

## Antecedents of Value-Based Healthcare Adoption among Healthcare Professionals in the UAE

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### Abstract

#### Background

As the UAE advances towards its Vision 2030 goals for healthcare excellence and sustainability, understanding the factors that influence the adoption of value-based healthcare among healthcare professionals is crucial. Value-Based Health Care aims to shift the focus from volume-driven to outcome-oriented care. Value-based care models are demonstrating the benefits for multiple health care organizations across the geographies. Yet its adoption among health care professionals remains understudied in the UAE region.

#### Objectives

This quantitative study examines the antecedents of value-based healthcare adoption among healthcare professionals in the United Arab Emirates through a structural equation modelling approach.

#### Methods

Integrating the Technology, Organization, Environmental (TOE) framework and Technology Acceptance Model (TAM), we tested a model consisting of four constructs: Awareness of VBHC (AW), Perceived Benefits (PB), Implementation Challenges (IC), and Willingness to Adopt (WA). The data was collected from 32 healthcare professionals across UAE healthcare institutions using a validated 16-item questionnaire on a 5-point Likert scale.

#### Results

The findings reveal that perceived benefits showed a stronger positive effect on willingness to adopt ( $\beta = 0.7207$ ,  $p < 0.001$ ,  $f^2 = 1.1413$ ). Implementation challenges also positively influenced the adoption willingness ( $\beta = 0.3031$ ,  $p = 0.0017$ ,  $f^2 = 0.2762$ ). Surprisingly, awareness of value-based VBHC showed little or no significant relationship with adoption willingness ( $\beta = -0.0372$ ,  $p = 0.7808$ ). The model explained 77.33% of the variance in willingness to adopt.

#### Conclusion

These findings challenge the conventional and theoretical assumptions related to awareness-driven adoption and suggest that professionals' recognition of both benefits and challenges can drive VBHC adoption intentions. The positive effect of implementation challenges demonstrates that professionals who understand the systemic barriers may exhibit greater readiness to change and higher enthusiasm to solve the adoption barriers. Implications of leadership training, digital infrastructure investment and UAE healthcare policy are discussed.

**Keywords:** Value-based healthcare, VBHC adoption, healthcare professionals, UAE healthcare, PLS-SEM, technology acceptance, implementation challenges, perceived benefits

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### 1. Introduction

The United Arab Emirates is one of the Middle Eastern nations where healthcare has rapidly evolved in the last century, with the help of Public and private healthcare services. The system is governed by authorities like the Dubai Health Authority (DHA) and the Health Authority Abu Dhabi (HAAD), which enforce standards related to quality and health policies (Balkhi, 2019; Hussein & Moonesar, 2018).

So far, the country has implemented various reforms specific to the adoption of Digital platforms, healthcare modernization, applying mandatory health insurance to all and increasing primary health reach to remote areas (Pillai et al., 2021; Malaviya et al., 2022). Authorities are striving to increase access to quality healthcare and efficient chronic care management (Jagadeesan, 2022). At the other end, the healthcare system is facing issues related to infrastructure challenges, a lack of qualified healthcare workforce and there are

shortcomings related to the availability of specialized care in rural areas across the Emirates (Al-Ramlawi, 2023; Alqaysi et al., 2024). In addition, health care is expensive, and insurance coverage limitations cause financial burdens for the patients in the region (Malaviya et al., 2022; Elmusharaf et al., 2024).

Value-Based Healthcare was introduced by Michael Porter and Elizabeth Teisberg in the year 2006 and gives importance to the value provided to the patients (Bally et al., 2023; Porter, 2008; Tierney, 2024). VBHC framework highlights the following key principles:

- Patient Care: Maximize the value for patients by evaluating the value of health outcomes gained per dollar spent (Bally et al., 2023; Teisberg et al., 2020; Fernández-Salido et al., 2024).
- Measurement of Outcomes: Outcome measurement is carried out towards the patient journey and should be specific to patient needs (Teisberg et al., 2020; Fernández-Salido et al., 2024; Salvatore et al., 2021).
- Efficiency in cost management: The measurement of costs should be accurate and able to explain the relationship between service delivery and patient outcome (Teisberg et al., 2020; Fernández-Salido et al., 2024; Tierney, 2024).
- Integrated delivery of care: Care needs to be coordinated among the healthcare departments and personnel to meet the needs of patients (Bally et al., 2023; Nat, 2021).
- Reimbursement based on value provided: Payments to the provider should be based on the percentage of value provided to the patients and outcomes that patients gained from the care (Bally et al., 2023; Møller, 2017).

## 1.1. Impact of Value-Based Care on Healthcare Outcomes

The implementation and adoption of Value-Based Healthcare led to various benefits for the organizations:

- Improvement in Clinical Outcomes: Studies revealed that Value-Based Care benefited Chronic disease management and patient satisfaction. For instance, value-based programs related to Kidney care helped in reducing medical complications and improving healthcare management for renal patients (Berman & Lowentritt, 2024).
- Improved Patient Engagement and Satisfaction: Care Management Programs specifically tailored to the needs of patients have proven to improve patient satisfaction and empowerment (Wang et al., 2023).
- Optimized Healthcare Utilization: With the help of Integrated Practice Units (IPU), patients with chronic conditions and older adults can reduce hospital readmissions and receive care from decentralized care centres (Bally et al., 2023; Hoorn et al., 2024).

## 2. Survey of Literature

The Survey of existing literature is undertaken with pre-defined criteria where importance is given to the quality of journals, citation of the articles and the relevance of the researched information to the study of interest. Upon careful analysis and search of information in online databases, the following areas are considered for the study.

### 2.1. Core Components of Value-Based Healthcare

- Outcomes Quantification: The focus of the model is to increase the value that can be gained by the patients during their course of treatment, and the value should be meaningful and matter to the patient's healthcare needs. For instance, quality of life, survival rates and functional efficiency (Teisberg et al., 2020; Fernández-Salido et al., 2024; Salvatore et al., 2021).
- Cost Efficiency: Cost will be considered effective when the resource utilization is optimised to achieve the intended outcomes for the patient (Teisberg et al., 2020; Fernández-Salido et al., 2024). This needs changes in the measurement of costs, and the concepts like

Time Drive Activity Based Costs (TDABC) can be helpful (Tierney, 2024).

- Patient Experience: Healthcare organizations need to accommodate the patient's needs as the centre of care rather than disease management and allow the patients to maintain regular and easy access to communicate with providers managing less wait times and regular evaluation of wait times and regular evaluation of patient satisfaction scores (Bally et al., 2023; Rüter & Meier, 2022).

2.2. Continuous Improvement in Value-Based Concept: The concept of value-based healthcare was introduced by Michael Porter and Elizabeth Teisberg in the year 2008 (Bally et al., 2023; Porter, 2008). From then, the concept has evolved to include integrated care delivery, patient-reported outcomes, and shared decision-making (Rüter & Meier, 2022; Khodakova et al., 2023). Implementation Process of Value-Based Healthcare To implement VBHC, there is a requirement for a coordinated approach among the multiple stakeholders, ranging from healthcare providers, Insurance payers, patients and policy makers. The entire process can be broken down into the following phases:

- Analyze the current process and practices: Healthcare organizations begin reviewing their current workflows and identify the improvements around patient outcomes, resource utilization and cost management (Hefti et al., 2024).
- Collection and Measurement of PROMs and PREMs: Collection of the Patient Reported Outcome Measures and Patient Reported Engagement Measures serves the crucial information to understand patient healthcare needs and targeted care (Schönberger et al., 2024; Rüter & Meier, 2022).
- Care Team Collaboration and Coordination: Multi-disciplinary teams that take care of the unique needs of patients need to be formed and assess the patient needs at regular intervals (Khodakova et al., 2023; O'Donnell et al., 2023).

- Quality Improvement and Enhancement: Since quality improvement is an ongoing process and healthcare organizations must regularly assess the initiatives, measure the care and outcomes and improve the overall service delivery to the patients (Schonberger et al., 2024; Hefti et al., 2024).

### 2.3. Achieving Cost Efficiency Using Value-Based Care Models

Cost efficiency needs to be achieved without impacting the quality of services provided to the patient. Following cost optimization can be achieved using VBHC:

- Reduction in healthcare spending: Reimbursement models such as bundled payment are already proven models for healthcare cost reductions, where payments for patient care will be released in bundles considering the patient recovery and the result of the clinical care (Etges et al., 2023).
- Decreased unnecessary tests and procedures: Subjective assessment and identification of lab investigations and procedures required in the pre-operative phase showed a reduction in the lab and radiology test ordering (Cecconi et al., 2024).
- Optimized resource allocation: Certain higher-value care programs related to anti-microbial usage and controlled medication prescriptions reduced the need for over-prescribing these drugs (Williams et al., 2024).
- Digital health Innovations and solutions: The help of Telehealth and the seamless exchange of health information helped in the reduction of readmissions and saved the cost of hospital consultation and admission (Zhang et al., 2024; Roy, 2022).

### 2.4. Assessment and Measurement of Value-Based Healthcare

Patient Reported Outcome Measures help to assess the outcomes of the patient which matter to the patient. In the Netherlands, PROMs are used to assess the VBHC effectiveness and manage the care process (Bianchi et al., 2023). Also, Patient

Reported Engagement Measures allows to measure the satisfaction levels of the patient. Australia has pioneered using PREMs to assess the satisfaction of patients in Dentistry ([Hegde et al., 2024](#)).

Benchmarking of healthcare was used to compare healthcare services across the organizations, and this was evident in Europe, where benchmarking is used for Breast cancer treatment, which helped in identifying the variations in the treatment and cost allocations ([Garcia-Lorenzo et al., 2023](#)).

Care process-related outcomes related to operations like care coordination and patient wait times are used to evaluate the effectiveness of the Value-Based Healthcare Initiative in Sweden ([Nilsson et al., 2017](#)). Qatar is actively implementing strategies related to cost-effectiveness and resource allocation, and helping the country in saving healthcare costs ([Abdelfadil et al., 2023](#)). UAE Healthcare Challenges The predominant challenge that the UAE healthcare system is facing is the lack of adequate infrastructure and low resources. A gap analysis in Dubai related to healthcare services resulted in a lack of acute care beds, outpatient facilities and an additional need for emergency beds capacity by 2030 ([Monsef et al., 2023](#)). This is more evident in rural areas and remote emirates where there is a lack of acute medical care facilities, intensified by increased population density and higher incidence of chronic care conditions ([Katoue et al., 2022](#))

The implementation of mandatory insurance policies like the Insurance System of Advancing Health in Dubai (ISAHD) to provide universal access to health to citizens and mandated health insurance for expats reduced the out-of-pocket expenses by 13% ([Malaviya et al., 2022](#)). But still, the challenges in the insurance sector are evident in the form of malpractices like overbilling, poor coverage and lack of transparency ([Harichandran, 2023](#); [Voronezhskiy et al., 2024](#)).

Workforce shortages are particularly high in specialized areas and noticeable in primary and palliative care areas due to limited training opportunities and high attrition rates ([Katoue et al., 2022](#)) ([Harhara et al., 2022](#)). For instance, internal medicine residents are not confident in their skills

and require more training in patient treatment modalities ([Harhara et al., 2022](#); [Nijhawan & Al-Shams, 2022](#)).

Non-communicable and chronic conditions, such as diabetes, obesity, and cardiovascular conditions, have a high burden on healthcare costs and resources. This is further complicated due to the lack of health education among residents, improper or delayed referrals and lack of screening programs ([Al-Shamsi et al., 2021](#)). This is due to fragmented care and a lack of integrated care services ([Katoue et al., 2022](#); [Ahmad et al., 2024](#)).

## 2.5. Theoretical Frameworks for the adoption

Understanding the adoption of value-based healthcare requires the theoretical frameworks that clearly explain how individuals and organizations respond to innovative models like value-based care. For the study, three frameworks have been adopted. The Technology Acceptance Model (TAM) was developed by Davis in 1989 and elucidates that perceived usefulness and perceived ease of use are the primary determinants of technology acceptance and usage behaviour. TAM was extensively applied and validated in the healthcare context, such as electronic medical records, telemedicine, and clinical decision support systems ([Bilbâie et al., 2024](#)).

Unified Theory of Acceptance and Use of Technology (UTAUT), which was originally proposed by Venkatesh in 2003, elaborates the TAN by adding additional constructs like Performance expectancy, Effort expectancy, Social influence, and Facilitating conditions ([Venkatesh et al., 2003](#)). UTEA/UTEA was also extensively applied across the healthcare domain, especially in the areas of EMR systems acceptance, healthcare information exchange, and digital health platforms ([Qvist et al., 2024](#); [Mustafa et al., 2022](#)). Empirical findings reveal that performance expectancy and facilitating conditions are the important predictors of adoption, and social influence also plays a moderating role depending upon the professional hierarchy level and organization culture.

The Technology Organization Environment (TOE) framework was originally introduced by Tornatzky

and Fleisher in 1990, which offers a broader perspective by categorising adoption determinants into three different contexts: Technological, Organizational and Environmental areas. TOE was also widely applied in healthcare technology adoption research, like blockchain in healthcare, big data analytics, and enterprise resource planning systems (Bazel et al., 2025; Ghaleb et al., 2023; Reyes et al., 2025). Studies that used the TOE framework consistently noticed the organization factors, like leadership commitment and resource allocation carries important role just like technological factors in influencing the adoption success.

For the context of the value-Based Health Care, frameworks are not such that adoption is not purely based on awareness or technical feasibility. But relies on the perceptions of the health care professionals on the perceived benefits and usefulness of the model and organizational infrastructure, such as facilitating conditions within the hospital, which can support the implementation and the broader policy environment where constant regulatory incentives and peer alignment can act as drivers for the adoption.

## 2.6. Research Gap and Study Rationale

Despite there being an increased interest towards value-based healthcare in the Gulf region, the literature still reveals some of the critical gaps. First, most of the studies that were conducted on the VBHC are either qualitative or descriptive in nature, relying on interviews, focus groups, or case study methods. Even though these methods provide contextual understanding, but did not permit quantitative hypothesis testing. Second, there is a minor set of studies that were developed and validated using the psychometric instruments to measure the adoption of all the healthcare professionals within the VBHC context in the Gulf region. Third, health care professionals' perceptions, such as awareness, pursuit of benefits, and the recognition of implementation challenges, were not systematically studied using quantitative modelling methods like structural equation modelling. Fourth, studies that use multivariate analysis to test the technological, organizational,

and environmental factors were very rare across the literature.

The study addresses these gaps by working on a quantitative model to study the VBHC adoption, which is grounded in the theoretical frameworks like TOE and TAM. We used four constructs: Awareness of VBHC, Perceived benefits, Implementation challenges, and Willingness to adopt through a survey-based questionnaire of 16 items as an instrument. We used PLS-SEM, a variance-based structured equation modelling technique, which is used to study the predictive modelling of complex constructs and modest sample sizes.

## 3. Research Methodology

### 3.1. Research Objectives and Design

Research aims to understand and estimate the significance of relationships among awareness, perceived benefits, implementation challenges, and willingness to adopt VBHC among healthcare professionals. While quantitative methods do provide a richer understanding towards context, they lack in multivariate hypothesis testing. That is the key gap this study aims to address. Quantitative methods assist in hypothesis testing, model comparison, and effect size estimation, which are vital for practical decision-making.

The study adopts the quantitative cross-sectional research with a post-positivist epistemology. Post-Positivist, now let's just consider the complexity in measuring the social phenomenon, but using validated instruments and statistical techniques can help in reliable and practical insights. We aim to test the theoretically grounded hypothesis on the relationships among latent constructs using the empirical data, which were collected through a structured survey instrument.

### 3.2. Conceptual Model and Hypothesis Development

The conceptual model integrates the Technology, Organization, Environment framework (TOE) and the Technology Acceptance model (TAM). Value-based health care adoption is influenced by the behavioural intention, where cognitive perceptions

of the health care professionals act as antecedents. The model comprises four latent constructs:

1. Awareness of VBHC (AW): the extent to which professionals are familiar with the value-based healthcare terminology, principles, concept, and applications. Awareness acts as a precursor for the adoption, which explains the prior exposure to information.
2. Perceived Benefits (PB): related to professional-specific beliefs and perceptions about the advantages of value-based health care, including improved patient care, cost reduction, personalized care, and patient satisfaction. Perceived benefits align with the TAM perceived usefulness construct.
3. Implementation challenges (IC): recognition of barriers related to Value-Based Care Adoption involving resource constraints, workflow integration issues, professional resistance, and ambiguous policies
4. Willingness to Adopt (WA): Healthcare professionals' intentions to adopt VBHC models with the availability of adequate resources and support. Willingness to adopt is the primary outcome variable that reflects the readiness to engage with value-based health care transformation.

### 3.3. Research Hypothesis

Based on the literature search and theoretical frameworks, we propose to test three hypotheses:

H1: Awareness of VBHC (AW) positively influences willingness to adopt value VBHC (WA).

Information and knowledge are crucial for behavioral change. Who understands value-based health care principles and applications, or more positively perceives the model as feasible and vital. Studies related to technology acceptance demonstrate the awareness and knowledge and predict the adoption intentions among professionals (Mustafa et al., 2022; Kruszyńska-Fischbach et al., 2022).

H2: Pursued benefits of VBHC (PB) positively influence willingness to adopt VBHC (WA).

As per the technology acceptance model, perceived usefulness acts as a primary driver for technology acceptance. Professionals who believe that VBHC will improve patient outcomes and reduce costs are more likely to support its adoption. Empirical Studies presents the strong positive effect of pursued benefits on adoption intentions among professionals (Bilbâie et al., 2024; Qvist et al., 2024; Al-Dmour et al., 2025).

H3: Implementation challenges of VBHC (IC) positively influence willingness to adopt VBHC (WA).

This hypothesis is counterintuitive but theoretically grounded. Professionals who recognize the implementation challenges will act more engaged in the transformation process, showcasing a problem-solving orientation and framing the strategies for overcoming the structural barriers. Awareness of challenges can show a deeper understanding and commitment towards a change as opposed to superficial knowledge and enthusiasm. Qualitative studies confirm the argument that professionals who acknowledge the barriers are often the most willing to invest in finding solutions (Engen et al., 2025; Lansdaal et al., 2022).

### 3.4. Instrument Development and Measurement

**Awareness of VBHC (AW):** - AW1: I am familiar with the term Value-Based Healthcare (VBHC). - AW2: VBHC focuses on maximizing patient outcomes relative to healthcare costs. - AW3: I am aware of how VBHC is applied in healthcare settings. - AW4: I have attended or come across training or discussions on implementing VBHC.

**Perceived Benefits (PB):** - PB1: VBHC improves the quality and outcomes of patient care. - PB2: Shifting to VBHC can help in lowering unnecessary healthcare costs. - PB3: VBHC ensures more personalized care tailored to patients' specific needs. - PB4: VBHC leads to higher levels of satisfaction and trust among patients.

**Implementation Challenges (IC):** - IC1: Adopting VBHC requires significant investment in staff training and resources. - IC2: Integrating VBHC systems into existing healthcare workflows is

challenging. - IC3: There is resistance among healthcare professionals and organizations toward shifting from traditional models to VBHC. - IC4: The lack of clear guidance or support from policymakers hinders the adoption of VBHC.

**Willingness to Adopt (WA):** - WA1: I would be willing to adopt VBHC models if adequate training and resources are provided. - WA2: I believe that the healthcare system can successfully transition to VBHC with proper implementation efforts. - WA3: The UAE is open to modifying traditional practices to align with VBHC principles. - WA4: I am confident in my ability to contribute to successfully implementing VBHC initiatives.

The instruments were reviewed by three healthcare management experts and two practicing physicians to ensure the content validity and contextual relevance. Minor adjustments were made post-review to enhance the clarity. A pilot study with five health care professionals confirmed that the items are understandable and the response scale was appropriate.

### 3.5. Sampling and Data Collection

The target population group for the study involves healthcare professionals like physicians, nurses, allied healthcare staff, healthcare IT professionals, and healthcare administrators working at the UAE Health Care Institutions. We employed a convenience sampling method, distributing the survey through professional networks, healthcare organizations, and online platforms. Participation was voluntary and anonymous, with prior informed consent obtained from all respondents before answering the survey.

Data collection was conducted over a four-week period in late 2024. A total of 32 sample responses were collected. While the sample size is modest, it is adequate for PLS-SEM analysis, which showed efficiency with smaller samples and predictive accuracy over parameter efficiency (Hair et al., 2019). The minimum sample size for the PLS-SEM is typically determined by the “10 times rule”, which explains that the sample size should be at least 10 times the maximum number of structural parts but any latent variable in the model. In our

model, the maximum number of paths directed at willingness to adapt is three (from AW, PB, and IC), yielding a minimum required sample of 30. Our sample of 32 makes this threshold.

Respondents' demographics were not recorded to preserve anonymity, but informal feedback provided the representation of multiple healthcare rules and institutions across Dubai and Abu Dhabi. The sample is not probabilistic, hence it does not permit statistical generalization to the entire UAE healthcare workforce. However, the focus is on hypothesis testing and effect size estimation rather than population parameter estimation, which makes the sample appropriate for the study objectives.

### 4. Data Analysis and Results

We employed Partial Least Squares Structural Equation Modelling (PLS-SEM using ADANCO 2.4.1 software). The analysis is performed in two stages: assessment of the measurement model and assessment of the structural model. The measurement model evaluates the reliability and validity of the constructs, ensuring the indicators adequately represent the latent variables. Structural Model tests the hypothesized relationships among constructs, estimating path coefficients, effect sizes, and significance levels.

#### 4.1. Survey Response and Participant Characteristics

Survey responses received with a mix of nurses, physicians, hospital administrators, healthcare IT technicians and allied health professionals like Lab Technicians and Radiology Technicians. The majority of the contribution was received from nurses and healthcare IT Technicians. All of the 16 survey instruments have been answered. The questionnaire is self-explanatory, easy to follow and respond. The average time took to respond to the survey was less than 10 minutes.

#### 4.2. Measurement Model Assessment

Measurement Model Assessment evaluates the reliability and validity of the four constructs. Awareness of VBHC (AW), Perceived Benefits (PB), Implementation Challenges (IC), and Willingness to Adopt (WA). All constructs are



modelled as reflective, which indicates the manifestations of the underlying latent variable.

**4.2.1. Indicator Loadings and Reliability**

All loadings exceed the recommended threshold of 0.70, with the exception of AW2 (0.7031) and IC4 (0.7335), which are marginally acceptable. The loadings indicate that each indicator shares a variance with its respective constructs. The highest

loading was observed for WA2 (0.9367), reflecting the stronger alignment between the indicator and the willingness to adapt construct. The lowest loading is AW2 (0.7031), which suggests that item VBHC focuses on maximizing the patient outcomes relative to cause captures a slightly broader conceptual perspective than the awareness items of the healthcare professionals. Table 1 presents the indicator loadings for each construct.

**Loadings**

Indicator	AW	PB	IC	WA
AW1	0.9087			
AW2	0.7031			
AW3	0.8495			
AW4	0.8308			
PB1		0.8566		
PB2		0.8189		
PB3		0.7802		
PB4		0.9110		
IC1			0.7914	
IC2			0.8203	
IC3			0.8859	
IC4			0.7335	
WA1				0.9181
WA2				0.9367
WA3				0.8757
WA4				0.9279

**Table 1 Indicator Loadings**

**4.2.2. Internal Consistency Reliability**

Internal consistency reliability was assessed using Jöreskog’s composite reliability ( $\rho_c$ ) and Cronbach’s alpha ( $\alpha$ ). Composite reliability ranges from 0.8834 (IC) to 0.9535 (WA), indicating excellent internal consistency. Cronbach alpha

ranges from 0.882 (IC) to 0.9348 (WA), confirming that the indicators within which the construct is highly intercorrelated. High reliability values also suggest that the constructs are measured with a minimum of random error. Table 2 presents the construct reliability.

**Construct Reliability**

Construct	Dijkstra-Henseler's rho ( $\rho_A$ )	Jöreskog's rho ( $\rho_c$ )	Cronbach's alpha( $\alpha$ )
AW	1.0000	0.8953	0.8413
PB	1.0000	0.9074	0.8628
IC	1.0000	0.8834	0.8224
WA	1.0000	0.9535	0.9348

**Table 2 Construct Reliability**

**4.2.3. Convergent Validity**

Convergent validity was assessed using the average variance extracted (AVE), which describes the proportion of indicator variance explained by the construct. Table 3 below explains that all constructs exceeded the 0.50 threshold AW

(0.6830), PB (0.7107), IC (0.6555), and WA (0.8370). High AVE values represent the capability of the constructs to be more different from their indicators than from measurement error. The WA Construct exhibits a high AVE of (0.8370), reflecting the strong coherence of the willingness to adopt items.



**Convergent Validity**

Construct	Average variance extracted (AVE)
AW	0.6830
PB	0.7107
IC	0.6555
WA	0.8370

*Table 3 Convergent Validity*

**4.2.4. Discriminant Validity**

Discriminant validity was assessed using two criteria: the Heterotrait-Monotrait Ratio (HTMT) and the Fornell-Larcker criterion. Table 4 below presents the HTMT values. All values are below 0.90, except for PB-WA (0.9361), which

marginally exceeds the conservative threshold of 0.85 but remains below 0.95. The table shows the perceived benefits and willingness to adopt or conceptually related but empirically different constructs. High correlation is theoretically expected because the pursued benefits act as an antecedent for adoption willingness.

**Discriminant Validity: Heterotrait-Monotrait Ratio of Correlations (HTMT)**

Construct	AW	PB	IC	WA
AW				
PB	0.8199			
IC	0.6577	0.5714		
WA	0.7128	0.9361	0.7182	

*Table 4 Discriminant Validity (HTMT)*

The Fornell-Larcker criterion requires that the square root of each construct’s AVE (shown on the diagonal in Table 5) exceeds its correlations with other constructs. The criteria are satisfied for all constructs, confirming the discriminant validity. The diagonal values (square roots of AVE) are AW

(0.8266), PB (0.8432), IC (0.8097), and WA (0.9149). From the table below, all the diagonal correlations are lower than these values, indicating that each construct shares more variance with its own indicators than with other constructs.

**Discriminant Validity: Fornell-Larcker Criterion**

Construct	AW	PB	IC	WA
AW	0.6830			
PB	0.4879	0.7107		
IC	0.2993	0.2317	0.6555	
WA	0.3996	0.7067	0.3966	0.8370

Squared correlations; AVE in the diagonal.

*Table 5 Discriminant Validity Fornell-Larcker Criterion*

**4.2.5. Multicollinearity**

Variance inflation factors (VIF) are used to examine multicollinearity among indicators. VIF

values are below 5.0, with the highest being 4.6008 for WA2. This confirms the absence of problematic multicollinearity, ensuring that the indicators

contribute unique information to their respective findings. constructs. Table 6 showcases the Multicollinearity

**Indicator Multicollinearity**

Indicator	AW	PB	IC	WA
AW1	3.3104			
AW2	1.3742			
AW3	2.4660			
AW4	2.1141			
PB1		2.3108		
PB2		2.0125		
PB3		1.7476		
PB4		3.2237		
IC1			1.8664	
IC2			1.9854	
IC3			2.6320	
IC4			1.7121	
WA1				4.1306
WA2				4.6008
WA3				2.6889
WA4				4.3070

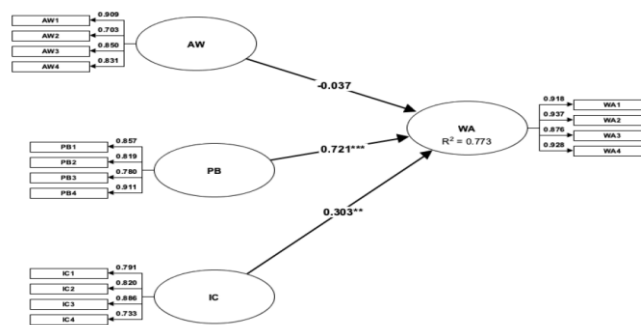
Variance inflation factors (VIF)

**Table 6 Multicollinearity**

The measurement model describes the strong psychometric properties. All indicators load significantly on the respective constructs, internal consistency reliability is excellent, convergent validity is established, and discriminant validity is also confirmed. Measurement model results provide confidence that constructs are measured reliably and validly, supporting further structural model analysis.

**4.3. Structural Model Assessment**

Structural model tests the hypothesized relationships among the constructs. The primary outcome variable is willingness to adopt, which is based on Awareness of VBHC (AW), Perceived Benefits (PB), and Implementation Challenges (IC).



*Figure 1 Structural Equation Model*

**4.3.1. Coefficient of Determination (R<sup>2</sup>)**

The Model explains 77.33% of the variance in the willingness to adopt (R<sup>2</sup> = 0.7733), with an adjusted R-square of 0.7490. This proportion of explained variance indicates that the three antecedent constructs collectively contribute to most of the variation in the adoption willingness.

The higher R-square suggests that the model has a strong predictive power, and the selected antecedents are highly relevant to understanding the VBHC adoption intentions.

**4.3.2. Path Coefficients and Significance**

Table 7 below provides the details related to Direct Effects Inference of Mean value, T-value and 2-sided p-value

1. **AW → WA:**  $\beta = -0.0372$ ,  $t = -0.2783$ ,  $p = 0.7808$  (not significant). Awareness of VBHC does not significantly predict Willingness to Adopt. The negative coefficient, though negligible in magnitude, suggests that awareness alone is insufficient to drive adoption intentions.
2. **PB → WA:**  $\beta = 0.7207$ ,  $t = 4.6847$ ,  $p < 0.001$  (highly significant). Perceived Benefits exert a

strong positive effect on Willingness to Adopt. This is the most influential path in the model, indicating that professionals' beliefs about the positive outcomes of VBHC are the primary driver of adoption willingness.

3. **IC → WA:**  $\beta = 0.3031$ ,  $t = 3.1431$ ,  $p = 0.0017$  (significant). Implementation Challenges also positively influence Willingness to Adopt. This finding is counterintuitive but statistically robust, suggesting that professionals who recognize barriers to VBHC adoption are paradoxically more willing to adopt the model.

**Direct Effects Inference**

Effect	Original coefficient	Standard bootstrap results				
		Mean value	Standard error	t-value	p-value (2-sided)	p-value (1-sided)
AW -> WA	-0.0372	-0.0308	0.1336	-0.2783	0.7808	0.3904
PB -> WA	0.7207	0.7045	0.1539	4.6847	0.0000	0.0000
IC -> WA	0.3031	0.3009	0.0964	3.1431	0.0017	0.0008

*Table 7 Direct Effects Inference*

**4.3.3. Effect Sizes (Cohen's f<sup>2</sup>)**

Effect sizes quantify the substantive importance of each predictor. Cohen's f<sup>2</sup> values are interpreted as small (0.02), medium (0.15), or large (0.35). The results are:

1. **AW → WA:**  $f^2 = 0.0028$  (negligible). Awareness has virtually no practical impact on adoption willingness.

2. **PB → WA:**  $f^2 = 1.1413$  (very large). Perceived Benefits have a substantial impact, far exceeding the threshold for a large effect.
3. **IC → WA:**  $f^2 = 0.2762$  (medium). Implementation Challenges have a moderate but meaningful impact on adoption willingness.

Table 8 describes the effect overview using Cohen f square.

**Effect Overview**

Effect	Beta	Indirect effects	Total effect	Cohen's f <sup>2</sup>
AW -> WA	-0.0372		-0.0372	0.0028
PB -> WA	0.7207		0.7207	1.1413
IC -> WA	0.3031		0.3031	0.2762

*Table 8 Effect Overview*

From these effect sizes, pursued benefits are having a dominant effect on the adoption willingness, while implementation challenges play a secondary role. Awareness contributes negligibly to the model.

**4.3.4. Model Fit**

Model fit was examined using the Standardized Root Mean Square Residual (SRMR), which



measures the average discrepancy between the observed and model-implied correlations. Tesla MR value is 0.1342, which is more than the conventional threshold of 0.08 for a good fit. PL-SEM prioritizes predictive accuracy over model fit, and a higher R-square indicates strong predictive performance. SRMR value suggests some discrepancy between the model and the data, but does not undermine the validity of the path estimates or the conclusions.

**4.3.5. Inter-Construct Correlations**

Table 9 also presents the inter-construct correlations. Perceived benefits and willingness to adopt are highly correlated ( $r = 0.8407$ ). Awareness is moderately correlated with perceived benefits ( $r = 0.6985$ ) and willingness to adopt ( $r = 0.6321$ ), but these bivariate associations do not translate into a significant path coefficient in the multivariate model, showcasing that the effect of awareness is mediated or suppressed by other variables.

**Inter-Construct Correlations**

Construct	AW	PB	IC	WA
AW	1.0000			
PB	0.6985	1.0000		
IC	0.5471	0.4813	1.0000	
WA	0.6321	0.8407	0.6297	1.0000

*Table 9 Inter-Construct Correlations*

**4.4. Hypothesis Testing Results**

**H1: Awareness of VBHC (AW) positively influences Willingness to Adopt VBHC (WA)**

Awareness of value-based health care does not predict adoption willingness in the sample. These findings challenge the conventional assumption that raising awareness is a sufficient strategy for promoting adoption among health care professionals. The path coefficient is negative and non-significant ( $\beta = -0.0372$ ,  $p = 0.7808$ ) in this hypothesis.

**H2: Perceived Benefits of VBHC (PB) positively influence Willingness to Adopt VBHC (WA)**

Pursued benefits are the primary driver for adoption willingness, consistent with the Technology Acceptance Model and prior research on technology acceptance. The path coefficient is large and highly significant ( $\beta = 0.7207$ ,  $p < 0.001$ ,  $f^2 = 1.1413$ ).

**H3: Implementation Challenges of VBHC (IC) positively influence Willingness to Adopt VBHC (WA)**

Professionals who recognize the implementation challenges of EHR are more willing to adopt value-based health care. This suggests that awareness of barriers reflects the deeper engagement and problem-solving approach among health care

professionals. The path coefficient is positive and significant ( $\beta = 0.3031$ ,  $p = 0.0017$ ,  $f^2 = 0.2762$ ).

**5. Discussion**

**5.1. Interpretation of Findings**

The results of this study reveal a counterintuitive pattern of relationships among the antecedents of value-based care adoption. The most remarkable finding is the non-significance of the awareness construct. Even though theoretically, knowledge and familiarity drive the behavioural change, awareness of value-based health care showed no relationship with the willingness to adopt. This further suggests that superficial understanding and exposure towards valuable self-care terminologies and principles are not sufficient to improve the adoption. Professionals may be aware of value-based health care in an abstract sense without incorporating the relevance of the model and its importance to their practice; the action of our insights cannot be materialized.

The findings also criticize the information-deficient models of behaviour change, which assume that providing information can lead to automatic change in attitudes and behaviors. In practice, awareness is a necessary component but not a sufficient condition for adoption. Professionals need to recognize the tangible benefits and feasible pathways of incorporating the model and ideology

into their practice. The high correlation between awareness and pursued benefits ( $r = 0.6985$ ) reveals that awareness may influence adoption indirectly by creating favourable conditions for adoption. But in the multivariate model analysis, pursued benefits fully suppress the effects of awareness, causing the direct path to be non-significant.

Strong positive effect of Pursuit Benefits is in line with TAM and supports the extensive prior research on technology acceptance. Professionals who believe that value-based care will improve patient outcomes, reduce costs, personalize care, and enhance patient satisfaction are highly motivated to adopt the model. The large effect size ( $f^2 = 1.1413$ ) stresses the importance of perceived usefulness in driving adoption intentions. This finding has a clear practical implication, where interventions to promote value-based care adoption should emphasize the concrete evidence-based benefits rather than abstract principles and concepts. In this line of case studies, pilot results, and testimonials from early adopters across the geographies can help professionals to gauge the benefits.

The positive effect of implementation challenges is not in line with theoretical concepts and challenges the conventional wisdom that perceived benefit should deter the adoption, yet the study reveals the opposite. Health care professionals who perceive and understand the challenges, such as training requirements, workflow integration difficulties, policy unfriendliness, and professional resistance, are more willing to adopt value-based health care. This can be further supported in several ways.

First, by recognizing the challenges, professionals may reflect deeper engagement with the transformation process. Professionals who have thought about the criticality of value-based healthcare implementation and its challenges are more likely to have realistic expectations and a problem-solving mindset. They may view the challenges as obstacles that need to be addressed and managed rather than permanent blockers. The second acknowledgement of challenges helps the organization to prepare for the transformation. The

leadership that openly discuss the implementation difficulties helps the professionals to feel more engaged and supported in addressing the barriers. Third, the positive effect may also reflect a selection bias. Professionals who are already inclined to adopt value-based healthcare may be more prepared to manage the implementation challenges because they are already actively considering how to mitigate or prevent the operational challenges. Qualitative research supports this interpretation. (Engen et al., 2025) found that professionals who are more engaged with value-based care implementation are the most transparent about their challenges, considering them as opportunities for problem-solving and organizational learning. Conversely, the professionals who dismiss the value-based care as an impractical model often lack a detailed understanding of implementation requirements. This supports the awareness of challenges and can be considered as an engagement enabler rather than a resistance factor.

## 5.2. Theoretical Contributions

The study offers several contributions to the theory of health care innovation adoption. First, it challenges the notion of information models propose the behavioural changes coupled with awareness. Our findings suggest that awareness is a weak predictor of adoption when perceived benefits and implementation are accounted for. This implies that adoption models should prioritize the factors that focus on the practical implementation and empirical outcomes, like perceived usefulness and perceived feasibility, over mere cognitive aspects like knowledge and familiarity.

The second study extends the TAM by adding the implementation challenges as a predictor for adoption intentions. Traditional TAM aimed at perceived usefulness and perceived ease of use, both of which are considered as facilitators. Our inclusion of implementation challenges reveals that barriers can also have a positive aspect when they are coupled with realistic benefits.

Third, the study demonstrates the importance of integrating the TOE and TAM frameworks. TOE

emphasises organizational and environmental factors, which complement the TAM's focus on acceptance and individual perceptions. By using the implementation challenges as a TOE-derived construct and perceived benefits as a TAM-derived construct, the study showcases that the adoption is shaped by the individual perceptions, beliefs, and system factors. Fourth study provides the empirical perspective by using the PLS-SEM in healthcare adoption research with a modest sample size. PLS-SEM consists of psychometric properties of the measurement and showcases the strong predictive power it can be further explored as a key tool for hypothesis testing in Gulf healthcare settings.

### **5.3. Practical Implications for UAE Health Care**

The findings reveal several actionable implications for UAE health care: policy, change management, and organizational strategy.

#### **5.3.1. Shift from awareness campaigns to benefit realization**

From the study, it is evident that the non-significance of awareness role as a stand-alone factor can bring change. Interventions should move to consider the concrete demonstration and empirical evaluation of value-based health care benefits. Pilot Projects help in understanding the measurable improvements in patient outcomes, cost savings, and care coordination. Collaboration and communication with early adopters and conducting site visits where value-based healthcare implementations help the healthcare professionals to proceed with clarity and confidence.

#### **5.3.2. Invest in organizational infrastructure and support**

The positive effect of implementation challenges suggests the willingness of healthcare professionals to adopt by perceiving the challenges as barriers to overcome. Health care organizations should invest in data infrastructure, training programs and workflow redesigning. Leadership should maintain open communication channels about implementation difficulties and showcase a commitment to support healthcare professionals with the necessary resources.

#### **5.3.3. Align incentives with VBHC principles**

Perceived benefits are the primary drivers for adoption willingness, but these benefits should align with the healthcare professionals' intrinsic and extrinsic motivations. Financial incentives such as outcome-based bonuses, shares, savings, and payments can motivate healthcare professionals to perform and accept the value-based healthcare model. Non-financial incentives, such as recognition, professional development, and providing professional autonomy, can also act as a driver for adoption.

#### **5.3.4. Tailored interventions to professional roles and contexts**

The adoption interventions should be customized to the specific roles, workflows, and concerns of different professional groups. One-size-fits-all approach can lead to dissatisfaction and provider resistance. Role-specific training and tailor-made strategies for each role to adapt to the new model are highly encouraged.

#### **5.3.5. Leverage policy momentum and regulatory frameworks**

UAE policies and its environment are conducive to value-based healthcare adoption. With initiatives such as EJADAH, HTA Units and Vision 2030, which provide the strategic direction for the healthcare organizations to move towards value-based healthcare. Regulatory bodies such as DHA and HAAD can help in incorporating the VBHC principles into the accreditation standards. A clear regulatory framework and policies are very much desirable to promote value-based healthcare in the region, which in turn motivates the organization and organizational leadership.

#### **5.3.6. Foster a culture of continuous improvement and learning**

Health care organizations should promote a culture of continuous improvement, collaboration, and openness to communicate the challenges and best practices within the health care professional roles and teams. The underlying positive effect of implementation challenges can be further utilized to create positive awareness and knowledge

towards value-based healthcare and its implementation challenges.

## 6. *Limitations and Scope for Future Research*

The study has several limitations that should be acknowledged. First, the sample size is modest ( $N = 32$ ), limiting the statistical power and generalizability of the findings. For the PLS-SEM analysis and hypothesis testing, the sample is adequate, but it does not allow subgroup analysis or exploration of moderating effects. Future research should consider a larger sample to study the relationship among the constructs, which might vary by professional role, organization type, and geographic region.

Second, the sample is non-probabilistic, which relies on convenient variables through professional networks. This introduces potential selection bias, and respondents may be more engaged towards value-based health care or more technologically aware than the broader population of UAE health care professionals. The findings should be treated as exploratory and hypothesis testing rather than definitive findings.

Third, the study is cross-sectional in nature. The perceptions and intentions were captured at a specific point in time. Longitudinal studies are needed to examine how constructs such as awareness, perceived benefits, and implementation challenges can evolve and influence the adoption behaviour. The study is also dependent on self-reported data, which might subject it to social desirability bias and common method variance. There is a high possibility that respondents may overstate their willingness to adopt or their recognition of benefits to present themselves. The future research should study the objective measures of adoption behaviour, such as participation in the value-based healthcare initiatives, usage of outcome-measure bundles and the engagement levels in the multidisciplinary care teams. Fourth, the model omitted other potentially important variables such as organizational culture, leadership support, peer influence, prior experience of health care professionals with value-based health care and individual characteristics such as age, gender, tenure, professional identity. Future research

should expand the study of adoption by considering these variables and test the relationship for mediating and moderating effects.

The study is specifically restricted to the UAE context, and findings may not generalize to other Gulf countries or health care systems. This demands studying the factors that influence the adoption among health care practitioners in their specific context. A comparative research across GCC countries would further benefit the role of contextual factors and generalization of the barriers and enablers of adoption.

## 7. *Conclusion*

The study is the first quantitative multivariate analysis of the antecedents of value-based healthcare adoption among healthcare professionals in the United Arab Emirates, to the best of our knowledge. By integrating the Technology Organization Environment Framework and Technology Acceptance Model, we tested a model comprising Awareness of VBHC, Perceived benefits, Implementation challenges and Willingness to adopt. Using Partial Least Squares Structural Equation Modelling with data from 32 health care professionals. We conclude that perceived benefits strongly predict the adoption and willingness. Implementation challenges also exert a positive effect, and awareness shows no significant relationship with the adoption intentions. These findings challenge the conventional and theoretical assumptions about awareness-driven adoption and highlight the importance of showcasing and demonstrating the tangible benefits and addressing system-wide challenges. The positive effect of implementation Challenges helps professionals to recognize the barriers and enables them to prepare to adopt value-based healthcare by taking the responsibility and willingness to solve the adoption issues. The model explains 77.33% of the variance in the willingness to adopt, indicating a stronger predictive power. Study contributes to the literature by integrating the TOE and TAM frameworks and demonstrating the application of PLS-SEM in a Gulf health care context, with region-specific empirical evidence to further guide and inform the

policies and practices. Practical implications of shifting from awareness campaigns to the launch of pilot-based studies, investing in the organizational resources and data infrastructure, aligning the incentives with value-based healthcare principles, tailoring the interventions to the professional role, framing the supportive policies, and creating an environment for continuous learning helps in navigating the challenges and increasing the success of adoption.

Limitations involve modest sample size, non-probabilistic sampling, cross-sectional design, reliance on self-reported data and omission of organizational and environmental factors. Future research should focus on studying the adoption on a much wider sample, involving various professional roles, probabilistic samples, longitudinal studies and incorporating the organizational system factors in the study. Declarations:

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**Consent to Participate:**

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**Consent for Publication:**

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**Availability of Data and Materials:**

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**Clinical Trial Registration:**

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