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CULTURAL FEASIBILITY STUDY OF IMPLEMENTING KAIZEN COSTING SYSTEM IN ILAM CEMENT FACTORY

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ABSTRACT

Management accounting can be effective for organizations success by presenting new costing systems and cost reduction, presenting managerial techniques and solving their problems. Kaizen costing is one of the tools and methods of cost management system that stems from organizations culture and Japanese institutions. Today in many industrial kaizen costing has been modeled to increase efficiency. It is a variable culture that can be various and multidimensional, and its ranking and separation is not easily feasible. But Hofstede model could interpret it satisfactorily using four indices: the gap of more or less power, bit-oriented versus quality oriented, avoidance of the lack of confidence versus risk taking and individualism versus pluralism. The purpose of this research is to study the relation of cultural dimensions with efficient and successful implementation of kaizen costing system. Present research is applied in terms of method and descriptive- surveying in terms of data collection. We used inferential statistics and modeling method of structural equation to analyze data and test the hypotheses of research. Statistical sample of research includes 100 employees from Ilam cement factory that were selected as sample by systematic elimination method. Designed questionnaires were distributed among them from February 2013 to July 2014. The obtained results show that there is a positive and meaningful relationship between independent variables of the gap of low power, pluralism and wisdom and implementation of kaizen costing system. But the impact of dependent of avoidance of ambiguity on kaizen costing system hasn't been confirmed by data.

Keywords: Cost Management, Kaizen Costing, Culture, Ilam Cement Factory

INTRODUCTION

As human societies develop, trade markets develop and various and larger trade units established. They compete against each other organizations associate themselves with changes and the ability of forecasting changes generates in them to maintain their competitive advantage in present variable and dynamic environment. Therefore, organizations should evaluate present situation according to environmental conditions so that they can adopt and implement the most suitable strategy. Culture is often considered as one of the most important environmental factors that influences accounting system of the country. However, professional aspects of accounting are less cultural but due to its dependence on human aspects and its mutual action and reacting culture influences accounting. Culture can influence internal accounting reports (management) and external accounting reports (financial).

Previous Researches

Today the existence of many corporate depends on their ability for increasing management system veracity that concentrates on costs reduction throughout production process and value chain. Cost management includes a set of managerial actions to provide clients satisfaction along with continuous reduction and control of costs. One of the cost management tools is kaizen costing. Kaizen costing is one of the methods of efficiency promoting that is based on continuous improvement of products and production process. Indeed kaizen acts as an umbrella that includes efficiency techniques such as client-focusing, the establishment of recommendation system, cooperative management, total quality control, automation, efficiency promotion and on time production. In Kaizen approach employees are considered as the problem solution. Therefore, it is expected that firm's employees generate changes in production process and product life cycle by cooperating with each other so that lead to cost reduction and efficiency

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promotion (Rahnama, 2008). Kaizen requires the cooperation of individuals all organizational ranks including senior managers, middle managers and employees to achieve continuous improvement and development. The important point of this approach is to decrease class distinction and discrimination in an organization. Innovation is an important element in kaizen. Therefore, it always has innovation and changes along with better efficiency and effectiveness that are two main pillars of profitability (Darabi, 2010). Detection of need is the starting point of improvement. Four main pillars of kaizen are as follows: the acceptance of improvement philosophy, intellectual agreement, group cooperation, and permanent learning in an organization (Salimi, 2005). Many researchers suggest using accounting as a suitable tool to control management system. They believe that cultural resistance in the organization leads to the failure of continuous improvement, because when employees feel that their interests are threatened, they resist changes (Ghazanfari *et al.*, 2012). Therefore, culture is important. It is important because every action without being aware of cultural forces may result in unpredicted consequences. Not only there are cultural differences, but also they influence organization environment (Feghi, 2009). Culture can play an important role in globalization process of all countries. Culture is a variable that can be various and multidimensional, and its separation and ranking is not easily feasible. But the model of Hofstede could interpret it satisfactorily using four indices (Mehrabanfar *et al.*, 2013).

In past decades many discussions and researches have considered features and differences of work cultures in various countries according to the model of Hofstede (Latifi, 2004). Hofstede determined four dimensions of culture dimension that are different across countries. Hofstede's model includes following components: the gap of less power, bit- oriented versus quality oriented, avoidance of the lack of confidence versus risk taking, and individualism versus pluralism (Mehrabanfar and Naubari, 2013).

Poor Jalali and Myk in a theoretical- analytical paper studied the established cultural changes in Iran before and after Islamic Revolution and its impacts on accounting values. Their research limited to 1973-1989. The obtained results showed that culture influences accounting values in Iran. But confirmation the veracity of their suggestions requires the conduction of empirical researches in this field.

Delavari (2008) in his study in a manufacturing firm showed in addition to performance improvement of employees and amendment of work processes, produced wastage decreased by 64 percent.

Raeesi *et al.*, (2009) in their research "the effectiveness of profitability management cycle with the approach of operational Kaizen on the improvement of operational indices of laboratory unit of Tehran social security hospital" showed that the implementation of operational kaizen in this laboratory unit with identification of present problems and challenges and resolving them using collective wisdom and the experiences of group members led to the significant improvement in reducing waiting time of patients for admission, increase the rate of sampling, reduction the number of lost documents, elimination of patients unrelated reference to laboratory units and decrease the crowdedness of laboratory unit. Finally this increased the extent of satisfaction of clients from 67 percent to 75.8 percent.

Kowakowa (2012) studied the development of Kaizen's models and methods. The results show that modular system presents better results for kaizen than the designed traditional system.

Winsent (2013) studied cost management using kaizen costing system in his research. The results show that the implementation of a kaizen costing system by managers can lead to the cost reduction of materials procurement, consumption costs, and work force.

Chakraborty *et al.*, (2013) studied the role of Kaizen system in manufacturing corporate. The results show that the implementation of a Kaizen costing system has positive impacts on manufacturing corporate.

Research Hypotheses

Main Hypothesis

Ilam cement factory is ready to implement Kaizen costing system in terms of cultural characteristics of its employees.

Subordinate Hypotheses

- 1-Ilam cement factory is ready to implement Kaizen costing system in terms of the low gap of power.
- 2- Ilam cement factory is ready to implement Kaizen costing system in terms of avoidance of ambiguity (risk aversion).

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3- Ilam cement factory is ready to implement Kaizen costing system in terms of pluralism.

4- Ilam cement factory is ready to implement Kaizen costing system in terms of wisdom (bit- oriented).

Research Conceptual Model

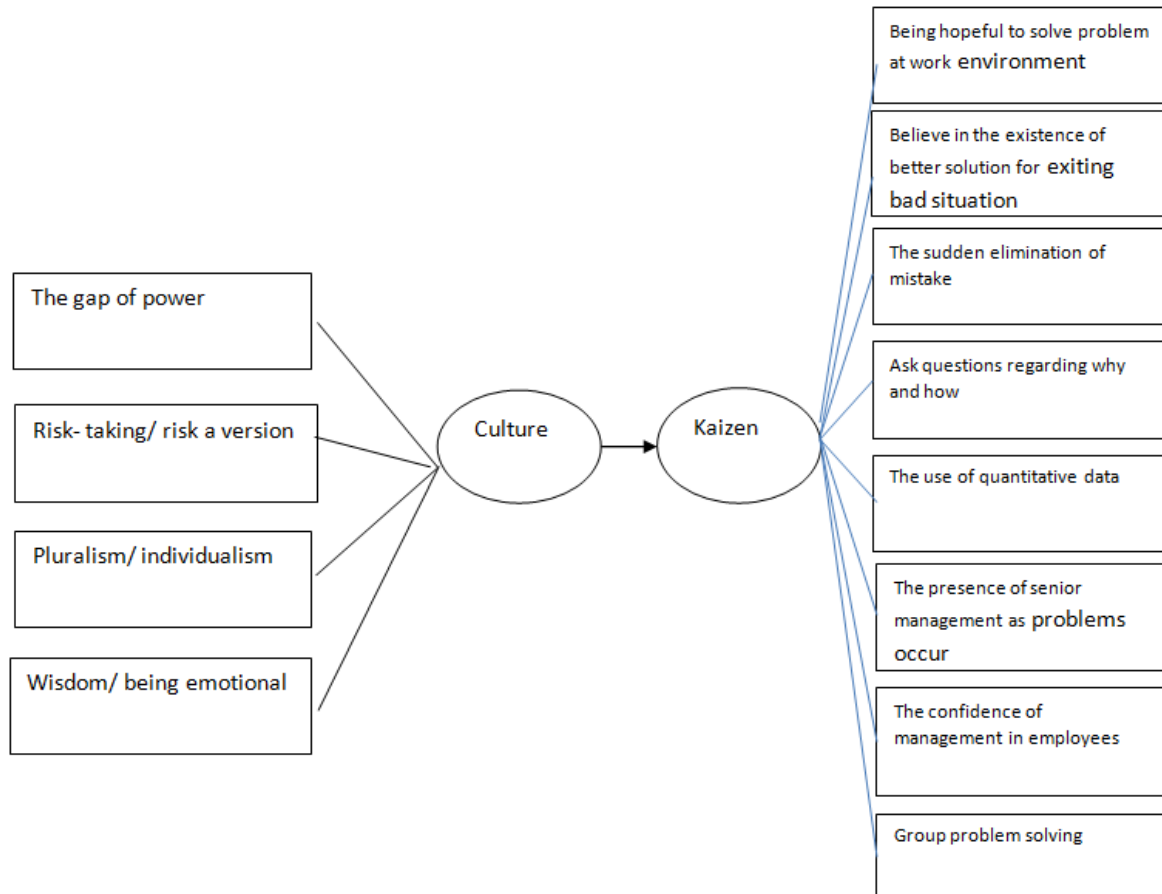


Figure 1: Conceptual model: made by author

MATERIALS AND METHODS

Research Method

Present research is applied. It is based on purpose in terms of classification, and is descriptive in terms of method. It is a correlation research in terms of the relationship between variables (Khaki, 2007).

Population and Statistical Sample

In present research, Ilam cement factory's employees that are 325 persons were selected as statistical population. According to the organizational chart of factory about 100 managers, assistants, attendants and supervisors work in the factory. These 100 persons were selected as sample. In this research sampling method is systematic elimination method.

The Tool of Data Collection

In this research information related to theoretical foundations and definitions were collected by library method and referring to reliable books and magazines. Information related to exiting variables in hypotheses was collected by questionnaires. The questionnaire of research includes 24 items. With primary distribution of 40 questionnaires, the calculated coefficient of questionnaire's reliability was 0.896 that includes 24 questions. According to this fact that the minimum value of reliability coefficient for research questionnaire is 0.70, it is seen that obtained value of Cranach α coefficient is above this value. Therefore, the reliability of questionnaire is suitable. Then, all questionnaires were distributed, and

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Cranach α coefficient was calculated for completed questionnaires. The results are presented are presented in the following table.

Table1: Calculations related to Cranach α

Row	Studied elements	The value of Cranach α coefficient
1	The gap of low power	0.733
2	Avoidance of ambiguity	0.743
3	Pluralism	0.714
4	Wisdom (bit- oriented)	0.719
5	Kaizen	0.750
6	Total questionnaire	0.877

RESULTS AND DISCUSSION

Data Analysis

In this research, we used inferential statistics and modeling method of structural equations to analyze data and test the hypotheses of research (Hooman, 2007). In present research after depicting analytical model of research based on data by Path diagram program, we executed Perlis program, and obtained measurement model. In this model we tested hypotheses using β coefficients and t test. Then we computed fitness indices of model automatically by running Perlis program for interested model (Delavar, 2007).

Table 2: Fitness indices of research model

Estimated value	Standard values	Macro	Fitness index
247	-	Degrees of freedom	Degree of Freedom
781.19	It is nor a suitable measure due to the dependence on the volume of sample	Chi-Square	Chi-Square
0.077	0.05	RMSEA	root- mean- squares of estimation error
0.88	0.90	NFI	Normalized fitness index
0.90	0.90	NNFI	Not normalized fitness index
0.93	0.90	CFI	Comparative fitness index
0.052	0.05	RMR	Root- mean- remained squares
0.85	0.90	GFI	Goodness of fitness index
0.82	0.90	AGFI	Amended goodness of fitness index

As it is seen in table (2), the indices of correspondence extent or goodness of fitness are in an acceptable level. Two diagrams are presented in the following that show general output models of Lisrel software. They include both structural model and measurement model. We will consider them in detail.

Diagram (1) shows t values for structural and measurement models.

Diagram (2) shows the values of factor load for structural and measurement models.

Diagram (1): base model with t values

Diagram (2): base model with path coefficients

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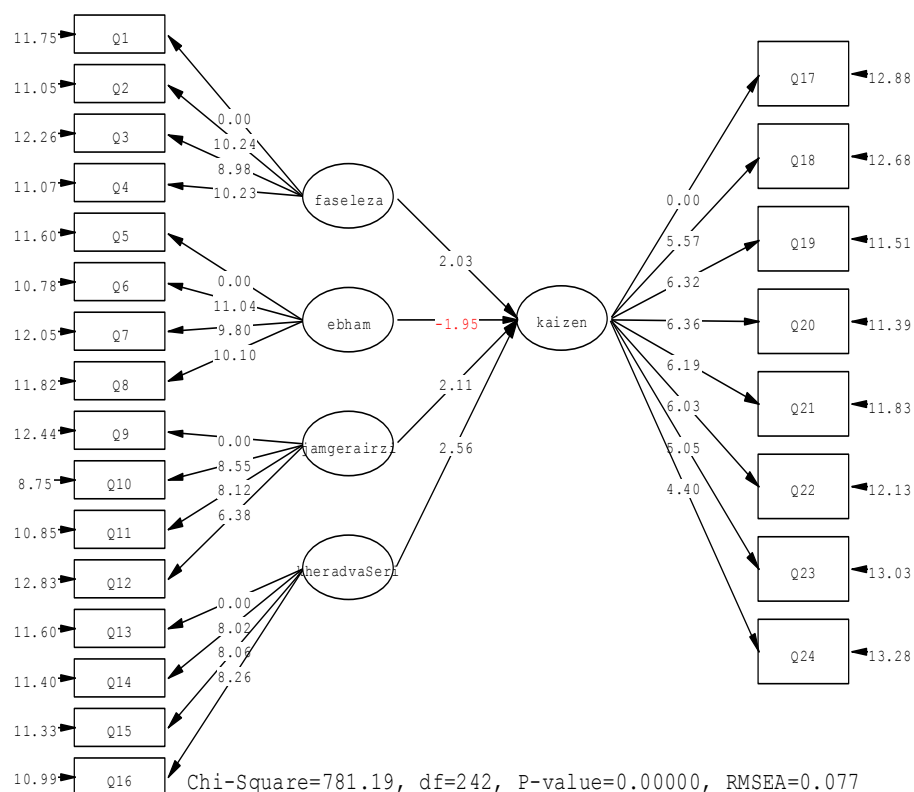


Diagram 1: Base model with t values

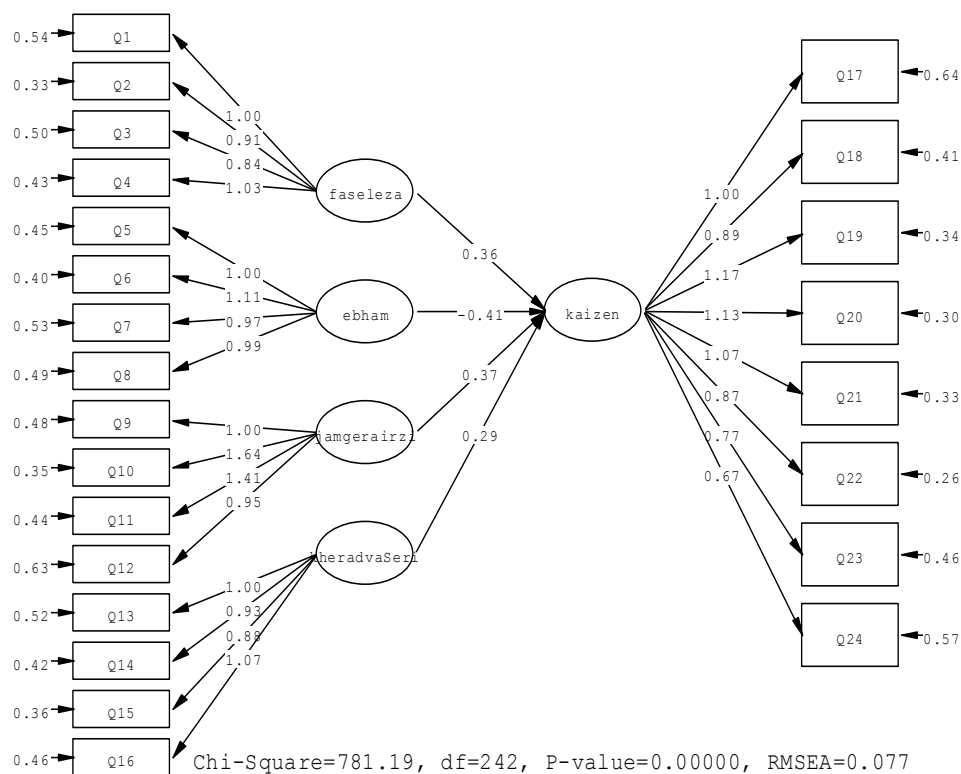


Diagram 2: Base model with path coefficients

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Table 3: Results related to model measurement

Variables	Indicators	Path coefficients (β)	T values
The gap of low power (individuals independence)	Q ₁	1	-
The gap of low power (hierarchy)	Q ₂	0.91	10.24
The gap of low power (individuals salary)	Q ₃	0.84	9.98
The gap of low power (individuals 1assessment)	Q ₄	1.03	10.23
Avoidance of ambiguity (risk aversion)	Q ₅	1	-
Avoidance of ambiguity (Stress)		1.11	11.04
Avoidance of ambiguity (hard working)	Q ₇	0.97	9.80
Avoidance of ambiguity (risk- taking)	Q ₈	0.99	10.10
Pluralism (accountability)	Q ₉	1	-
Pluralism (work ethic in individuals)	Q ₁₀	1.64	8.55
Pluralism (emotional dependence on work)	Q ₁₁	1.41	8.12
Pluralism (innovation and dependence on employer)	Q ₁₂	0.95	6.38
Wisdom (being known by others)	Q ₁₃	1	-
Wisdom (progress and competition)	Q ₁₄	0.93	8.02
Wisdom (improve relationship with manager)	Q ₁₅	0.88	8.06
Wisdom (security sense)	Q ₁₆	1.07	8.26
The acceptance of Kaizen system	Q ₁₇	1	-
The acceptance of Kaizen system	Q ₁₈	0.89	5.57
The acceptance of Kaizen system	Q ₁₉	1.17	6.32
The acceptance of Kaizen system	Q ₂₀	1.13	6.36
The acceptance of Kaizen system	Q ₂₁	1.07	6.19
The acceptance of Kaizen system	Q ₂₂	0.87	6.03
The acceptance of Kaizen system	Q ₂₃	0.76	5.05
The acceptance of Kaizen system	Q ₂₄	0.67	4.40

Hypotheses Test

First Hypothesis Test

Researcher Claim

1-Ilam cement factory is ready to implement Kaizen costing system in terms of the gap of low power. When this claim is stated as a statistical assumption, it will be as follows:

$$\text{Kaizen} = \text{constant} + 0.36^*_{(t=2.03)} + \text{the gap of low power} - 0.41^*_{(t=-1.95)} + \text{of ambiguity} + 0.37^*_{(t=2.11)} + \text{pluralism} + 0.29^*_{(t=2.56)} + \text{wisdom} + \text{error}$$

Statistical Assumption

H₀: Ilam cement factory is not ready to implement Kaizen costing system in terms of the gap of low power.

H₁: Ilam cement factory is ready to implement Kaizen costing system in terms of the gap of low power.

Table 4: The results of standard coefficients and t statistics

Predictor variable	Predicted variable	Estimated coefficient	t statistics	Standard statistics	t
The gap of low power	To implement Kaizen costing system	0.36	2.03	1.96	

According to structural equation, the extent of impact of the gap of low power independent variable on dependent variable of implementing Kaizen costing system equals $\gamma_{12} = 0.36$, because the value of t statistics (2.03) is greater than the value of 1.96 this relationship is supported by data (relationship is meaningful at error level of 5 percent). Therefore, hypothesis is confirmed. In other words, the lower the gap of power, more successful the implementation of this method.

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Second Hypothesis Test

Researcher Claim

2- Ilam cement factory is ready to implement Kaizen costing system in terms of avoidance of ambiguity (risk aversion).

Kaizen= constant+ 0.36* the gap of low power ($t=2.03$)- 0.41* avoidance ($t=-1.95$)of ambiguity+ 0.37* pluralism($t=2.11$) + 0.29* wisdom($t=2.56$)+ error

Statistical Assumption

H₀: Ilam cement factory is not ready to implement Kaizen costing system in terms of avoidance of ambiguity (risk aversion).

H₁: Ilam cement factory is ready to implement Kaizen costing system in terms of avoidance of ambiguity (risk aversion).

Table 5: The result of standard coefficient and t statistics

Predictor variable	Predicted variable	Estimated coefficient	t statistics	Standard statistics	t
Avoid of ambiguity	To implement Kaizen costing system	-0.41	-1.95	1.96	

According to structural equation, the extent of impact of avoidance of ambiguity independent variable on dependent variable of implementing Kaizen costing system equals $\gamma_{12}=-0.41$, because the value of t statistics (-1.95) is smaller than the value of 1.96 this relation is not supported by data (relationship is not meaningful at error level of 5 percent). Therefore, hypothesis is not confirmed. In other words, the greater the degree of risk aversion, more difficult the acceptance of this method.

Third Hypothesis Test

Research Claim

3- Ilam cement factory is ready to implement Kaizen costing system in terms of pluralism.

Kaizen= constant+ 0.36* the gap of low power ($t=2.03$)- 0.41* avoidance ($t=-1.95$)of ambiguity+ 0.37* pluralism($t=2.11$) + 0.29* wisdom($t=2.56$)+ error

Statistical Assumption

H₀: Ilam cement factory is not ready to implement Kaizen costing system in terms of pluralism.

H₁: Ilam cement factory is ready to implement Kaizen costing system in terms of pluralism.

Table 6: The result of standard coefficients and t statistics

Predictor variable	Predicted variable	Estimated coefficient	t statistics	Standard statistics	t
Pluralism	To implement Kaizen costing system	0.37	2.11	1.96	

According to structural equation, the extent of impact of pluralism independent variable on dependent variable of implementing Kaizen costing system equals $\gamma_{13}=0.37$, because the value of t statistics (2.11) is greater than the value of 1.96 this relation is not supported by data (relationship is meaningful at error level of 5 percent). Therefore, hypothesis is not confirmed. In other words, the more the extent of pluralism, the more successful the implementation of this method.

Fourth Hypothesis

Research Claim

Ilam cement factory is ready to implement Kaizen costing system in terms of wisdom (bit-oriented).

Kaizen= constant+ 0.36* the gap of low power ($t=2.03$)- 0.41* avoidance ($t=-1.95$)of ambiguity+ 0.37* pluralism($t=2.11$) + 0.29* wisdom($t=2.56$)+ error

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Statistical Assumption

H_0 : Ilam cement factory is not ready to implement Kaizen costing system in terms of wisdom (bit-oriented).

H_1 : Ilam cement factory is ready to implement Kaizen costing system in terms of wisdom (bit-oriented).

Table 7: The results of standard coefficients and t statistics

Predictor variable	Predicted variable	Estimated coefficient	t statistics	Standard statistics	t
Wisdom (bit-oriented)	To implement Kaizen costing system	0.29	2.56	1.96	

According to structural equation, the extent of impact of bit- oriented independent variable on dependent variable of implementing Kaizen costing system equals $\gamma_{14}=0.29$, because the value of t statistics (2.56) is greater than the value of 1.96 this relation is supported by data (relationship is meaningful at error level of 5 percent). Therefore, hypothesis is not confirmed. In other words, the more successful the implementation of this method.

Main Hypothesis

Researcher Claim

Ilam cement factory is ready to implement Kaizen costing system in terms of cultural characteristics of its employees.

Table 8: General results of hypotheses

Hypotheses	t-value	Path coefficient	Confirmation or rejection of hypothesis
Ilam cement factory is ready to implement Kaizen costing system in terms of the gap of low power	2.03	0.36	Is confirmed
Ilam cement factory is ready to implement Kaizen costing system in terms of avoidance of ambiguity (risk aversion)	-1.95	-0.41	Is rejected
Ilam cement factory is ready to implement Kaizen costing system in terms of pluralism	2.11	0.37	Is confirmed
Ilam cement factory is ready to implement Kaizen costing system in terms of wisdom	2.56	0.29	Is confirmed

According to above table, Ilam cement factory is ready to implement Kaizen costing system in terms of the gap of low power, pluralism, and wisdom variables. Therefore, main hypothesis is confirmed according to the acceptance of First, Third and fourth subordinate hypotheses.

Hypotheses Results

The Result of First Subordinate Hypothesis Test

According to the observed positive relationship between cultural dimension of the gap of low power and the acceptance of Kaizen costing method, Ilam cement factory is ready to implement this method. If Kaizen costing system is implemented, employees will not show negative resistance because employees deal with costing method and strategy that one of its measures is to establish suitable work conditions.

The Result of Second Subordinate Hypothesis Test

According to the observed lack of relationship between cultural dimension of avoidance of ambiguity and the acceptance of Kaizen costing system, it should be noted that Ilam cement factory is not ready to implement Kaizen costing system in terms of avoidance of ambiguity. Therefore, factory should replace risk aversion with risk –taking in order to be successful.

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The Result of Third Subordinate Hypothesis Test

According to direct and positive relationship between cultural dimension of pluralism the acceptance of kaizen costing method, Ilam cement factory will be more successful in the direction of managing costs by implementing this method.

The Result of Fourth Subordinate Hypothesis Test

According to direct and positive relationship between cultural dimension of wisdom (bit-oriented) and the acceptance of kaizen costing system, Ilam cement factory is ready to implement Kaizen costing system in terms of this cultural dimension, and the acceptance of this method doesn't result in negative reactions on behalf of employees.

Conclusion

General Conclusion of Research

With the development of trade and the growing increase of competition, surpassing competitors requires the production of products with higher quality and lower cost. In such an environment the role of costs management and its impact on costs reduction is inevitable throughout production process and value Chain. According to the plurality of cost management methods it seems that it is better before the implementation each one of these methods in an environment to consider the impact of independent variables on them. We should evaluate which one of these methods is associated with the conditions of that work environment including its culture, because wrong selection is not only disadvantageous, but also leads to the loss of great costs. Generally, the findings of this research show that Kaizen costing method is one of the tools of cost management that aims the reduction of final cost in the production process of present products and its purpose is to satisfy customer and the reduction of actual costs of production to below the level of previous final cost. Kaizen costing system is influenced by cultural characteristics this means that in societies where the gap of power is low, and wisdom and pluralism are experienced it has the capability of effective implementation. Effective implementation of this method can help us to surpass other competitors who use traditional methods or other new techniques to compute final cost.

Recommendations Based on Research Findings

According to the advantages of Kaizen costing method and the obtained results that show the existence of suitable culture to implement this method in the factory it is suggested to provide the conditions for implementing this method in Ilam cement factory as soon as possible, and replace avoidance of ambiguity with risk-taking. In addition, factory management should decrease organizational gaps, and increase equality, because first hypothesis shows that there is a meaningful relationship between the gap of low power and the acceptance of this method.

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