

# The Perceptions of Employees on Organizational Climate Dimensions in Adoption of Hydrogen Fuel Cell Vehicles (HFCV): A Study at Kulim Industrial Area, Kedah State of Malaysia

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## Abstract

*The aim of the study is to assess the perception of employees on organizational climate dimensions in adoption of hydrogen fuel cell vehicles at Kulim Industrial Area at Kedah State of Malaysia. In this study, the organizational climate dimension consists of job contribution, job rewards, managerial support, socialization and information, manpower training and development, teamwork orientation and leadership action that are believed to be affecting the adoption of HFCV. The number of respondents involved in this study are 130 respondents with overall average rate of response of 100 percent. The findings shows the highest average total score on perceptions of job contribution are manufacturing industries with 55 percent, the highest average total score on perceptions of job rewards are manufacturing industries and car service center that shared 46 percent. The highest average total score on perceptions of managerial support dimensions are manufacturing industries with 51 percent whilst the highest average total score on perceptions of socialization and information dimensions are automobile industries and car service center that contribute to 50 percent and 51 percent. The highest average total score on perception of manpower training and development dimensions are the automobile industries and car service center that shared 51 percent agreement from the items statement list. The highest average total score on perceptions of team work orientation dimensions all the industries of manufacturing, automobile and car service center that shared 53 percent agreement of the items statement as per listed. The last dimension of leadership actions shows highest average total score are the automobile industry with 55 percent agreement on the items statement as per listed.*

**Keywords:** Organizational Climate, Job Contribution, Manpower Training and Development, Teamwork Orientation, Leadership Action.

## Introduction

A hydrogen fuel cell vehicle is a type of electric vehicle that uses hydrogen as fuel instead of fossil fuel to power the car. Hydrogen cars are basically electric cars. They have electric motors that drive the wheels just like electric cars but the difference lies in the battery. A hydrogen fuel cell creates a chemical reaction

with the hydrogen that generates electricity, water and heat. Just like an electric car, there are no harmful exhaust emissions that can affect the environment. There is a high potential of the adoption of hydrogen fuel cell vehicles in Malaysia as it is a new industrialized country that has plenty of room for technological advancement and improvement in its automotive industry. Hydrogen fuel cell vehicles can be implemented successfully but the initiatives for the adoption of HFCV need a lot of attention, motivation and actions based on aspects of organizational climate dimensions that need to be looked over specifically by the key players of the automotive industry.

## Literature Review

The organizational climate dimensions that may affect the adoption of hydrogen fuel cell vehicles are as follow:

Organizational Climate Dimensions	Source
<p><b>1. Job contribution</b> In job contribution, the elements like personal contributions to the success of organization, good use of knowledge and skills, convenient physical work environment, opportunities to grow and learn new skills and the proudness to be part of the organization affect initiatives in HFCV adoption.</p>	Adopted from: Elise Ramstad (2009) and adapted to suit the study requirements.
<p><b>2. Job Rewards</b> The element of rewards received by work initiatives is appropriate as per job assigned for HFCV adoption.</p>	Adopted from: Huang, TC, Lawler J. Lei CY (2007) and adapted to suit the study requirements.
<p><b>3. Managerial Support</b> Managerial support is important to build the harmony and successfulness of work initiatives. The managerial support includes providing the resources like equipment, materials, information, etc. and assistance to employees to do their job effectively. Managerial support helps employees to do their job with more freedom and work autonomy for the HFCV adoption.</p>	Adopted from: Efraty, Siegel and Lee (2001) and adapted to suit the study requirements.
<p><b>4. Socialization and Information</b> The elements of socialization and cooperation at the workplace includes how the management is done such as whether employees are kept informed on the latest news and information on work that affect the sense of team spirit, speaking up and voicing opinions on HFCV. Problems that can be solved formally and informally creates optimism about the organization future especially if there is support on social relationships with management and colleagues</p>	Adopted from: Shanok, L.R and Eisenberger, R (2006) and adapted to suit the study requirements.
<p><b>5. Manpower Training and Development</b> The elements in manpower training and development that may affect HFCV adoption are development, investment and incentives, comprehensive program, career development, human resource management and employee evaluation</p>	Adopted from: White M., Hill S., McGovern P., Mills C., and Smeaton D. (2003) and adapted to suit the study requirements

#### 6. Teamwork Orientation

The elements in teamwork orientation include team-based process, team-based development and team-based management

Adopted from: Kozlowski SW.J., Ilgen DR (2006) and adapted to suit the study requirement

#### 7. Leadership Action

The elements of leadership that affected the practices of HFCV is team-based leadership, high-performance based leadership (2011).

Adopted from: Cheung, MFY and Wong CS (2011) and adapted to suit the study requirements.

## Research Methodology

### Research Objective

The main objective of this study are to assess the perceptions of employees on organizational climate in adoption of HFCV at Kulim Industrial Area at Kedah State of Malaysia.

### Research Design

This study uses a descriptive approach with the aim in assessing the perceptions of organizational climate.

### Research Instrument

A questionnaire is used as the research instrument based on the various researchers of organizational climate and was modified to meet the needs and requirements of this research. The number of statement for each scales of dimensions are shown in Table 1.

Table 1. Number of Statements for Social Dimensions

Scale	Number of Item Statements
<b>Organizational Climate Dimensions</b>	
• Job Contribution	7
• Job Rewards	4
• Managerial Support	8
• Socialization and Information	6
• Manpower Training and Development	15
• Teamwork Orientation	18
• Leadership Action	17
<b>Total Item Statements</b>	<b>75</b>

Organizational climate questions are measured using a 5-point Likert-scale ranging from (1) Strongly Disagree, (2) Disagree, (3) Moderately Agree, (4) Agree and (5) Strongly Agree. The researcher adapts the questionnaire and adjusted it according to the requirements and need of organizational climate research in adoption of HFCV.

### Data Collection

The data collection for this study was focused at Kulim Industrial Area with the main focused on the automobile industry, automotive manufacturing industry and car service centre. The data collection was conducted within three months between October to December 2016.

Table 2. The Rate of Response

Kulim Industrial Area, Kedah	No. of Respondents	No. of Questionnaires Returned	Return Rate of Response (%)
1. Automobile Industry (KIA-1)	40	40	100%
2. Manufacturing Industry (KIA-2)	30	30	100%
3. Car Service Centre (KIA-3)	60	60	100%

## Research Findings

The demographic profile of employees at Kulim Industrial Area, Kedah State of Malaysia were summarized as follows:

Table 3. Summary of Majority Demographic Profile of Respondents

No	Demographic Variable	Majority	Percentage (%)
1.	Gender	Male	80.5
2.	Citizen	Citizen	100
3.	Age	30 – 45 years	62.5
4.	Race	Malay	52.0
5.	Religion	Muslim	52.0
6.	Education Level	Diploma/Degree	55.0
7.	Job Category	Managerial	48.0
8.	Monthly Income	RM1,001-RM7,000	63.0

As shown in Table 3, majority of the respondents are male at 80.5 %. 100 % of respondent are Malaysian citizens. The survey respondents are composed primarily of age between 30 - 45 years, accounting for 62.5 % of the respondents. In term of race, 52 % of respondent are Malays and 52.0 % are Muslim respondents. The 55 % of respondents got their diploma and degree level of education and the job category 48 % at managerial level. A majority of respondents earns a monthly income of RM 1,001- RM 7,000 at 63 %.

## The Perception of Employees Job Contribution in Adoption of HFCV

The perception of employees on job contribution were presented in Tables 4 below.

Table 4. The Perception of Employees on Job Contribution

No.	Item Statement	KIA-1	KIA-2	KIA-3
<b>A</b>	<b>Job Contribution</b>			
	<i>In terms of job contribution, I think in adoption of HFCV, I...</i>	<b>% of Agreement</b>		
1.	Will personally contribute to the HFCV work	56	59	50
2.	Feel that working with HFCV will makes me contribute to success at workplace	46	53	47
3.	Believe on the HFCV-related work that I am assigned to and will make good use of my knowledge and skills.	62	46	56
4.	Feel that convenient physical work environment enables me to do my HFCV-related job effectively.	45	48	46
5.	Get the opportunities to grow and learn new skills	55	57	58
6.	Am satisfied to be a part of organization team of HFCV	48	59	46
7.	Say that my spirit on the HFCV adoption will be high and motivated	33	61	55
<b>Average Total Score</b>		49	55	51

The highest average total score on perceptions of Job Contribution are manufacturing industries with 55 percent.

### The Perception of Employees on Job Rewards in Adoption of HFCV

The perception of employees on salary is presented in Table 5 below.

Table 5. The Perception of Employees on Job Rewards

No.	Item Statement Job Rewards <i>In terms of Job Rewards, I think in adoption of HFCV, I will....</i>	KIA-1	KIA-2	KIA-3
		% of Agreement		
1.	Receive salary and incentive based on my performance in HFCV development	48	46	47
2.	Get the motivation on how to achieve performance to get incentives like bonuses as per required.	46	54	42
3.	Set my Key Performance Indicator to be achievable and reliable for my position and salary level	41	45	50
4.	Be pushed forward by my team manager to get the productivity of HFCV as per required for my salary requirements	38	40	45
<b>Average Total Score</b>		43	46	46

The highest average total score on perceptions of Job Rewards are manufacturing industries and car service center with both 46 percent.

### The Perception of Employees on Managerial Support in Adoption of HFCV

The Perception of Employees on HFCV Managerial Support is presented in Table 6 below.

Table 6. The Perception of Employees on Managerial Support

No.	Item Statement Managerial Support <i>In terms of Managerial Support, I think in adoption of HFCV, my supervisor/manager will...</i>	KIA-1	KIA-2	KIA-3
		% of Agreement		
1.	Regularly let me know what is expected of me in doing my HFCV related job effectively.	55	46	52
2.	Provide the resources I need (equipment, materials, information, etc.) to do my HFCV job effectively.	53	57	41
3.	Give me the individual help and support I need to do my HFCV effectively.	42	56	50
4.	Offer me opportunities to grow and learn new HFCV skills.	45	55	45
5.	Team up the work group with a sense of team spirit	47	44	58
6.	Give supportive feedback on the HFCV work I do from my superior	51	45	54
7.	Be reliable to help me out with a HFCV work problem	48	40	52
8.	Talk to the superior about something that has upset or annoyed me about HFCV work	45	51	57
<b>Average Total Score</b>		48	49	51

The highest average total score on perceptions of Managerial Support dimension are manufacturing industries and car service center with both achieved 49 percent and 51 percent.

### The Perception of Employees on Socialization and Information in Adoption of HFC

The perception of employees on Socialization and Information is presented in Table 7.

Table 7. The Perception of Employees on Socialization and Information

No.	Item Statement	KIA-1	KIA-2	KIA-3
<b>Socialization and Information</b>				
<b>C</b>	<i>In terms of Socialization and Information, I think in adoption of HFCV, the management of my organization will.....</i>	<b>% of Agreement</b>		
1.	Keep their employees informed of their latest HFCV news that affects employee interest.	58	55	52
2.	Encourage employees to speak up and voice their opinions frankly about HFCV without fear of being punished	51	46	53
3.	Allow employees to channel their grievance or other personal problem in HFCV work and to resolved fairly	49	47	42
4.	Be optimistic about the future of this organization in term of HFCV management.	45	55	52
5.	Make their employee proud of the organization	43	40	48
6.	Encourage the spirit of success on HFCV	51	48	57
<b>Average Total Score</b>		<b>50</b>	<b>49</b>	<b>51</b>

The highest average total score on perceptions of Socialization and Information dimension are automobile industries and car service center with both achieved 50 percent and 51 percent.

### The Perception of Employees on HFCV Manpower Training and Development

The perception of employees on manpower training and development is presented in Table 8 below.

Table 8. The Perception of Employees on Manpower Training and Development

No.	Item Statement	KIA-1	KIA-2	KIA-3
<b>HFCV Manpower Training and Development</b>				
<b>E</b>	<i>In terms of Training and Development, I think in adoption of HFCV, the training and development in my organization will...</i>	<b>% of Agreement</b>		
1.	Emphasize on long-term development for HFCV employee training plans.	55	47	59
2.	Frequently evaluate HFCV employee training programs.	60	50	60
3.	Develop and trace HFCV employee training plans.	51	55	54
4.	Maintain adequate budget for HFCV employee training.	48	48	53
5.	Organize HFCV training activities for the employees are comprehensive.	58	45	49
6.	Do training activities for the employees that require extensive investments of time/money.	47	48	53
7.	Do training activities for the employees in need for HFCV skills	38	47	52
8.	Give incentive for HFCV employee's development	42	53	45
9.	Encourage employees to commit themselves to perform better in HFCV work	50	47	43
10.	Offer training that provides career development opportunity.	52	50	53
11.	Offer HFCV behavioral training which helps to teach employees about corporate culture and its values.	48	52	55



12.	Provide HFCV training that helps improve employees' performance.	57	48	54
13.	Do training on HFCV equipment	61	47	38
14.	Strongly encouraged me to develop skills in HFCV management.	52	37	45
15.	Be able to develop the comprehensive HFCV training policies and programs that are reliable for employees.	45	40	50
<b>Average Total Score</b>		<b>51</b>	<b>48</b>	<b>51</b>

The highest average total score on perceptions of Manpower Training and Development dimension are automobile industries and car service center with both achieved 51 percent.

### The Perception of Employees on HFCV Team-work Orientation

The perception of employees on teamwork orientation is presented in Table 9 below.

Table 9. The Perception of Employees on Teamwork Orientation

No	Item Statement	KIA-1	KIA-2	KIA-3
F	Teamwork Orientation			
	<i>In terms of teamwork orientation I think in adoption of HFCV, the team of my organization will...</i>	% of Agreement		
1.	Have the freedom to adapt the goals as needed.	66	45	57
2.	Treat members as equals, regardless of rank, culture, or other differences for management success	60	50	56
3.	Be focused both on the HFCV task and on how well the group is working.	55	48	54
4.	Be positive in their thinking as a result of discussions or information collected.	56	55	47
5.	Be rewarded for their achievements as a team/group.	48	47	61
6.	Be confident that the organization will act on their recommendations.	52	49	52
7.	Communicate directly and personally with each other on HFCV team work	45	52	48
8.	Disseminate project-relevant information to be shared openly by all team members.	52	54	57
9.	Be happy with the usefulness of the information received from other team members.	55	46	48
10.	Recognized the specific potentials (strengths and weaknesses) of individual team members.	46	58	59
11.	Be contributing to the achievement of the team's goals in accordance to their specific potentials.	53	62	45
12.	Help and support each other as best as they could.	45	55	45
13.	Give suggestions and contributions to HFCV team members for further discussions	53	57	47
14.	Resolve conflict and worked to resolve issues on the team.	57	55	61
15.	Help team members on the team by haring knowledge and information.	65	55	57
16.	Freely share information (technical, market, etc.) with others on the team.	50	56	57
17.	Demonstrate interest and enthusiasm during team activities.	56	60	47
18.	Acknowledge the contributions made by others on the team.	45	55	48
<b>Average Total Score</b>		<b>53</b>	<b>53</b>	<b>53</b>

The highest average total score on perceptions of Team Work Orientation dimension are automobile industries, manufacturing industries and car service center that achieved 53 percent on items statement as per listed.

### The Perception of Employees on HFCV Leadership Action

The perception of employees on leadership action is presented in Table 10.

Table 10. The Perception of Employees on Leadership Action

No G	Item Statement Leadership Action	KIA- %	KIA- %	KIA-3 %
<i>In terms of leadership action, I think in adoption of HFCV, the leadership in my organization will...</i>				
1.	Have the ability to arouse enthusiasm and to build optimism in HFCV	46	40	48
2.	Have the ability to create green group synergy.	67	40	60
3.	Have the ability to build HFCV team bonds.	55	54	45
4.	Have the ability to express HFCV team working encouragement.	57	56	40
5.	Have the ability to provide HFCV task motivation.	60	62	43
6.	Have the ability to be persuasive in HFCV work.	52	48	53
7.	Have the ability to be a change catalyst in HFCV working environment.	57	62	54
8.	Help employees to make working on their HFCV tasks more pleasant.	55	55	57
9.	Treat HFCV team members as equals.	45	60	62
10.	Have the ability to explain the way how the HFCV tasks should be carried out.	50	61	58
11.	Have the ability to decide what and how things shall be done in HFCV management.	61	55	63
12.	Focus to maintain definite standards of HFCV work performance.	45	62	55
13.	Have the skill to demonstrate good communication skills.	62	45	52
14.	Potentially demonstrate positive leadership qualities in HFCV management.	63	52	48
15.	Have the ability to develop practical and realistic programs in HFCV management.	48	65	54
16.	Have the ability to analyze problems in HFCV management and arrive at appropriate solutions.	57	47	56
17.	Show enthusiastic and motivated in performing duties in HFCV	61	44	54
<b>Average Total Score</b>		55	53	53



The highest average total score on perceptions of Leadership Action dimension are manufacturing industries with 55percent of agreement on items statement as per listed. The overall findings show that the total score of the agreement for Organizational Climate dimensions is summarized as shown in Table 11.

Table 11. The Summarized Findings of Organizational Climate Dimension at Kulim Industrial Area, Kedah State of Malaysia

No.	Organizational Climate Dimensions	Average Total Score (%)		
		KIA- 1	KIA-2	KIA-3
1.	Job Contribution	49	55	51
2.	Job Rewards	43	46	46
3.	Managerial Support	48	49	51
4.	Socialization and Information	50	49	51
5.	Manpower Training and Development	51	48	51
6.	Teamwork Orientation	53	53	53
7.	Leadership Action	55	53	53

The findings on the average total score of agreement on Organizational Climate dimensions shows that the dimensions of job contributions in the manufacturing industries at Kulim Industrial Area scored the highest with 55 percent. The job rewards dimensions shows the highest average total score are the car service centers at 47 percent. The managerial support also shows that the car service center industries got the highest score with 51 percent. The socialization and information dimension shows that the highest scorer at Kulim Industrial Area are automobile industry and car service center with 51 percent. The teamwork orientation dimensions shows the three industries, automobile, manufacturing and car service center shared 53 percent for each items statement as per listed. Last but not list the leadership action shows the highest average total score are the automobile industries with 55 percent.

## Recommendation

To improve and enhance the organizational climate dimensions for employees and management, the following are recommendations for the adoption of HFCV:

### Job Contribution

The management should be able to initiate the conducive working environment and conditions intrinsically and extrinsically to enhance the job satisfaction with the following:

- Increase personal satisfaction on HFCV related work.
- Motivate employees to contribute and build up skills.
- Clarify the organizational HFCV goal.
- Care about employee well-being.
- Autonomy given in HFCV related jobs.
- Encourage communication openly and effectively.
- Motivate employees into HFCV involvement.
- Encourage effort for HFCV direction.

### Job Rewards

Salary and benefits have both surface and symbolic value that the management need to be highly concerned of as they are rewards for employees. To adopt HFCV successfully, the management need to pay attention to:

- Salary increment whenever productivity increases.
- Paying incentives for extra work.
- Increment for good performance.
- Benefits like medical and insurance coverage.
- Rewards with recognition of good work presented.
- Positive HFCV work environment.
- Providing job security and safety.
- Individual growth and development in HFCV.

### Managerial Support

The employees believe that managerial support is good for both the organizations and employees morale. Therefore the management should provide:

- Support and motivate employees for better directions.
- Encouragement and support in handling HFCV work.
- Understanding on employee problem in HFCV.
- Confidence and trust in handling HFCV work operations.
- Guidance and understanding of HFCV work problem.
- Demonstrate on caring for support.
- Considerations on employees' opinion in HFCV operations.
- Provide help on HFCV problems.
- Help employees on HFCV career development.

### Socialization and Information

Increase the harmony of relationships and friendship at the work place will help employees increase their self-motivation for HFCV work related in the following aspects:

- Feeling respect of each-others in HFCV team work.
- Feeling complicity in relationships between employees and colleagues and superiors.
- Building healthy relationship with management and colleagues.
- Facilitate and encourage mentoring at all levels of the organization.
- Use networks to raise the profile of staff in organizations based on skills and expertise.
- Arrange session to listen more talks about their career paths and steps to future directions.
- Arrange small sessions hosted by senior executive around breakfast, lunch or evening drinks to allow employees to be closed and open discussion like a family gathering.

### Manpower Training and Development

The management need to be focused and emphasize of the training and development for enhancement of employees as per suggested:

- Organizations should emphasize the short and long development of the training program in the organization to more comprehensive green groups.

- Strongly encourage employees to develop their skills through continuous HFCV training activities in the organizations.
- Organization should give more incentive for HFCV employee's development to encourage them to commit them to perform better and to get more career development opportunities.
- Organization should frequently evaluate green employee training programs to ensure their employees are strongly enough to improve their performance.
- Organizations have to provide more investment to build a comprehensive HFCV training and programs.
- Set up a mentoring and networking program to facilitate career development.
- Organize coaching work-shops for employees in HFCV.

### Teamwork Orientation

The working team needs to be professional in handling the work as a team with the following suggestions:

- Foster good team-work in the HFCV work.
- Open-communication within team members.
- Conflict and crisis avoided and solved at the earliest stage.
- Participation in team decision making.
- Team leaders must be active in green management.

### Leadership Action

The leaders in the organizations need to pay attention on the following:

- The leadership style that suits HFCV related work environment.
- Build positive culture at work such as trust, openness, collaboration and cooperation.
- Provide the resources for efficiency at work.
- The leaders must be always keep their employees informed about the latest green information that will make a valuable contribution to the success of the organization.
- Clearly communicate expectation in HFCV directions.
- Ensure work provides learning environment.
- Encourage development of employees in HFCV work.
- Apply new skills and knowledge for subordinates.
- Knowledgeable on employees performance.
- Recognize and emphasize of employees strength.

### Conclusion

The research findings suggests that organizations provide a positive working environment by ensuring the relationship between colleagues and the management is in good order, and always providing positive feedbacks and make sure that only constructive criticism is given so that employee performance.

The rewards given must be equal to the work of HFCV that has been done successfully. This maintains the viability of an employee in obtaining a prestigious quality of work in HFCV. Furthermore, the organizational climate is important to increase the positive behavioral of management and employees to succeed in HFCV practices and adoption.

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