the validity and reliability

	N of items	Coefficient of reliability	Coefficient of validity
General consistency of the questionnaire	24	0.839	0.915

The source: SPSS

Table (5): Distribution of study sample individuals

Personal data	Characteristics	Frequencies	Percentage
Sex	Male	68	68,70%
	Female	31	31,30%
Age Bracket	Under 30 years	24	24,20%
	31-40 years	50	50,50%
	41 years and above	25	25,30%
Experience	Under 5 years	23	23,20%
	6-15 years	51	51,50%
	16 years and above	25	25,30%
Educational Qualifcation	No University	13	13,10%
	University	86	86,90%

The source: SPSS

Table (6): Indicators of internal consistency and convergence validity

Latent variable	Indicators	Loadings	CA	CR	AVE	Rho De Joreskog
Discipline	QD1	0.766	0.755	0.844	0.576	0.760
	QD2	0.774				
	QD3	0.708				
	QD4	0.784				
Integrity	QI1	0.920	0.795	0.907	0.829	0.800
	QI2	0.901				
Honesty	QSI1	0.876	0.703	0.871	0.771	0.703
	QSI2	0.880				
Equality	QE1	0.876	0.712	0.874	0.776	0.712
	QE2	0.886				
Rationalization of investment decisions	QRID1	0.720	0.857	0.891	0.540	0.866
	QRID2	0.802				
	QRID3	0.760				
	QRID4	0.798				
	QRID5	0.760				
	QRID6	0.696				
	QRID7	0.584				

The source: Smart PLS

Table (7): Fornell-Larcker Criterion

	Discipline	Integrity	Honesty	Equality	Rationalization of investment decisions
Discipline	**0.759**				
Integrity	0.574	**0.911**			
Honesty	0.438	0.459	**0.878**		
Equality	0.252	0.336	0.293	**0.881**	
Rationalization of investment decisions	0.299	0.277	0.383	-0.019	**0.735**

The source: Smart PLS

Table (8): Indicators for evaluating the formative model

Latent variables	VIF	T-Values	P-Values
Discipline	1.584	6.436	0.000
Integrity	1.682	10.093	0.000
Honesty	1.375	8.208	0.000
Equality	1.161	2.786	0.005

The source: Smart PLS

Table (9): Quality evaluation indicators of the structural model

	R Square	R2 adjusted	= (1- SSE/BSP)Q^2
Rationalization of investment decisions	0.127	0.118	0.038

The source: Smart PLS

Table (10): effect size criterion f^2

Latent variables	Effect size f^2 Rationalization of investment decisions
Moral dimension	0.145

The source: Smart PLS

Table (11): Correlation between latent variables

	Moral dimension	Discipline	Integrity	Honesty	Equality	Rationalization of investment decisions
Moral dimension	1					
Discipline	0.863	1				
Integrity	0.814	0.574	1			
Honesty	0.718	0.438	0.459	1		
Equality	0.495	0.252	0.336	0.293	1	
Rationalization of investment decisions	0.365	0.299	0.277	0.383	-0.019	1

The source: Smart PLS

Table (12): direct effects

	The Paths	Path Coefficients	T-Values	P-Values	the decision
The first hypothesis	**Moral dimension → Rationalization of investment decisions**	**0.356**	**2.004**	**0.045**	Acceptable

The source: Smart PLS

Table (13): Indirect Effects

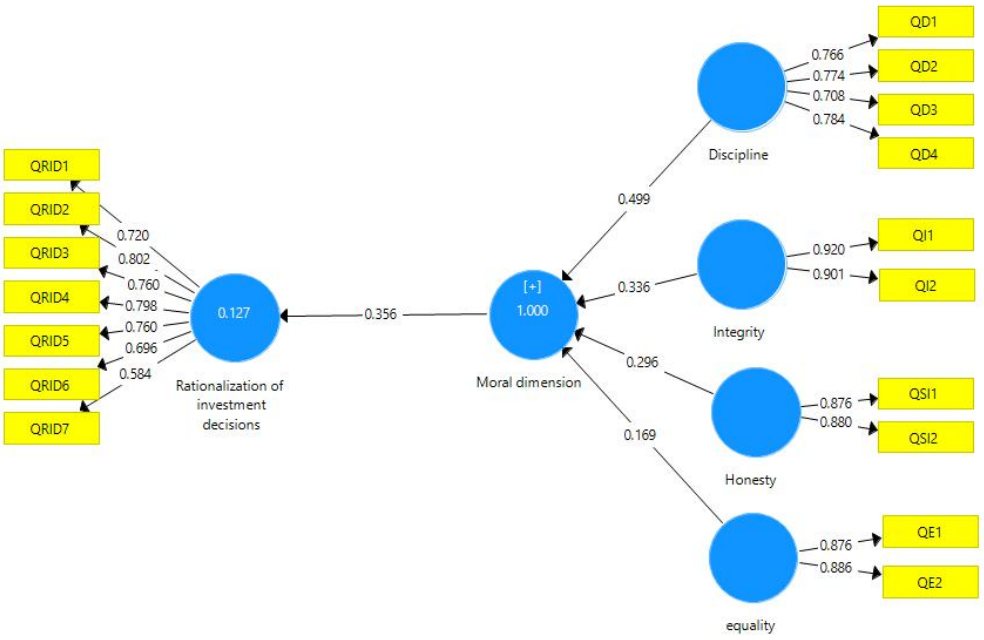
Hypotheses	The Paths	Path Coefficients	T-Values	P-Values	the decision
The second hypothesis	**Discipline → Rationalization of investment decisions**	0.178	2.005	0.045	Acceptable
The third hypothesis	**Integrity → Rationalization of investment decisions**	0.120	2.015	0.044	Acceptable
The fourth hypothesis	**Honesty → Rationalization of investment decisions**	0.105	1.975	0.048	Acceptable
The fifth hypothesis	**Equality → Rationalization of investment decisions**	0.060	1.581	0.114	Rejected

The source: Smart PLS

Table(14): Questionnaire

		items
Discipline	QD1	Establishing controls and penalties that develop adherence to business ethics
	QD2	Trying to be disciplined by the time, so that you are not late for performing your tasks
	QD3	you possess a high degree of sincerity in work
	QD4	take responsibility for performing your tasks and completing your duties with high merit and effectiveness
Integrity	QI1	Dealing impartially and fairly with all the employees, clients, and customers of the institution
	QI2	It adheres to laws and regulations in order to achieve objectivity
Honesty	QSI1	you have good moral values and performs the work with honesty and mastery
	QSI2	Bias and discrimination are avoided when performing the work
Equality	QE1	Adopting the values of justice and equality when performing work
	QE2	Relations between managers are distinguished by respect, reverence, kindness and cooperation to achieve the goals of the institution
Rationali-zation of investment decisions	QRID1	Decision-makers must possess high competence and experience
	QRID2	A successful investment project which has feasibility economic
	QRID3	The decision-maker determines the main objective of the investment
	QRID4	The investors must collect the appropriate information in order to make a decision
	QRID5	The decision-maker must assess the expected returns of the available investment alternatives
	QRID6	The decision-maker must choose the appropriate investment alternative for the specified objectives
	QRID7	The financial manager is guided by the scientific foundations in making the investment decision

Figure (1): proposed study model



The source: Smart PLS

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