

CUSTOMER SATISFACTION AND CULTURE IN INTERNATIONAL CONSTRUCTION PROJECTS

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ABSTRACT

Recent literature suggests customer satisfaction and end-user benefit are more important than the cost, time, and quality pillars of the iron triangle when considering project success. This research utilizes a value-focused thinking (VFT) philosophy to highlight four fundamental objectives and eleven critical success factors for improving customer satisfaction on construction projects accomplished through the Foreign Military Sales (FMS) program. Many of these factors are either directly or indirectly related to culture since the values and desires of the customer are likely to align with the values of their culture. These findings offer valuable implications to project management in cross-cultural environments.

INTRODUCTION

Cost, time, and quality are often considered the most important criteria regarding project success [2, 7, 8]. However, meeting time demands, satisfying budget constraints, and providing a quality product represent only a portion of the effort needed to have a successful project; there are other crucial factors as well [8, 20]. For example, customer satisfaction has been identified as an important factor impacting project success [7, 8, 21, 28, 33]. However, customer satisfaction is not always easily understood. Therefore, to explore customer satisfaction in more detail, we focused on construction projects completed in Saudi Arabia through the Foreign Military Sales (FMS) program used by the United States (U.S.).

BACKGROUND

The FMS program is used by the United States to provide international allies with defense capabilities and create long-lasting relationships [5, 11, 31]. For example, Saudi Arabia and the U.S. have created a strategic partnership to promote regional stability by increasing military preparedness and counterterrorism capabilities [35]. Although most FMS transactions involve weapon systems [5], construction projects are included when supporting infrastructure is required. During these projects, FMS project managers are responsible for cultivating relationships. Therefore, it is imperative that they be knowledgeable about the host country and the role of customer satisfaction in achieving project success. As such, this research addressed the following question: What are the critical success factors that will best enhance customer satisfaction during FMS construction operations in Saudi Arabia? These critical success factors will be identified by using the value-focused thinking (VFT) philosophy and a multiple objective decision analysis (MODA) from the viewpoint of a FMS project manager.

METHODOLOGY

Based on the belief that better decision-making occurs when the decision-making process focuses on values, VFT has been used in a variety of areas, including environmental concerns, construction projects, and asset management [17]. Shoviak [34] translated philosophical descriptions of VFT from Keeney [18] and Kirkwood [19] into the 10-step model shown in Figure 1. While the full 10 steps are often used, there are examples in which only the initial steps were used to identify strategic objectives [14, 17, 32] and homeland security capabilities [29]. Similarly, we only used the first five steps in our research.

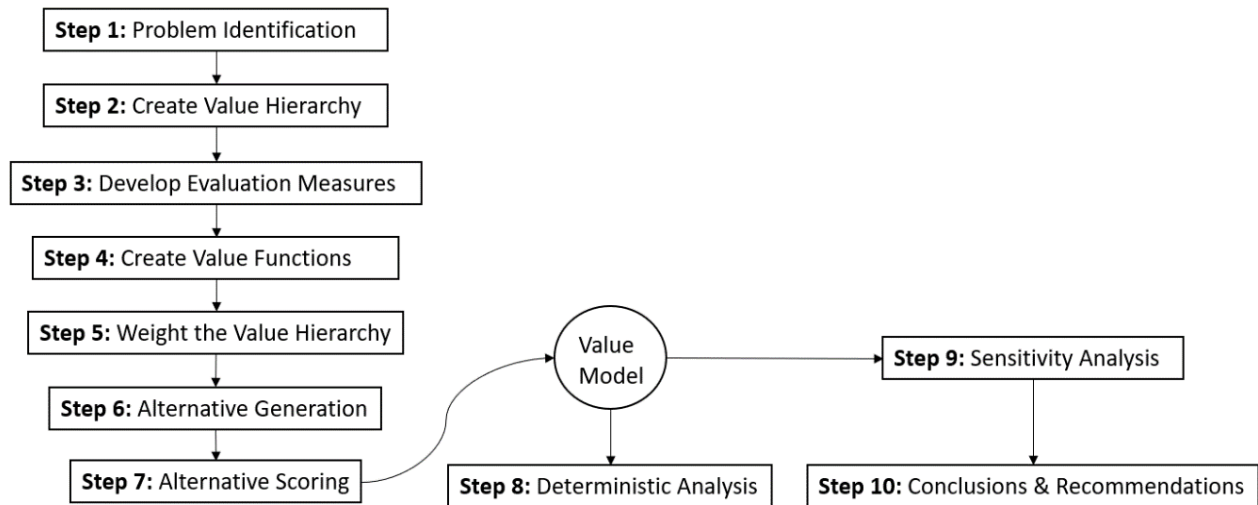


Figure 1. Steps of a Multiple Objective Decision Analysis Approach [34]

Step 1: Identify Problem

Two FMS project managers were consulted as the decision-makers. Due to the pandemic, all discussions were conducted over an 8-month period either over the phone or through Zoom software; additionally, they were conducted separately to prevent the influence of peer pressure and groupthink. During initial discussions, both FMS decision-makers confirmed that sustaining high levels of customer satisfaction is the primary objective when deciding whether an FMS project is successful. Therefore, it was decided that the overall strategic objective was to identify areas of priority for increasing customer satisfaction with Saudi stakeholders during construction projects managed through the FMS program.

Step 2: Construct Value Hierarchy

The next step is to create a value hierarchy that defines the overall strategic objective, fundamental objectives, specification objectives that decompose the fundamental objectives, and evaluation measures for the fundamental objectives. The VFT philosophy incorporates concept mapping [1, 9, 10] to identify the fundamental objectives through a means-ends network [15] in which all objectives identified by a decision-maker are categorized as either fundamental objectives (those that must be met to achieve an end goal) or means objectives (those that impact the achievement of the fundamental objectives) [15]. We developed a congregated means-ends concept map based on separate means-ends network for each decision-maker. We then used the control of consequences test to identify objectives that are prime contributors to the decision problem [15]. If an objective is too broad, alternatives outside of the decision context can affect its achievement; therefore, it is considered a means objective as opposed to a fundamental objective [15]. After conducting the control of consequences test, the final fundamental objectives are improve communication, meet time demands, increase cultural awareness, and ensure successful turnover to the host nation; the resulting value hierarchy is shown in Figure 2.

Step 3: Develop Evaluation Measures

Evaluation measures, known as attributes, measure the extent to which objectives are achieved and are classified into three categories: natural, constructed, and proxy [15]. Natural attributes are used when the objectives can be explained quantitatively or through connections created from common knowledge [15, 16]. Constructed attributes are often used when it is inappropriate or untenable to use natural attributes [15, 16]. These attributes provide a scale for measurement when a natural attribute does not exist for a particular objective [16]. Proxy attributes measure performance of objectives indirectly [15]. Like constructed attributes, proxy attributes are used when it is difficult to create natural attributes [16]. We primarily used proxy and constructed attributes because there are few natural measures for many of the objectives; therefore, the use of constructed and proxy attributes help provide insight into the definition of contributing factors for each objective [15]. The evaluation measures discussed in the remainder of this section are grouped according to the fundamental objective they support.

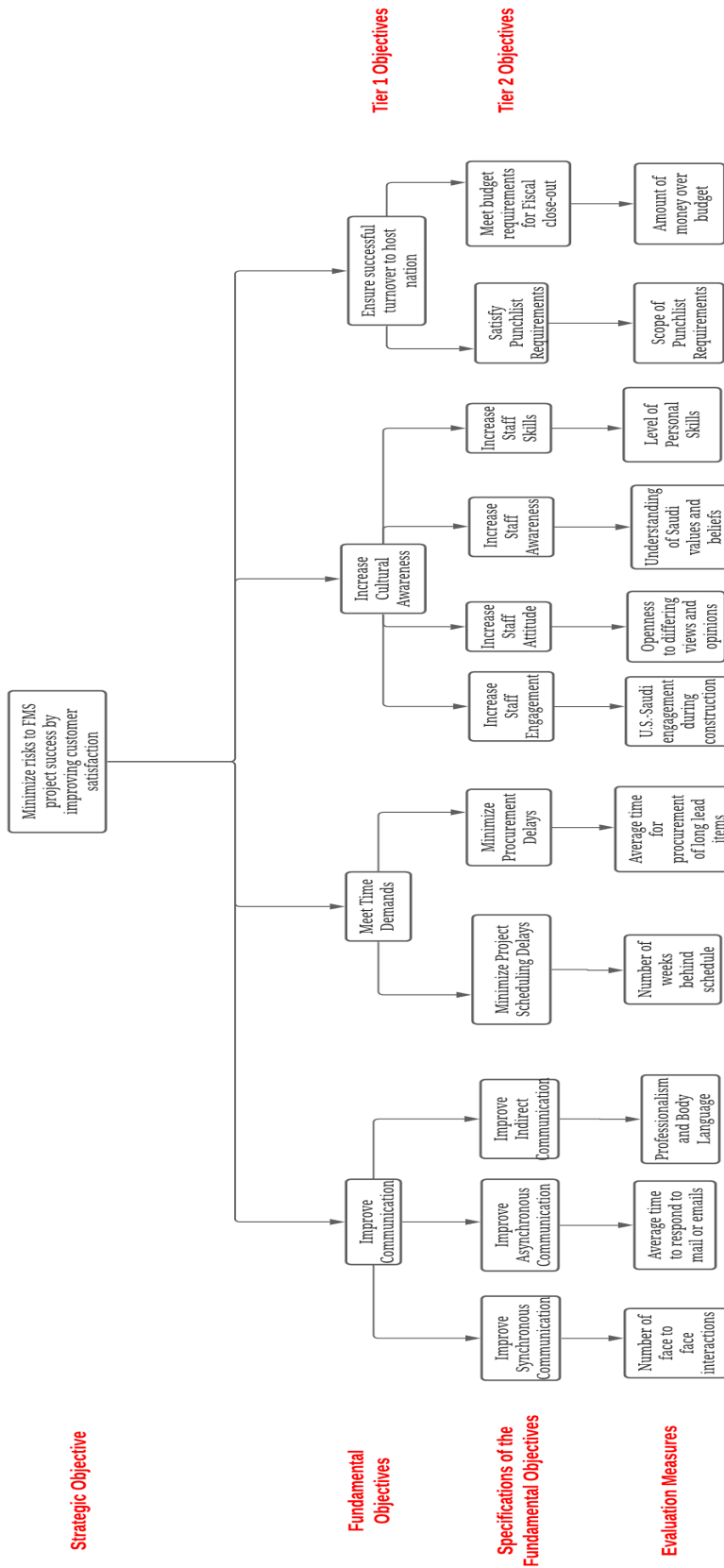


Figure 2. Value Hierarchy for FMS Construction

Table 1 provides a summary of the evaluation measures for the objective “improve communication,” which is decomposed into three specifications: synchronous communication, asynchronous communication, and indirect communication. Synchronous communication occurs when messages and responses between parties are exchanged in face-to-face interactions. Asynchronous communication occurs when parties are not communicating in real time; they are measured by examining the average response time to emails and letters. Indirect communication is described as the perception of body language, attentiveness, and professionalism. The attributes for synchronous and asynchronous communication use natural scales, while the attribute for indirect communication uses a constructed scale.

Table 1. Summary of Measures in the Improve Communication Branch

Third-Tier Hierarchy Value	Associated Measure	Lower Bound	Intermediate Lower Bound	Intermediate Upper Bound	Upper Bound
Synchronous communication	Number of face-to-face interactions	Once a month	Once every two weeks	Once a week	3x a week
Asynchronous communication	Average time to respond to mail or emails	Respond the next day	Within 8 hrs	Within 6 hrs	Within 4 hrs
Indirect communication	Professionalism and Body Language	Unprofessional	Neutral	Neutral	Approachable

Table 2 provides a summary of the evaluation measures for the objective “ensure successful turnover,” which examines how well the FMS program manages funds and ensures adequate quality during construction. It is decomposed into two specifications: satisfy punch list requirements and meet budget requirements for fiscal close-out. Satisfying punch list requirements analyzes whether the items of the project are in-scope or out-of-scope. Meeting budget requirements analyzes whether the project meets or exceeds the budget. Both evaluation measures are proxy attributes due to the inability and difficulty of creating measures that directly measure a “successful turnover.”

Table 2. Summary of Measures in the Ensure Successful Turnover Branch

Third-Tier Hierarchy Value	Associated Measure	Lower Bound	Intermediate Level	Upper Bound
Punch list Requirements	Scope of punch list items	Out-of-scope items	Neutral	In-scope items
Fiscal close-out (Program Level)	Amount of money over budget at completion	Extremely over program budget requirements	Over program budget requirements	Meet program budget requirements

The objective “meet time demands” focuses on analyzing the number of delays encountered during construction. Shown in Table 3, meeting time demands is further specified as the number of weeks behind schedule and the average time for procurement of long-lead items. Both measures have natural scales.

Table 3. Summary of Measures in the Meeting Time Demands Branch

Third-Tier Hierarchy Value	Associated Measure	Lower Bound	Intermediate Lower Bound	Intermediate Upper Bound	Upper Bound
Project Schedule Delay	Number of Months Behind Schedule	> 12 months	6 months	3 months	No delays
Procurement Delay	Average time for procurement of long-lead items	6 months	4 months	2 months	2 weeks

Summarized in Table 4, the objective “increase cultural awareness” is further specified into four components measuring cultural competence: awareness, engagement, attitude, and skills. First, it is crucial for the FMS staff to have adequate cultural awareness to be able to recognize diversity-related values, beliefs, and stereotypes [6]. Engagement primarily focuses on how FMS staff members interact with Saudi officials; these interactions heavily influence the relationship that forms. Attitude relates to openness to differing views and opinions. The level of exposure of an FMS staff member to differing cultures and views can significantly impact their ability to manage conflicting situations. Lastly, an FMS staff member could have all the right characteristics and knowledge but still lack the ability to employ the learning in real-life situations. Therefore, having the experience to transfer knowledge into practice during interactions is key in reducing cultural conflict and misunderstandings. All attributes for increasing cultural awareness use constructed scales except for level of personal skills, which uses a proxy scale.

Table 4. Summary of Measures in the Increase Cultural Awareness Branch

Third-Tier Hierarchy Value	Associated Measure	Lower Bound	Intermediate Lower Level	Middle Level	Intermediate Upper Level	Upper Bound
Staff Engagement	Level of U.S.-Saudi engagement during construction	Very Poor	Poor	Neutral	Good	Very Good
Staff Attitude	Level of openness to differing views and opinions	Very Poor	Poor	Neutral	Good	Very Good
Staff Awareness	Level of understanding for Saudi values and beliefs	Very Poor	Poor	Neutral	Good	Very Good
Staff Skills	Level of personal skills	Very Poor	Poor	Neutral	Good	Very Good

Step 4: Create Value Functions

Since the attributes use varying measurement scales, value functions are used to convert measures to the same scale so that corresponding values vary from zero (least preferred score) to one (most preferred score) over the range of possible scores for a particular measure. For our research, we used piecewise linear functions for all attributes except the three values discussed below. Piecewise linear functions use value increments between each possible impact level. These value increments are derived by comparing each impact level to the impact level with the smallest value increment identified by the decision-makers. Exponential value functions vary depending on whether the preferences are monotonically increasing or decreasing. For our research, synchronous communication was monotonically increasing while project scheduling delays and procurement shipment time were monotonically decreasing.

Step 5: Weight the Hierarchy

We used the trade-off method to determine the hierarchy weights by comparing two imaginary alternatives that provide equal value to the decision-maker. To begin the trade-off method, the analyst asks, “Suppose you can move one of the attributes from its lowest to highest impact level. Which attribute would you move?” The analyst then asks, “If you could not move that attribute, which remaining attribute would you move?” Once the decision-makers ranked the attributes in this manner, we conducted indifference analysis. Consider synchronous and asynchronous communication for example. The analyst asks, “Suppose you could either move asynchronous communication from its lowest impact level (≥ 24 hrs) to its highest impact level (Within 4 hrs) or move synchronous communication from its lowest impact level to an intermediate level. Which intermediate impact level for synchronous communication would make you indifferent between the two options?” Using the hypothetical values for the chosen intermediate impact level of synchronous communication, the highest impact level for asynchronous communication, and the lowest impact level for the remaining nine attributes, we developed an equation to solve for the weight of asynchronous communication with respect to the weight of synchronous communication. This process was repeated for all attributes and the final weights are displayed in Table 5.

Table 5. Calculated Weights for Each Attribute

Attribute	Weight	Attribute	Weight
Synchronous communication	.205	Staff awareness	.102
Asynchronous communication	.123	Punchlist items	.125
Staff engagement	.102	Program fiscal close-out	.125
Indirect communication	.055	Staff attitude	.041
Project scheduling delays	.041	Procurement Shipment Time	.041
Level of personal skills	.041		

RESULTS

Maintaining open communication channels and setting aside time for relationship building is critical for achieving FMS project success in Saudi Arabia. Two of the fundamental objectives relate to culture, and the FMS decision-makers confirmed the importance of cultural competency and cultural awareness. Therefore, we thought it would be useful to discuss the results using Hofstede’s cultural framework which initially comprised four dimensions: power distance, uncertainty avoidance, collectivism–individualism, and masculinity–femininity [13]. A fifth dimension, long-term orientation versus short-term orientation, was added in 1993 [4]. A comparison of the experiences of the FMS decision-makers and Hofstede’s cultural dimensions are summarized in Figure 3 and discussed in the remainder of this section.

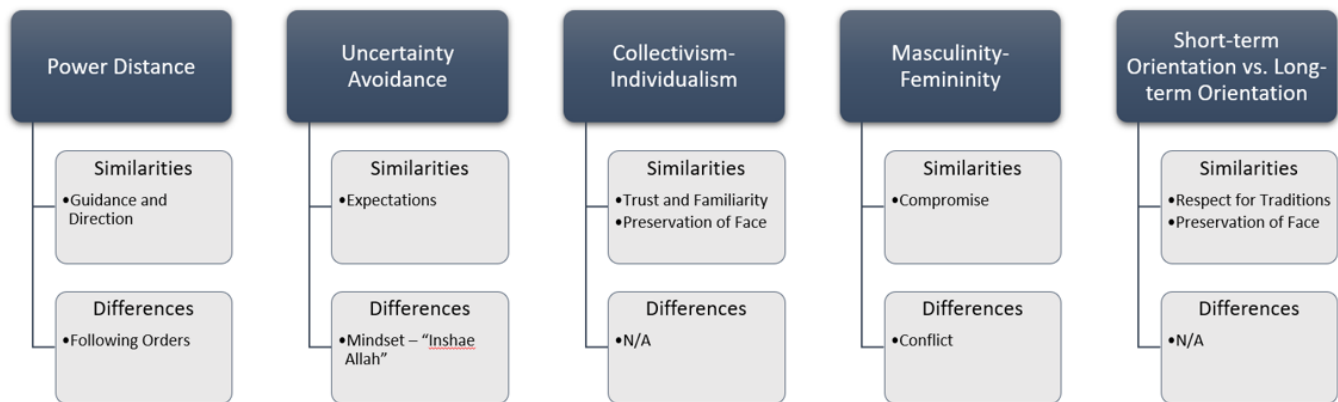


Figure 3. Mapping Hofstede’s Dimensions to Experiences of FMS Decision-Makers

For the power distance and uncertainty avoidance dimensions, the experiences of the FMS decision-makers coincided with Hofstede’s cultural dimensions regarding the importance of providing explicit guidance and direction [3, 22, 30]. The FMS decision-makers believe that providing explicit guidance ensures all parties involved in the construction are in agreement. For the uncertainty avoidance dimension, the FMS decision-makers did not agree with the literature regarding the mindset of “Inshae Allah” [24, 26]; its usage and impact on promoting lackluster effort was not evident during their time in Saudi Arabia.

The collectivism-individualism and short-term oriented versus long-term orientation dimensions proved to be applicable to Saudi Arabia’s current environment. For collectivism-individualism, the importance of building trust, building familiarity, and preserving “face” [3, 22] were all deemed important elements to consider when interacting with RSAF officials and workers. Additionally, the values of short-term oriented societies correspond well with the current value system of Saudis. Respect for Islamic traditions are revered and are always given priority regardless of circumstances [3, 23, 26].

The literature concerning the masculinity-femininity dimension [22, 27, 36] both coincided and differed from the FMS experiences. The FMS decision-makers agreed that compromising plays a huge role in ensuring the desires of RSAF stakeholders are considered. On the contrary, the literature focusing on masculine-natured societies mentioned the risk of

extreme conflict between two masculine parties. However, the FMS decision-makers never experienced anything close to extreme conflict. Negotiations and conflict resolution between RSAF and FMS officials were similar to standard business agreements.

CONCLUSIONS

One of the assertions of this research is that FMS project success depends largely on customer satisfaction. We subsequently identified 4 fundamental objectives and 11 attributes that influence customer satisfaction on construction projects. An underlying theme throughout the research was the importance of culture. Project managers who are culturally aware of the customs, traditions, and value system of host nations are better equipped to meet customer expectations. Additionally, cross-cultural miscommunication can lead to cultural miscues which can further undermine relationships. Therefore, to enhance the cultural competency of FMS personnel, the FMS program must not only focus on understanding common cultural characteristics but also little nuances that can affect customer satisfaction. Building a culturally competent staff will show foreign partners that the FMS program values them and their satisfaction.

Research suggests that U.S. employees tend to impose Western ideals when exposed to other cultures [12, 25]; additionally, business leaders and executives primarily focus on business risks but ignore nonbusiness risks because they are less tangible, more unmanageable, and less understood [15, 22]. Therefore, insight gained from this research is applicable to other settings in which cultural awareness may be important. Being mindful and understanding of differing cultures in areas where international work is conducted can prevent or mitigate most problems that might be encountered during cross-cultural interactions.

DISCLAIMER: The views expressed in this article are those of the writers and do not reflect the official policy or position of the U.S. government, Department of Defense, U.S. Air Force, Air Force Institute of Technology, or U.S. Air Force Academy.

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