

## **CENTRALIZED OR FEDERATED DATA MANAGEMENT MODELS, IT PROFESSIONALS' PREFERENCES**

### **Dr. Gholam Ali Shaykhian, NASA**

Ali Shaykhian has received a Master of Science (M.S.) degree in Computer Systems from University of Central Florida and a second M.S. degree in Operations Research from the same university and has earned a Ph.D. in Operations Research from Florida Institute of Technology. His research interests include knowledge management, data mining, object-oriented methodologies, design patterns, software safety, genetic and optimization algorithms and data mining. Dr. Shaykhian is a professional member of the American Society for Engineering Education (ASEE).

### **Dr. Mohd A. Khairi, Najran University**

B.Sc of computer science from Khartoum university. Earned my masters from ottawa university in system science. My doctoral degree in information system from University of Phoenix( my dissertation was in Master Data Management). I worked in IT industry over 20 years, 10 of them with Microsoft in different groups and for the last 4 years was with business intelligence group. My focus was in Master Data Management. For the last 2 years I teach at universify of Najran in the college of Computer Science and Information System . My research interest in Master Data Management.

# CENTRALIZED OR FEDERATED DATA MANAGEMENT MODELS, IT PROFESSIONALS' PREFERENCES

Gholam Ali Shaykhian, Ph.D.

Mohd Abdelgadir Khairi, Ph.D.

## Abstract

The purpose of this paper is to evaluate IT professionals' preferences and experiences with the suitable data management models (Centralized Data Model or Federated Data Model) selection. The goal is to determine the best architectural model for managing enterprise data; and help organizations to select an architectural model. The study compared and contrasted the federated and centralized data models within the context of business and technology requirements using a survey method. Each model is ranked using the following set of applicable factors: cost, schedule, performance, efficiency, limitations, risk, training, operations, compliances, deployment, security, accessibility, dependability, data quality, stability, maintainability, reliability, availability, flexibility, scalability, and predictability.

The survey involved practitioners working in various aspects of enterprise data management and use various MDM tools and technologies for organization's business requirements. IT Professionals have detailed insights and knowledge into the practical aspect of the data management technologies. Therefore, they can identify any gaps or deficiency that may exist with the usage of the data management models.

## Introduction

Business Intelligence (BI) communities within Information Technology (IT) departments strive to select a suitable Data Management (MDM) architectural model that help bridge the gap among their organizations, technologies, and their customers. "Today, master data management (MDM) provides new tools, techniques and governance practices to enable businesses to capture, control, verify and disseminate data in a disciplined fashion. Combined with tools for data quality management, this provides the trusted information foundation that companies base their analytics on" [6]. Wolter and Haselden [7] stated "The pain that organizations are experiencing around consistent reporting, regulatory compliance, strong interest in Service-Oriented Architecture (SOA), and Software as a Service (SaaS) has prompted a great deal of interest in Master Data Management (MDM). The recent emphasis on regulatory compliance, SOA, and mergers and acquisitions has made the creating and maintaining of accurate and complete master data a business imperative" (p. 1).

Enterprise Data Management, an IT discipline, is composed of a set of tools and processes to define enterprise data entities of an organization. Enterprise data management objectives are to organize and manage the organization's enterprise data. This paper focused on the two

architectural models, Centralized and Federated, for enterprise data management implementation. Organizations strive to use one version of the same data in different parts of their operations.

In a Centralized Data Model (CDM), business consolidates enterprise data in one repository [3][4][5]. Using CDM may resolve data duplications, inconsistent master data, and improve data quality. However, implementing CDM may require users to overcome challenges such as geographical locations of the applications, cost of the implementation, and compliance with business rules and regulations.

Federated Data Model (FDM) allows an organization to extend data and business services to inquire data from multiple sources [2]. FDM's goal is to make enterprise data available to all departments and partners of an organization. Yet, implementing FDM comes with many challenges such as synchronization of data between transactional and master data, network connectivity between the sources and MDM hub, performance, maintenance, and identifying roles and responsibilities.

Determining which architectural model is suitable for an organization depends on several factors; including use of the enterprise data, number of applications (domains) that will use the master data [4], development and availability costs, delivery schedule, performance, efficiency, limitations, risk, training, operations, compliances, deployment, security, accessibility, dependability, data quality, stability, maintainability, reliability, availability, flexibility, scalability, and predictability.

An online web survey was made available in multiple MDM communities Wikis and Blogs who work directly with enterprise data; individuals were invited to provide responses anonymously. The online survey questions were related to data management technologies, architectural attributes, and business requirements that influenced the selection of MDM model. The responses from approximately 80 IT Professionals' are further documented in this paper. The study involves IT organizations "how they manage their enterprise data" and to present meaningful data set that pertains to IT organizations. This study focuses specifically on gathering information on fundamental key factors in implementation of an MDM; the key factors (cost, schedule, performance, efficiency, limitations, risk, training, operations, compliances, security, accessibility, dependability, data quality, deployment, stability, maintainability, reliability, availability, flexibility, scalability, and predictability metrics) were presented to experienced IT professionals who have in-depth knowledge of enterprise data management and its importance to an organization.

## **Data Collection**

Participants' responses to the survey (survey data were collected through surveymonkey.com) questions were recorded using a 5-point Likert-type response scale. In analyzing results of Likert – type responses, a median value can be calculated based on a 5 point scale wherein the closer the median is to 5, the more agreement there is to the response. Positively keyed items are phrased so that an agreement with the item represents a relatively high level of the attribute being measured and negatively keyed items are phrased so that an agreement with the item represents a

relatively low level of the attribute being measured. For negatively keyed items on this survey, all 1s were recoded to 5s and all 2s were recoded to 4s. Because the 5-point scale includes 3 as a neutral point, responses that were 3s were not altered. High scores on the negatively keyed items become low scores, indicating that low levels of the attribute were being measured.

**Cost factor:** Table 1 shows the percentage of participants rating the cost factor. Fifty-six (70%) participants choose Centralized Data Model (CDM) compared to six (7.5%) choose Federated Data Model (FDM); 18 (22.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 81.25% of participants responded “Strongly Agree”, 12.5% of participants responded “Agree” and 6.25% of participants responded “Neutral”. The data shows 70% MDM Professionals clearly prefer CDM model in respect to cost factor.

Table 1: *Professionals’ responses to Cost Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	66.7% (4)	33.3% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	92.9% (52)	7.1% (4)	0.0% (0)	0.0% (0)	0.0% (0)
Both	50% (9)	22.2% (4)	22.8% (5)	0.0% (0)	0.0% (0)

**Delivery factor:** Table 2 shows the percentage of participants rating the delivery factor. Fifty-five (68.75%) participants choose Centralized Data Model (CDM) compared to 6 (7.5%) choose Federated Data Model (FDM); 19 (23.75%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 77.5% of participants responded “Strongly Agree”, 12.5% of participants responded “Agree” and 10% of participants responded “Neutral”. The data shows 68.75% MDM Professionals clearly prefer CDM model in respect to delivery factor.

Table 2: *Professionals’ responses to Delivery Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	33.3% (2)	50% (3)	16.7% (1)	0.0% (0)	0.0% (0)
Centralized	89.1% (49)	9.1% (5)	1.8% (1)	0.0% (0)	0.0% (0)
Both	57.9% (11)	10.5% (2)	31.6% (6)	0.0% (0)	0.0% (0)

**Performance Factor:** Table 3 shows the percentage of participants rating the performance factor. Sixty (75%) participants choose Centralized Data Model (CDM) compared to four (5%) choose Federated Data Model (FDM); 16 (20%) believe CDM and FDM have no advantage over

the other. With respect to the MDM Models, 80% of participants responded “Strongly Agree”, 10% of participants responded “Agree”, 8.75% of participants responded “Neutral”, and 1.25 of participants responded “Disagree”. The data shows 75% MDM Professionals clearly prefer CDM model in respect to performance factor.

Table 3: *Professionals’ responses to Performance Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	25.0% (1)	75.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	95.0% (57)	5.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)
Both	37.5% (6)	10.5% (2)	43.75% (7)	4.2% (1)	0.0% (0)

**Efficiency factor:** Table 4 shows the percentage of participants rating the efficiency factor. Sixty-one (76.25%) participants choose Centralized Data Model (CDM) compared to Five (6.25%) choose Federated Data Model (FDM); 14 (17.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 78.75% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 15% of participants responded “Neutral”. The data shows 76.25% MDM Professionals clearly prefer CDM model in respect to efficiency factor.

Table 4: *Professionals’ responses to Efficiency Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	40.0% (2)	20% (1)	40.0% (2)	0.0% (0)	0.0% (0)
Centralized	95.1% (58)	4.9% (3)	0.0% (0)	0.0% (0)	0.0% (0)
Both	21.4% (3)	0.0% (0)	71.4% (10)	7.1% (1)	0.0% (0)

**Limitation factor:** Table 5 shows the percentage of participants rating the limitation factor. Ten (12.5%) participants choose Centralized Data Model (CDM) compared to 10 (12.5%) choose Federated Data Model (FDM); 60 (75%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 21.25% of participants responded “Strongly Agree”, 63.75% of participants responded “Agree” and 15% of participants responded “Neutral”. The data shows 75% MDM Professionals clearly see that CDM and FDM have no advantage over the other in respect to limitation factor.

Table 5: *Professionals’ responses to Limitation Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	50% (5)	50% (5)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	80.0% (8)	20.0% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Both	6.7% (4)	73.3% (44)	20.0% (12)	0.0% (0)	0.0% (0)

**Risk factor:** Table 6 shows the percentage of participants rating the risk factor. Fifty-seven (71.25%) participants choose Centralized Data Model (CDM) compared to Nine (11.25%) choose Federated Data Model (FDM); 14 (17.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 55% of participants responded “Strongly Agree”, 8% of participants responded “Agree” and 13% of participants responded “Neutral”. The data shows 71.25 % MDM Professionals clearly prefer CDM model in respect to risk factor.

Table 6: *Professionals’ responses to Risk Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	33.3% (3)	33.3% (3)	33.3% (3)	0.0% (0)	0.0% (0)
Centralized	89.5% (51)	8.8% (5)	1.8% (1)	0.0% (0)	0.0% (0)
Both	28.6% (4)	0.0% (0)	64.3% (9)	7.1% (1)	0.0% (0)

**Training Factor:** Table 7 shows the percentage of participants rating the delivery factor. Thirteen (16.25%) participants choose Centralized Data Model (CDM) compared to 10 (12.25%) choose Federated Data Model (FDM); 57 (71.25%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 15% of participants responded “Strongly Agree”, 67.5% of participants responded “Agree” and 17.5% of participants responded “Neutral”. The data shows 68.75% MDM Professionals clearly prefer CDM model in respect to delivery factor.

Table 7: *Professionals’ responses to Training Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	40.0% (4)	40.0% (4)	20.0% (2)	0.0% (0)	0.0% (0)
Centralized	53.8% (7)	30.8% (4)	15.4% (2)	0.0% (0)	0.0% (0)

Both	1.8% (1)	80.7% (46)	17.5% (10)	0.0% (0)	0.0% (0)
------	----------	------------	------------	----------	----------

**Operation factor:** Table 8 shows the percentage of participants rating the operation factor. Sixty (75%) participants choose Centralized Data Model (CDM) compared to Five (6.25%) choose Federated Data Model (FDM); 15 (18.75%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 77.5% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 17.5% of participants responded “Neutral”. The data shows 75% MDM Professionals clearly prefer CDM model in respect to operation factor.

Table 8: *Professionals’ responses to Operation Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	60.0% (3)	20% (1)	20% (1)	0.0% (0)	0.0% (0)
Centralized	95% (57)	5% (3)	0.0% (0)	0.0% (0)	0.0% (0)
Both	13.3% (2)	0.0% (0)	86.7% (13)	0.0% (0)	0.0% (0)

**Compliance factor:** Table 9 shows the percentage of participants rating the compliance factor. Sixty-one (76.25%) participants choose Centralized Data Model (CDM) compared to three (3.75%) choose Federated Data Model (FDM); 16 (20%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 76.25% of participants responded “Strongly Agree”, 8.75% of participants responded “Agree” and 15% of participants responded “Neutral”. The data shows 76.25% MDM Professionals clearly prefer CDM model in respect to compliance factor.

Table 9: *Professionals’ responses to Compliance Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	33.3% (1)	66.7% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	93.4% (57)	4.9% (3)	1.6% (1)	0.0% (0)	0.0% (0)
Both	18.75% (3)	12.5% (2)	68.75% (11)	0.0% (0)	0.0% (0)

**Security factor:** Table 10 shows the percentage of participants rating the security factor. Sixty-one (76.25%) participants choose Centralized Data Model (CDM) compared to five (6.25%) choose Federated Data Model (FDM); 14 (17.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 72.5% of participants responded “Strongly Agree”, 12.5% of participants responded “Agree” and 15% of participants responded “Neutral”.

The data shows 76.25% MDM Professionals clearly prefer CDM model in respect to security factor.

Table 10: *Professionals’ responses to Security Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	20.0% (1)	40.0% (2)	40.0% (2)	0.0% (0)	0.0% (0)
Centralized	91.8% (56)	8.2% (5)	0.0% (0)	0.0% (0)	0.0% (0)
Both	5.3% (1)	15.8% (3)	78.9% (10)	0.0% (0)	0.0% (0)

**Accessibility Factor:** Table 11 shows the percentage of participants rating the accessibility factor. Fifty-eight (72.5%) participants choose Centralized Data Model (CDM) compared to 5 (6.25%) choose Federated Data Model (FDM); 17 (21.25%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 72.5% of participants responded “Strongly Agree”, 8.75% of participants responded “Agree” and 18.75% of participants responded “Neutral”. The data shows 72.5% MDM Professionals clearly prefer CDM model in respect to accessibility factor.

Table 11: *Professionals’ responses to Accessibility Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	40.0% (2)	40.0% (2)	20.0% (1)	0.0% (0)	0.0% (0)
Centralized	91.4% (53)	6.9% (4)	1.7% (1)	0.0% (0)	0.0% (0)
Both	17.6% (3)	5.9% (1)	76.5% (13)	0.0% (0)	0.0% (0)

**Dependability Factor:** Table 12 shows the percentage of participants rating the dependability factor. Fifty-six (70%) participants choose Centralized Data Model (CDM) compared to six (7.5%) choose Federated Data Model (FDM); 18 (22.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 75% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 70% MDM Professionals clearly prefer CDM model in respect to dependability factor.

Table 12: *Professionals’ responses to Dependability Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
--	----------------	-------	---------	----------	-------------------



Federated	33.3% (2)	33.3% (2)	33.3% (2)	0.0% (0)	0.0% (0)
Centralized	96.4% (54)	3.6% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Both	22.2% (4)	0.0% (0)	77.8% (14)	0.0% (0)	0.0% (0)

**Data Quality Factor:** Table 13 shows the percentage of participants rating the data quality factor. Sixty-one (76.25%) participants choose Centralized Data Model (CDM) compared to five (6.25%) choose Federated Data Model (FDM); 14 (17.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 76.25% of participants responded “Strongly Agree”, 3.75% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 76.25% MDM Professionals clearly prefer CDM model in respect to data quality factor.

Table 13: *Professionals’ responses to Data Quality Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	20.0% (1)	20.0% (1)	60.0% (3)	0.0% (0)	0.0% (0)
Centralized	96.7% (59)	3.3% (2)	0.0% (0)	0.0% (0)	0.0% (0)
Both	7.1% (1)	0.0% (0)	92.9% (13)	0.0% (0)	0.0% (0)

**Stability Factor:** Table 14 shows the percentage of participants rating the stability factor. Sixty-one (76.25%) participants choose Centralized Data Model (CDM) compared to one (1.25%) choose Federated Data Model (FDM); 18 (22.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 76.25% of participants responded “Strongly Agree”, 3.75% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 76.25% MDM Professionals clearly prefer CDM model in respect to stability factor.

Table 14: *Professionals’ responses to Stability Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	0.0% (0)
Centralized	95.1% (58)	3.3% (2)	1.6% (1)	0.0% (0)	0.0% (0)
Both	16.7% (3)	5.6% (1)	77.8% (14)	0.0% (0)	0.0% (0)

**Maintainability Factor:** Table 15 shows the percentage of participants rating the maintainability factor. Fifty-six (70%) participants choose Centralized Data Model (CDM) compared to seven (8.75%) choose Federated Data Model (FDM); 17 (21.25%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 75% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 18.75% of participants responded “Neutral”. The data shows 56% MDM Professionals clearly prefer CDM model in respect to maintainability factor.

Table 15: *Professionals’ responses to Maintainability Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	57.1% (4)	28.6% (2)	0.0% (0)	14.3% (1)	0.0% (0)
Centralized	94.6% (53)	3.6% (2)	1.8% (1)	0.0% (0)	0.0% (0)
Both	17.6% (3)	0.0% (0)	82.4% (14)	0.0% (0)	0.0% (0)

**Reliability Factor:** Table 16 shows the percentage of participants rating the reliability factor. Fifty-eight (72.5%) participants choose Centralized Data Model (CDM) compared to 0 (0%) choose Federated Data Model (FDM); 22 (27.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 75% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 72.5% MDM Professionals clearly prefer CDM model in respect to reliability factor.

Table 16: *Professionals’ responses to Reliability Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	94.8% (55)	3.4% (2)	1.7% (1)	0.0% (0)	0.0% (0)
Both	22.7% (5)	9.1% (2)	68.2% (15)	0.0% (0)	0.0% (0)

**Availability Factor:** Table 17 shows the percentage of participants rating the availability factor. Twelve (15%) participants choose Centralized Data Model (CDM) compared to three (3.75%) choose Federated Data Model (FDM); 65 (81.25%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 18.75% of participants responded “Strongly Agree”, 61.25% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 15% MDM Professionals clearly prefer CDM model in respect to availability factor.

Table 17: *Professionals' responses to Availability Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	100.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	66.7% (8)	25.0% (3)	8.3% (1)	0.0% (0)	0.0% (0)
Both	6.2% (4)	70.8% (46)	23.1% (15)	0.0% (0)	0.0% (0)

**Flexibility Factor:** Table 18 shows the percentage of participants rating the Flexibility factor. Eleven (13.75%) participants choose Centralized Data Model (CDM) compared to six (7.5%) choose Federated Data Model (FDM); 63 (78.75%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 20% of participants responded “Strongly Agree”, 60% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 13.75% MDM Professionals clearly prefer CDM model in respect to Flexibility factor.

Table 18: *Professionals' responses to Flexibility Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	100.0% (6)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	63.6% (7)	27.3% (3)	9.1% (1)	0.0% (0)	0.0% (0)
Both	4.8% (3)	71.4% (45)	23.8% (15)	0.0% (0)	0.0% (0)

**Scalability Factor:** Table 19 shows the percentage of participants rating the scalability factor. Fifty-five (68.75%) participants choose Centralized Data Model (CDM) compared to Six (7.5%) choose Federated Data Model (FDM); 19 (23.75%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 75% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 68.75% MDM Professionals clearly prefer CDM model in respect to scalability factor.

Table 19: *Professionals' responses to Scalability Factor*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	66.7% (4)	33.3% (2)	0.0% (0)	0.0% (0)	0.0% (0)

Centralized	94.5% (52)	3.6% (2)	1.8% (1)	0.0% (0)	0.0% (0)
Both	21.1% (4)	0.0% (0)	78.9% (15)	0.0% (0)	0.0% (0)

**Predictability Factor:** Table 20 shows the percentage of participants rating the Predictability factor. Fifty-four (67.5%) participants choose Centralized Data Model (CDM) compared to 6 (7.5%) choose Federated Data Model (FDM); 20 (25%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 75% of participants responded “Strongly Agree”, 5% of participants responded “Agree” and 20% of participants responded “Neutral”. The data shows 67.5% MDM Professionals clearly prefer CDM model in respect to Predictability factor.

Table 20: Professionals’ responses to Predictability Factor

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	50.0% (3)	50.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	96.3% (52)	0.0% (0)	3.7% (2)	0.0% (0)	0.0% (0)
Both	25% (5)	5% (1)	70% (14)	0.0% (0)	0.0% (0)

**Deployment Factor:** Table 21 shows the percentage of participants rating the Deployment factor. Fifty-three (66.25%) participants choose Centralized Data Model (CDM) compared to nine (11.25%) choose Federated Data Model (FDM); 18 (22.5%) believe CDM and FDM have no advantage over the other. With respect to the MDM Models, 72.5% of participants responded “Strongly Agree”, 8.75% of participants responded “Agree” and 18.75% of participants responded “Neutral”. The data shows 66.25% MDM Professionals clearly prefer CDM model in respect to Deployment factor.

Table 21: Professionals’ responses to Deployment Factor

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Federated	44.4% (4)	55.6% (5)	0.0% (0)	0.0% (0)	0.0% (0)
Centralized	96.2% (51)	1.9% (1)	1.9% (1)	0.0% (0)	0.0% (0)
Both	16.7% (3)	5.6% (1)	77.8% (14)	0.0% (0)	0.0% (0)

## Summary

This paper focused on reporting IT professionals' preferences in selecting a data management model. The results of the survey analysis shows that centralized data management is preferred in Delivery, Performance, Efficiency, Limitations, Risk, Operation, Compliance, Security, Accessibility, Dependability, Data Quality, Stability, Maintainability, Reliability, Scalability, Predictability, and Deployment factors. The analysis shows federated data management is preferred in Availability, and Flexibility factors. Developing the right model for managing enterprise data is important, and tackling the problems with controlling all corporate master data under one system is necessary for any organization [1].

## References

- [1] Garbellotto, G. (2007). The data warehousing disconnect. *Strategic Finance*. 89(4) 59-61. Retrieved from EBSCOHOST Database.
- [2] Madhukar, N. (2009, June 24). Federated MDM data domains - A Perspective. Retrieved from [http://www.infosysblogs.com/customer-relationship-management/2009/06/federated\\_mdm\\_data\\_domains\\_a\\_p\\_1.html](http://www.infosysblogs.com/customer-relationship-management/2009/06/federated_mdm_data_domains_a_p_1.html)
- [3] Moseley, M. (2009). Choosing the optimal multidomain MDM Architecture. *www.information-management.com*. Advance online publication. Retrieved from [www.information-management.com/specialreports/2009\\_158/multidomain\\_mdm\\_master\\_data\\_management\\_centralized\\_-10015900-1.html](http://www.information-management.com/specialreports/2009_158/multidomain_mdm_master_data_management_centralized_-10015900-1.html)
- [4] Moseley, M. (2009). Eliminating Data Warehouse Pressures with Master Data Services and SOA. *Business Intelligence Journal*, 14(2), 33-43
- [5] Moseley, M. (2009, October 15). Part 7: Centralized Models: Complete but Expensive. [Web log message]. Retrieved from <http://blog.initiate.com/index.php/2009/10/15/part-7-centralized-models-complete-but-expensive/>.
- [6] Tapscott, D. (2008). *Business Intelligence: Actionable Insights for Business Decision Makers*. Retrieved from [http://www.businessobjects.com/campaigns/forms/q109/apj/everyone/tapscott/BI\\_for\\_Decision\\_Makers.pdf](http://www.businessobjects.com/campaigns/forms/q109/apj/everyone/tapscott/BI_for_Decision_Makers.pdf)
- [7] Wolter, R., & Haselden, K. (2008). The What, Why, and How of Master Data Management. *msdn.microsoft.com*. Advance online publication. Retrieved from [msdn.microsoft.com/en-us/library/bb190163.aspx](http://msdn.microsoft.com/en-us/library/bb190163.aspx)