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## **Integrated Management Systems maturity: Drivers and benefits in Indian SMEs**

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### **1. Introduction**

In this ever-growing competitive market, high quality standards and environmental performance have become order qualifying attributes for firms across the world. To manage such pressures, firms have been adopting various Management Systems which are a set of interacting elements of an organization to establish policies and objectives, and processes to achieve those objectives (ISO 9000:2015). A firm's management system may address a single discipline or several disciplines, such as a Quality Management System (QMS), an Environmental Management System (EMS) and Health and Safety Management System (ISO 9000: 2015). Further, management standards refer to the documents that state the requirements and guidelines to be followed in establishing and following a particular management system (ISO, 2018). Unfortunately, firms interested in implementing management systems are burdened by the presence of innumerable standards and various standardization bodies. In the world of mushrooming management system standards, there might be at least one management system standard for each stakeholder (Karapetrovic, 2002).

International Organization for Standardization (ISO) provides the most widely accepted quality and environmental management certifications, among other things (Vivanco et al., 2019). ISO 9001:2015, details the conditions for establishing a QMS. QMS came into existence owing to the necessity to control product quality and to establish standard procedures and routines in order to ensure the quality of operations in the firm. Similarly, the objective of an EMS is, therefore, to introduce firms to a systematic method of managing environmental activities and to develop services and products. This aid firms in reducing industrial environmental footprint to sustainable levels (Mazzi, 2020; Hoekstra and Wiedmann, 2014). Thus, EMS helps in achieving better environmental performance which not only improves business performance (Mazzi et al., 2016) but also leads to sustainable material system (Olivetti

1 and Cullen, 2018) and supply chain performance (Buyukozkan and Karabulut, 2018; Rourke,  
2 2014). The recently updated versions of ISO 9001:2015 and, ISO 14001:2015 follows a  
3 common high-level structure (HLS) and promotes integrations with other systems.

4 Referring to ISO 9001, ISO 14001, and OHSAS 18001, the Chairman and CEO of  
5 SatiStar Corp. quoted<sup>1</sup>:

6 *“Traditionally, the big three certifications are handled separately by different groups within*  
7 *the organization...This is despite the fact that 65 percent of the compliance process is the*  
8 *same for each standard, creating a huge and unnecessary amount of redundant activity.”*

9 Given the presence of numerous industry-specific standards, to achieve efficiencies in  
10 operations by leveraging commonality, the concept of an Integrated Management System  
11 (IMS) has gained prevalence (Vivanco et al., 2019). Firms with multiple management systems  
12 in place, consider IMS as an efficient way to manage them and in turn to exploit related  
13 synergies (Wiengarten et al., 2017; Karapetrovic and Casadesu's, 2009; Douglas and Glen,  
14 2000).

15 Despite the presence of similar HLS in the recently updated management systems, the  
16 process of integration of these systems are not similar across the different sized organizations.  
17 Best practices and policy suggestions in the domain of IMS cannot be extended to Small and  
18 Medium Enterprises (SMEs) as they possess different characteristics in practice (Llonch et al.,  
19 2018). The mismatch in the policy-making procedure, organizational structure, and  
20 employment of resources exist to the extent that the implementation of larger enterprise  
21 concepts directly to SMEs might even lead to negative consequences (Welsh and White, 1981).

22 SMEs play an important role in contributing towards the macro-economic wellbeing of  
23 nations across the world as they account for a high proportion of jobs, industries, and GDP,  
24 especially in emerging economies (Chakraborty et al, 2019). For instance, SMEs in India  
25 account for 95% of the industrial units, 45% of the industrial output, 40% of export and around  
26 38% of the GDP (MSME annual report, 2015). Owing to the stiff competition from large  
27 multinational corporations and ever-changing business settings, SMEs invest in management  
28 systems to improve customer satisfaction, improve innovativeness and productivity (Sadikoglu

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<sup>1</sup> <https://www.qualitydigest.com/inside/management-article/primetime-integrated-management-systems-022818.html>

and Zehir, 2010), change the culture (Prajogo and McDermott, 2005) and thus gain sustained competitive advantage (Curkovic et al., 2000).

However, our primary investigation has revealed that the procedures of IMS implementation varied across SMEs resulting in differential levels of integration of the management systems in SMEs (Llonch et al., 2018; Abad et al., 2014). Also, various constraints, strategy used for integration or the particular order in which management systems have been integrated (Labodova, 2004; Karapetrovic, 2002), motivation (Rebelo et al., 2014; Zeng et al., 2007) and challenges faced while implementing IMS (Simon et al. 2013; Fresno, 2010) condition the level of integration of management systems. The extent to which different elements of various management systems are integrated, also known as the IMS maturity level, has an impact on the operational performance of the firm (Bernando et al., 2012).

Owing to the importance and unique characteristics of SMEs and the importance of IMS in SMEs, we explore answers for the following research questions (RQ):

***RQ1: What factors impact the IMS Maturity of SME Firms?***

***RQ2: What is the impact of IMS Maturity on the Operational Performance of SME Firms?***

While IMS is not a new concept, an in-depth investigation on this topic remains unexplored and under-researched, especially in developing country SMEs (Llonch et al., 2018; Ballester and Simon, 2017). Extant literature also did not explore a comprehensive framework involving motivation, challenges, and benefits of IMS maturity (Gianni et al., 2017; Khanna et al., 2010). Table 1<sup>2</sup> below indicates the extent of research on this topic and the gaps that we fill by studying the impact of antecedents of IMS implementation on IMS maturity level and its impact on Operational Performance in SMEs. We use the Theory of Planned Behavior to develop the conceptual framework which is empirically evaluated using primary data from Indian SMEs.

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<sup>2</sup> While there are other articles which discuss about IMS implementation, we restricted the representation of the articles in the table to those which primarily deliberate about at least one of the constructs of interest in this study.

**Table 1:** Overview of related literature

Article	Description	Type of Research	Method	Context	SME (Y/N)	Motivation	Challenges	IMS Maturity	Performance
Zeng et al., (2007)	Examined the factors that affect IMS implementation and proposed multi-level synergy model for effective implementation of IMS	Qualitative	Survey	China	N	✓	✓		
Santos et al., 2011	Identified benefits, drawbacks and difficulties associated with IMS implementation in Portuguese SMEs	Qualitative	Survey	Portugal	Y		✓		
Simon et al., 2012	Analyzed the evolution of the implementation and integration of standardized Management Systems	Qualitative	Survey	Spain	N		✓		
Fresner and Engelhardt, 2004	Discussed two case studies that demonstrated the experience of two SMEs with IMS	Qualitative	Case Study	Austria	Y	✓			
Oliveira, 2013	Proposed guidelines for IMS implementation in industrial companies on the basis of fourteen case studies	Qualitative	Case Study	Brazil	N	✓	✓		
Simon and Douglas, 2013	Discussed how the location of companies impact the integration of MSSs	Quantitative	Case Study	UK, Spain	N	✓	✓		
Bernando et al., 2012	Analyzed whether the order of MSSs implementation in an organization determines the level of integration of its standardized MSSs.	Quantitative	Survey	Spain	N			✓	
Ballester and Simon, 2017	Examined whether the implementation of IMS and the integration level of its elements bring benefits and/or challenges to companies and whether these are related to corporate financial performance	Quantitative	Survey	Spain	N	✓	✓		✓

Bernando, 2014	Proposed a model to analyze the relationship between the integration of MSs and the innovation management performance.	Qualitative	Theoretical Model				✓	✓	✓	✓
Savino and Batbaatar, 2015	Investigated the core resources that can give IMS a potential basis to improve operational performance	Quantitative	Survey	Italy	Y					✓
Llonch et al., 2018	Analyzed the simultaneous implementation of IMS in a SME and its impact on costs	Qualitative	Case Study	Spain	Y				✓	✓
Present Study	Examines the impact of antecedents such as motivation and challenges on IMS maturity and its subsequent impact on the operations performance of SMEs	Quantitative	Survey	India	Y	✓	✓	✓	✓	✓

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The results from our study indicate that while intrinsic motivation of firms has a positive impact on the level of IMS maturity, extrinsic motivation has a negative impact on the same. Higher levels of IMS Maturity are found to lead to higher operational performance. In the next section, we theoretically develop our hypotheses by engaging relevant extant literature.

## **2. Theory and Hypotheses Development**

### **2.1 Motivation**

Theory of Planned Behavior (TPB) (Ajzen, 1991) acts as a foundation for developing our hypotheses and conceptual framework. TPB links the beliefs and behavior of an individual and suggests that an individual's behavioral intentions are shaped by the attitude towards that behavior, subjective norms and perceived behavioral control (Ajzen, 1991). While, TPB links the motivation and behavior of an individual and this research focuses on the link between a firm's motivation and challenges and IMS implementation, the authors find TPB as a suitable choice for theoretical explanations (Uhlener et al., 2012; Marcati et al., 2008) as the choice of implementation of a program such as IMS is driven primarily by the top management and the locus of control in an SME is centralized.

The factors that predict the intention to perform a given behavior (Ajzen, 2002; Ajzen, 1991) are discussed below:

1. *Attitude towards the behavior* is the extent to which an individual has a favorable or unfavorable evaluation of the behavior under study. Attitude towards the behavior comprises of instrumental (e.g., beneficial/harmful) and affective (e.g., enjoyable/unenjoyable) evaluations toward a behavior.
2. *Subjective norms* represent the perceived social pressure to perform or not to perform the behavior in question. Subjective norms are composed of a descriptive component (whether one's social network performs a behavior) and an injunctive component (e.g., whether one believes their social network wants them to perform the behavior).
3. *Perceived behavioral control* represents the perceived difficulty or ease of performing the behavior under study. Also, it is assumed to reflect previous experiences and anticipated obstacles related to the behavior. Perceived behavioral control is composed of controllability (e.g., personal control over behavior, appraisal of whether the behavior is completely up to the actor) and self-efficacy (e.g., ease/difficulty, confidence).

1           The factors that drive SMEs to integrate management systems can be directly linked to  
2 the three factors that predict an individual's behavioral intentions. The intrinsic motivation of  
3 firms to adopt IMS can be considered tantamount to the attitude towards the behavior, while  
4 external motivation is like Subjective norms experienced by an individual. Perceived  
5 behavioral control can be commensurate with the challenges faced by SMEs in integrating the  
6 management systems.

7           The Management systems implementation literature classifies motivation into internal  
8 and external motivation (Dahlin and Isaksson, 2017; Prajogo, 2011) which are discussed in the  
9 following sub-sections.

### 10 ***2.1.1 Extrinsic Motivation***

11 Extrinsically motivated SMEs implement IMS due to pressure from customers (mostly large  
12 firms with high bargaining power) (Dahlin and Isaksson, 2017; Rebelo et al., 2014; Zeng et al.,  
13 2007), society and/or government (to meet regulations) (Bernando et al., 2015; Leopoulos et  
14 al., 2010). Also, additional pressure to implement IMS arises from the need to match  
15 competitor's actions in an uncertain business environment (Dahlin and Isaksson, 2017;  
16 Sampaio et al., 2009) and to enhance legitimacy for gaining preferred supplier status (Vilchez  
17 and Darnall, 2016). These SMEs mostly implement IMS just to comply with the regulatory  
18 requirements or to fulfil customer expectations, as the underlying motivation is to react to the  
19 subjective norms. These pressures suggest highly positive injunctive (pressure from customer,  
20 society, and government) and descriptive (pressure from competitors and to comply with  
21 regulation requirements) norms. Therefore, IMS implementation carries an overall positive  
22 normative belief and subjective norm. Although there is a positive normative belief to  
23 implement IMS in extrinsically motivated firms, the level of integration is still low due to the  
24 lack of a positive attitude towards implementing IMS. These SMEs display a negative affective  
25 attitude towards IMS implementation as they may feel management systems as an  
26 encumbrance (Sammalisto, 2001). Due to this burden, these SMEs generally perceive the  
27 behavioral control to be less over the IMS implementation (Ivanova et al., 2014; Simon et al.,  
28 2013) in the firm. This results in loss of controllability and self-efficacy as these SMEs get  
29 dependent on external agents and it further reduces the perceived control over the integration  
30 process. These SMEs exhibit a negative instrumental attitude, which leads to an overall  
31 negative attitude towards the integration of management systems. As a result, the IMS maturity



level will have a negative impact and the integration of the standards will only be at a surface level. Therefore, we hypothesize that:

***H1: Extrinsic motivation to implement IMS will have a negative impact on IMS maturity level***

### **2.1.2 Intrinsic Motivation**

Actions that are environment-friendly and improve the quality of a product or service carry a positive normative belief. Therefore, integrating management systems is widely promoted as a positive behavior. Also, intrinsically motivated SMEs show a strong and positive instrumental attitude as these SMEs are committed to developing process and knowledge throughout the firm to achieve a culture where reduced errors (Vilchez and Darnall, 2016; Sampaio et al., 2010; Arifin et al., 2009), improved employee efficiency (Savino and Barbaatar, 2015; Khanna et al., 2010), and better performance (Zahid and Ghazali, 2017; Rebelo et al., 2014; Zeng et al., 2007) are an outcome. Internal motivation helps organizations to continuously improve their management systems rather than maintaining them at a minimum level of compliance achieved through external motivation (Nair and Prajogo, 2009). Internal motivation fosters a culture within the SMEs, whereby IMS implementation receives support from top management (Zahid and Ghazali, 2017; Simon et al., 2013), all the employees are aware of the goals and objectives of IMS and the management systems are integrated at procedure and process level. This makes the process pleasant for the employees ensuring positive affective attitude toward IMS which in turn results in a highly positive overall attitude towards integrating management systems. These SMEs generally perceive high behavioral control over the IMS implementation as both, the top management and the employees are highly involved in the integration process. This results in high confidence (self-efficacy) and better controllability in comparison with extrinsically motivated SMEs.

The positive attitude towards implementing IMS coupled with positive subjective norms and high perceived behavioral control shape the intentions of intrinsically motivated SMEs to integrate the management systems indicating high willingness and efforts to implement IMS. This strong intention to integrate management systems leads to a higher level of integration. Thus, we hypothesize that:

***H2: Intrinsic motivation to implement IMS will have a positive impact on IMS maturity level***

## **2.2 Challenges**

1 Perceived behavioral control dictates the likelihood of behavioral achievement along with the  
2 actual behavioral controls such as resources and opportunities available to a person. These  
3 behavioral controls have an impact on the intentions and the action towards a behavior (Ajzen,  
4 1991).

5 In the context of IMS implementation, challenges faced while integrating management  
6 systems determine the behavioral control and governs the IMS maturity level. Higher the  
7 challenges, lower the behavioral control and lesser the intention to integrate management  
8 systems. The IMS maturity is dependent on the challenges faced while implementing IMS such  
9 as continuous change of regulations and guidelines (Dahlin and Isaksson, 2017; Santos et al.,  
10 2011; Fresno, 2010), high costs (Simon et al., 2013; Bernardo et al., 2012; Douglas and Glen,  
11 2000), high time investment (Bernardo et al., 2015; Simon et al., 2013; Santos et al., 2011) and  
12 excessive paperwork (Simon et al., 2013, 2011). The continuous change in guidelines reduces  
13 the controllability of the SMEs over the integration process which results in lower levels of  
14 integration. Similarly, the SMEs that perceive IMS implementation as a practice that involves  
15 high cost and time investment and excessive paperwork are likely to have lesser control over  
16 the integration process due to less confidence and high perceived difficulty resulting in reduced  
17 self-efficacy. The lack of control and higher perceived difficulty leads to reduction in perceived  
18 behavioral control which has a negative effect on the intention to integrate management  
19 systems. Thus, we hypothesize that:

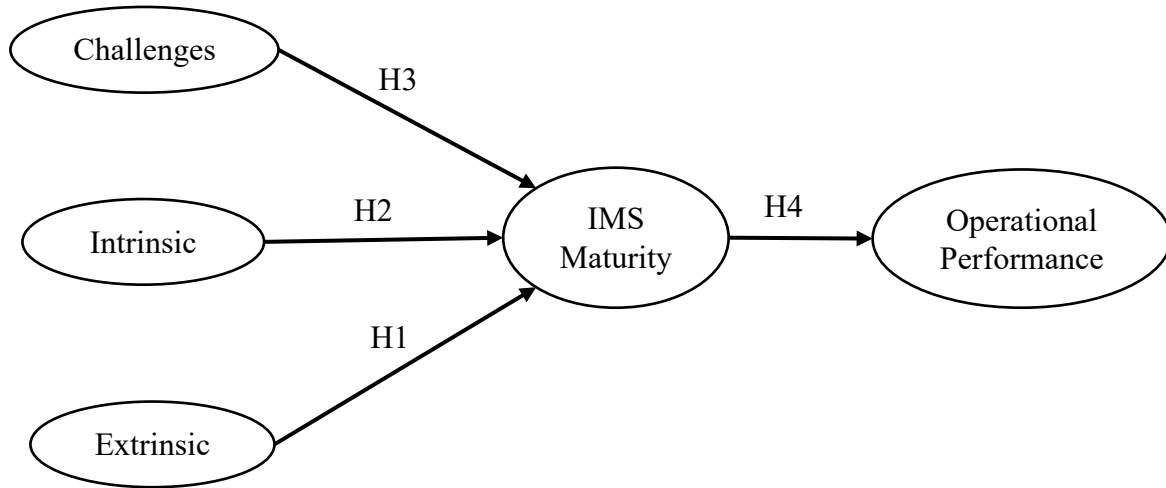
20 ***H3:** Challenges to implement IMS are negatively associated with IMS maturity level*

## 21 **2.3 IMS Maturity and Operational Performance**

22 IMS implementation has several benefits such as reduction in number of internal and external  
23 audits (Rebelo et al., 2014a; Rebelo et al., 2014b; Simon et al., 2012), elimination of waste at  
24 bureaucracy level (Zahid and Ghazali, 2017; Santos et al., 2011; Fresno, 2010), higher  
25 employee motivation and performance (Dahlin and Isaksson, 2017; Bernardo, 2014; Oliveira,  
26 2013; Khanna et al., 2010), better communication (Rebelo et al., 2014b; Santos et al., 2011),  
27 elimination of conflict between system and employees (Simon et al., 2012; Fresno, 2010) etc.  
28 These benefits help SMEs develop difficult to imitate capabilities such as extremely effective  
29 and efficient operations (Niculae and Ionescu, 2020; Simon et al., 2012; Santos et al., 2011;  
30 Fresno, 2010). These in long run will help SMEs gain a sustainable competitive advantage.  
31 Thus, we hypothesize that:

32 ***H4:** IMS maturity level is significantly and positively associated with operational performance*

The impact of intrinsic motivations, extrinsic motivation, and challenges on the IMS maturity level and its subsequent impact on operational performance is shown in the pictorial form in Figure 1 along with the respective hypothesis.



**Figure 1: Conceptual Model**

### 3. Methodology

According to Yin (2003), the choice of research strategy should consider three conditions: the type of research questions, the extent of control an investigator has over the actual behavior events and the degree of focus on contemporary as opposed to historical events. In this study, the research questions were mainly confirmative in nature. The study focuses on the contemporary small and medium economy and integrated management system implementation and the investigator has no control over these events. Thus, survey research was found apt for this study. In order to analyze the data and test the research hypotheses specified in the conceptual model a Confirmatory Factor Analysis (CFA) followed by a Covariance Based-Structural Equation Modelling (CB-SEM) was done (Hair et al., 1998).

Initially, the various challenges and motivations for IMS implementation were identified from the existing literature on IMS (Table 2). This helped in identifying the antecedents for IMS implementation and in order to validate the findings, in-depth discussions (six in-depth face-to-face interviews, of duration ranging from 30 minutes to 50 minutes) were held with the experts in the field. These in-depth discussions were conducted with the owners or quality managers in SMEs (certified to both, ISO 9001, and ISO 14001) in order to confirm and explore additional motivations and limitations of IMS implementation in SMEs, if any. Also, during the interviews the questionnaire was discussed in detail to ensure construct

1 validity. These initial discussions with the experts helped avoid any bias and to assess the  
2 content validity of the survey instrument we designed.

### 3 **3.1 Instrument and Measures**

4 The first section of the survey questionnaire captured the demographics of the firm while the  
5 second section was aimed at identifying the most significant motivations and challenges for  
6 implementing IMS. The next section recorded the responses on the variables measured using  
7 reflective items on a five-point Likert scale to test the relationship between motivation,  
8 challenges, IMS maturity level and performance in SMEs. The four constructs measured and  
9 tested in the study are: motivations (intrinsic and extrinsic) to implement IMS in SMEs,  
10 challenges faced while implementing IMS in SMEs, IMS maturity in terms of goals,  
11 documentation, and procedure and operational performance in SMEs. Significant  
12 modifications were made to the questionnaire based on the feedback obtained from experts in  
13 academia and professionals in SMEs practicing IMS. The experts checked the questionnaire  
14 for reliability threats such as observer bias and error, participant error and bias (Robson and  
15 McCartan, 2016). They also provided feedback on the presentation and structural aspects of  
16 the questionnaire. After the pilot exercise with academic and industry experts (Forza, 1996),  
17 the researchers modified the questionnaire in order to improve clarity and understanding.

**Table 2:** Construct definition with descriptive statistics

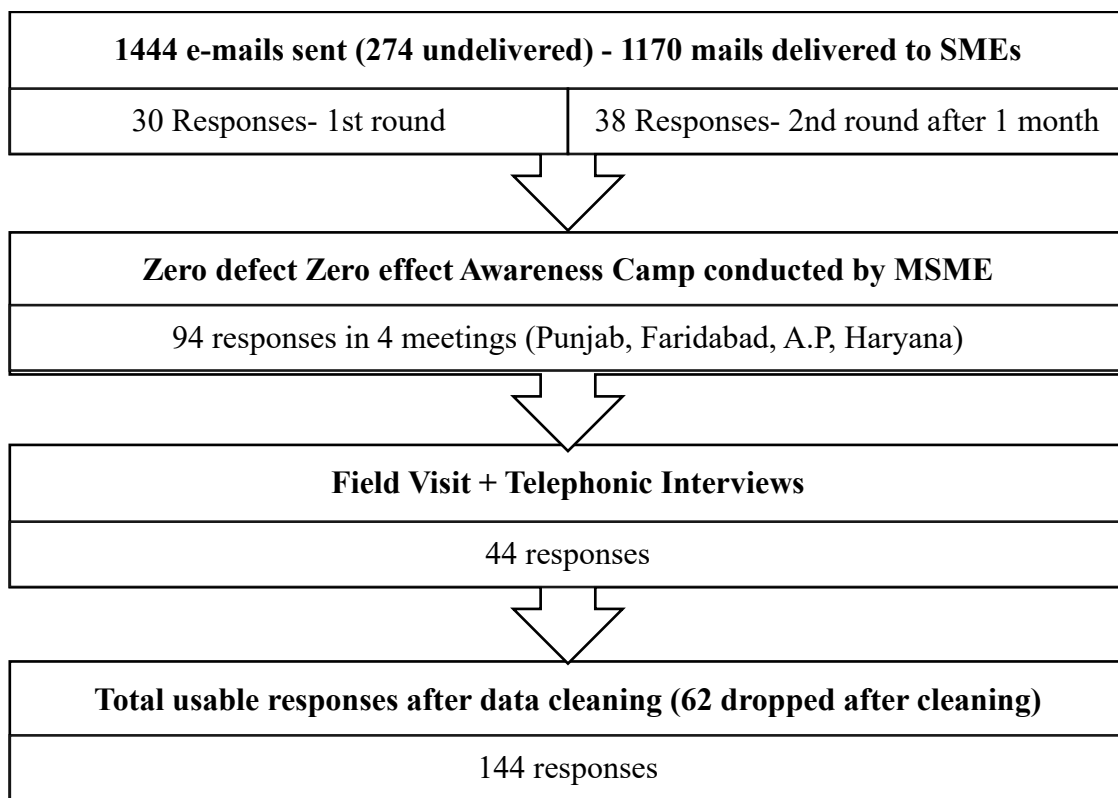
Construct	Items	Mean	SD	References
<b>Intrinsic Motivation</b> Intrinsic motivation to implement IMS	IM1- Better resource utilization	3.99	1.048	Sampaio et al., 2009; Zeng et al., 2007; Rebelo et al., 2014
	IM2- To reduce cost	3.97	1.020	
	IM3- To improve productivity	4.05	.999	
	IM4- To reduce disruptions due to audits	3.91	1.051	
<b>Extrinsic Motivation</b> Extrinsic motivation to implement IMS	EM1- To gain preferred supplier status	3.26	1.300	Sampaio et al., 2009; Zeng et al., 2007; Rebelo et al., 2014
	EM2- To match competitor’s actions	3.28	1.254	
	EM3- To meet industry policies or regulations	3.20	1.437	
	EM4- Customer pressure	3.26	1.250	
<b>Challenges</b> Barriers to implement IMS	C1- Continuous change of regulations and guidelines	3.01	1.094	Matias and Coelho, 2002; Zeng et al., 2007; Fresno, 2010;
	C2- High costs	2.99	1.134	
	C3- High time investment	2.90	1.202	
	C4- Too much paperwork	2.95	1.253	
<b>IMS Maturity Level</b> The extent to which different elements of various management systems are integrated	IMS1- Objective	3.62	1.626	Karapetrovic, 2002; Jørgensen, 2008;
	IMS2- Policy	3.68	1.624	
	IMS3- Manual	3.60	1.574	
	IMS4- Record	3.35	1.566	
	IMS5- Preventive and corrective actions	3.10	1.592	
	IMS6- Internal audit	3.24	1.564	
<b>Operational Performance</b> The extent to which the focal firm exceeded its main competitors in productivity, lead time, quality and employee efficiency	P1- Efficiency of employees	3.68	1.107	Ravichandran and Lertwongsatien, 2005; Wang et al., 2012
	P2- Overall productivity	3.69	1.092	
	P3- Productivity of employees	3.69	1.098	
	P4- Lead time	3.57	.898	
<b>Firm Size</b> (Control Variable)- Investment in plant and machinery for manufacturing SMEs and investment in equipment for service SMEs				
				MSMED Act, 2006

1           The definition and approach used to measure these constructs in this study are  
2 consistent with other studies on IMS and its implementation (Table 2). Also, the items used to  
3 measure these latent variables were drawn from well-established scales in IMS literature,  
4 strategy, human resource management, marketing, and operations management and were  
5 adapted to the context of the present study. The mean and Standard Deviation (SD) value of all  
6 the valid responses for various items are also shown in Table 2.

### 7   **3.2 Data Collection**

8   The data collection strategy involved both online surveys (the links sent through emails) and  
9 offline surveys (through hardcopies) in order to get details on the subject matter from the  
10 respondents (Santos et al., 2011). The survey was administered to the owners, quality heads or  
11 operations heads of SMEs drawn from a secondary data of companies registered with District  
12 Industrial Centre (DIC), Udyog Aadhar data, Rajasthan State Industrial Development and  
13 Investment Corporation (RIICO), Rajasthan Finance Corporation (RFC), Bhiwadi  
14 Manufacturers Association (BMA), Indian Industries Association (IIA) and the list of  
15 beneficiaries under ISO reimbursement scheme from MSME (Ministry of Micro, Small and  
16 Medium Enterprises) India. Only the SMEs implementing IMS were considered for data  
17 collection. Further screening was done on the basis of industry sector, as companies that are  
18 involved in exports or hazardous items or production process (such as chemicals, rubber, paint,  
19 paper, steel, printing, packaging, clothing, glass, heavy machine manufacturing, etc.) are more  
20 likely to be aware of IMS (Khanna et al., 2010; Saizarbitoria et al., 2015; Stamou, 2003).  
21 Initially, an e-mail questionnaire was sent to 1444 SMEs (although 274 returned as  
22 undelivered) which were at least ISO 9001 certified. The questionnaire was accompanied by a  
23 covering letter, which introduced the nature of the study, provided instructions to answer the  
24 questions, and underlined the fact that complete confidentiality will be maintained and the final  
25 report would be shared with the respondent (Santos et al., 2011). Despite reminders and an  
26 emphasis on the importance of the survey results on SMEs, the response rate of the online  
27 questionnaire was 5.8% and a total of 68 responses were received online. Although this rate  
28 appears to be very low, it is similar as the response rates reported from other surveys concerning  
29 SMEs (Newby et al., 2003). Considering the primary nature of data collection and the choice  
30 of respondents, the response rate is unsurprising for such studies (Ram et al., 2013; Velcu,  
31 2010).

In order to overcome this problem, 256 companies having both ISO 9001 and ISO 14001 certifications were identified and were contacted by telephone. Additionally, the researcher made field visits to some of the companies in the Matsya Industrial Area, Alwar (Rajasthan) and RIICO Industrial Area, Bhiwadi (Rajasthan). In all 44 responses were collected during the telephonic interviews and field visits. Also, the hard copies of the questionnaire were distributed to the owners of the SMEs during zero defect - zero effect awareness camp conducted by Ministry of Micro, Small and Medium Enterprises (MSME), Government of India. These camps were organized in the states of Punjab, Haryana, and Andhra Pradesh. A total of 94 responses were collected during these camps. Figure 2 illustrates the above-described process as well as the final response number.



**Figure 2:** Data collection process

A total of 206 responses were received using various data collection methods explained above. Out of these responses a few questionnaires were incomplete and were not suitable for analysis. Also, some of the responses were filled by the firms that were managing only one management system or were managing QMS and EMS separately and such responses were discarded. After pruning the cases that were deemed unfit for analysis, the researchers were left with 144 usable responses for analysis. This sample size was considered adequate based on several similar studies in comparative fields (Yee et al., 2010; Chao and Lin 2009).

## 4. Analysis and Results

### 4.1 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) was performed to determine the factor structure of the database. AMOS (version 20) was used to assess the measurement model through Structural Equation Modelling (SEM) and test the hypotheses. We use Covariance Based-Structural Equation Modelling (CB-SEM) as the model is not very complex and we have a sufficiently large sample size to assess the model (Hair et al., 1998). Table 3 presents the results of the CFA and the factor loadings are tabulated in Table 4.

A Cronbach's alpha value of greater than or equal to 0.6 is considered acceptable for the factor to be reliable (Hair et al., 1998). In our case, all the factors had a satisfactory value of Cronbach's alpha (Table 3). Literature recommends a Corrected Item-Total Correlation (CITC) value above 0.30 (Nunnally and Bernstein, 1994). In the present study, all the CITC values are above the threshold of .725, and so we conclude that all the factors are reliable. Composite Reliability (CR) scores were calculated to examine the internal consistency of the constructs in addition to Cronbach's alpha. CR scores of all the constructs were found to be in the range of .929 and .99 (Table 3), which is above the recommended cut-off of 0.6 (Nunnally and Bernstein, 1994). This confirms that all the constructs demonstrated adequate internal consistency.

Average Variance Extracted (AVE) value of 0.5 is the recommended threshold to ensure that adequate convergent validity is exhibited by the latent variable (Fornell and Larcker, 1981). AVE values for the latent variables in this study ranged between 0.767 and 0.945 (Table 3), thus indicating adequate convergent validity exhibited by all the latent variables. Also, the standardized factor loadings (Table 4) for all measures representing their respective constructs were found to be significant (at  $p < 0.001$ ) and well above the recommended cut-off level of 0.7, thus confirming that all measurement items demonstrated adequate convergent validity. Table 4 shows that all the observed variables loaded significantly on the respective latent variables and influenced them strongly.

Discriminant validity is exhibited when a construct shares more variance with its assigned items than with any other latent variable (Fornell and Larcker, 1981). The off-diagonal values in Table 3 exhibit the square roots of AVE for the constructs. The model demonstrates adequate discriminant validity, as each off-diagonal value is greater than the corresponding latent variable's correlation with other latent variables.



**Table 3:** CFA results

Construct	Cronbach's alpha	CITC	CR	AVE	Correlations (Square root of the Average Variance Explained (AVE) in the diagonal)				
					Challenges	Intrinsic Motivation	Extrinsic Motivation	IMS Maturity	Operational Performance
Challenges	.939	.841-.871	.939	.795	.892				
Intrinsic Motivation	.895	.725-.789	.929	.767	.000	.876			
Extrinsic Motivation	.930	.814-.863	.940	.800	.000	-.699	.895		
IMS Maturity	.961	.808-.923	.960	.807	-.209	.827	-.789	.898	
Operational Performance	.985	.890-.989	.990	.945	-.144	.570	-.544	.689	.972

**Note:** All values are significant at  $p < 0.001$

**Table 4:** Factor loadings

Measurement Item (Please refer Table 1 for details)	Standardized factor loadings (all values are significant at $p < .001$ )				
	Intrinsic Motivation	Extrinsic Motivation	Challenges	IMS Maturity	Operational Performance
IM1	.897				
IM2	.881				
IM3	.886	-	-	-	-
IM4	.837				
EM1		.924			
EM2		.900			
EM3	-	.882	-	-	-
EM4		.871			
C1			.871		
C2			.895		
C3	-	-	.912	-	-
C4			.888		
IMS1				.953	
IMS2				.968	
IMS3				.953	
IMS4	-	-	-	.917	-
IMS5				.782	
IMS6				.797	
P1					.997
P2					.997
P3	-	-	-	-	.997
P4					.893

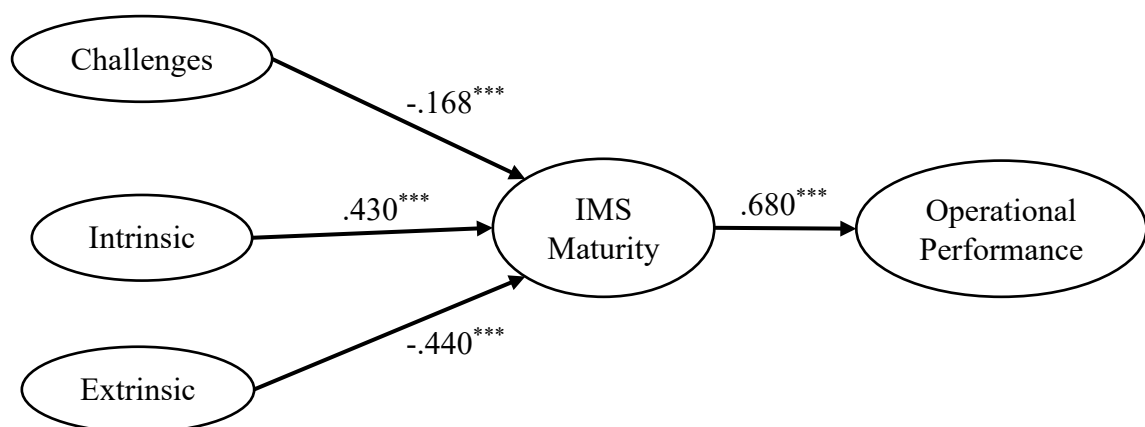
The common method bias was tested using Harman's one factor test and it was observed that a single factor accounted for only 42.26% of the variance in that data, which is less than the cut-off value of 50% (Podsakoff et al., 2003). As the model also satisfies the criteria of internal reliability, convergent validity, and discriminant validity, it can be concluded that the model meets the quality criteria adequately.

## 4.2 Model Fit

We used SEM to test the structural relationship between the constructs (Figure 3). The model had five constructs and 22 items to reflect the constructs. The measurement model indicated a good fit and we tested hypotheses using this model (Byrne, 2010). The model statistics for combined measurement and structural model are: Chi-Square (CMIN)=356.437, degrees of freedom (df)=201, CFI=.966, GFI=.822, SRMR=.0696, IFI=.966, TLI=.960 and RMSEA=.074, which indicate a good model fit (Anderson and Gerbing, 1988).

## 4.3 Assessment of the Structural Model

The structural model (based on the conceptual model in Figure 1) shows the relationship between various latent variables along with the path coefficients and significance value (Figure 3). The direction of the relationships between the antecedents of IMS and IMS maturity and its subsequent impact on operational performance is also shown in Figure 3. The analysis of the path coefficient scores in Table 5 shows support for our hypothesis H1 and suggests that extrinsic motivation is negatively associated (-.440,  $p<0.001$ ) with IMS maturity level. Also, we find significant support for our hypothesis H2 and the study shows that intrinsic motivation is significantly associated (0.432,  $p<0.001$ ) with IMS maturity. Similarly, we find support for hypothesis H3 and find that the challenges faced while implementing IMS have a negative and significant direct effect (-0.168,  $p>.001$ ) on the IMS maturity. The results also support hypothesis H4 and suggests a positive and direct significant effect (0.680,  $p<0.001$ ) of IMS maturity on operational performance.



**Figure 3:** Structural model

**Table 5:** Structural paths

Structural path in the model	Sign	Path coefficient	Significance / p-value
<i>H1</i> : Extrinsic Motivation → IMS Maturity	-	.440	***
<i>H2</i> : Intrinsic Motivation → IMS Maturity	+	.430	***
<i>H3</i> : Challenges → IMS Maturity	-	.168	***
<i>H4</i> : IMS Maturity → Operational Performance	+	.680	***

**Note:** \*\*\* suggests that the p value is less than 0.001

## 5. Discussion and Implications

Given the potential benefits it bestows on firms, IMS is a topic of importance for practitioners and researchers alike and the investigation of its drivers and benefits is a relevant topic in scientific debate (Mazzi et al., 2016; Tseng et al., 2019). Integration becomes more relevant for SMEs in a developing country, where the resources are limited and the need to supply best quality products and services at competitive prices is of prime importance. The stark differences between SMEs and large firms motivated us to empirically discover answers for research questions on antecedents and outcomes of IMS maturity.

### 5.1 Theoretical Contributions

Building on extant literature on IMS, this study bridges several gaps. While extant literature explored and discussed the motivation and challenges (Fresno, 2010; Sampaio et al., 2009; Zeng et al., 2007) faced while implementing IMS, it was observed that effect of these antecedents on IMS maturity and its effect on operational performance were not explored. We also build on the literature on management systems implementation and integration in SMEs (Chakraborty et al., 2019; Marcati et al., 2007; Savino and Batbaatar, 2015) and showcase the impact of intrinsic motivation on the level of IMS Maturity. We also contribute to the understanding of IMS implementation in developing countries (Khanna et al., 2010; Sadikoglu and Zehir, 2010) by topically exploring the impact of motivation and challenges on maturity.

Similar as the extant literature (Rebelo et al., 2014; Sampaio et al., 2009), our findings suggest a significant positive effect of intrinsic motivation on IMS maturity which then influences the operational performance of the SMEs. This is understandable as the firms that

are internally motivated to implement IMS adopt a proactive approach termed as the “process-oriented approach” in the literature (Sammalisto, 2001). While the extant literature had mixed results for extrinsic motivation’s impact on IMS implementation (Zeng et al., 2007), our analysis shows that extrinsic motivation to implement IMS has a negative impact on IMS maturity in SMEs. This is because extrinsically motivated SMEs implement IMS in order to comply with the regulatory requirements and generally have a negative attitude towards integrating management systems. These SMEs use a reactive approach to IMS, and employees of the firm do not follow the standard instructions in practice (Sammalisto, 2001).

IMS implementation in general needs a lot of support from top management and employees (Simon et al., 2013; Zeng et al., 2007). There are several challenges faced by organizations while implementing IMS such as continuous change of regulations and guidelines (Fresno, 2010; Santos et al., 2011), high costs (Bernardo et al., 2012; Douglas and Glen, 2000), high time investment (Bernardo et al., 2015; Simon et al., 2013; Santos et al., 2011). Our findings support suggest that these challenges have a negative significant impact on IMS maturity.

## **5.2 Managerial Implications**

To understand the managerial impact of our research, we interviewed a key stakeholder promoting IMS implementation in India. Mr. Manish Vashishth, Assistant Director at Quality Council of India while mentioning the differential impacts of management systems on firms said –

*“If your hobby is gardening then the chances of the survival of the plants will be higher because you’ll be taking good care of it. On the other hand, if you hate gardening or if you don’t enjoy it but still do it because of external pressure, then the plants might die because you won’t take good care of them. The quality and health of plants you get is like the benefits that firms get by implementing ISO 9001, ISO 14001 or even IMS. Different reasons will give different outcomes.”*

This corroborates our results of positive impact of intrinsic motivation and negative impact of extrinsic motivation of IMS Maturity. Internally motivated SMEs look at IMS as a tool to develop the firm and their objective is to change the orientation of the staff. Internal development is the main emphasis of the owner with a process-oriented approach with employee involvement along the lines of Total Quality Management (TQM). This relates to the “management motivated” (ISO 9000:2015) approach defined in the QMS as the SME itself

initiates the effort responding to the expected customer demands and trends. The staff participates in the operations rather than just performing their work. The involvement of management and continuous improvement can be recognized as strong drivers for implementing this approach. This model is generally more comprehensive and fruitful in comparison to the “stakeholder motivated” model (ISO 9000:2015). The chances of high commitment towards ISO 14001 are predominant if an environmental vision is implanted in process-oriented SMEs as it incorporates sustainability goals into the core of business decisions (Morioka et al., 2017). The employees in these SMEs are often engaged in environmental practices which gives them a feeling of belonging to “a company family” thus leading to sustained competitive advantage (Mazzi, 2020).

## **6. Conclusions**

The findings of this research may attract the attention of a number of SMEs, as they suggest that IMS maturity is positively related to operational performance. The result of the analysis may assist quality management professionals and operations managers to convince their business leaders and senior managers about the operational benefits of implementing IMS.

The study has some limitations and directions for future research like any other empirical research. First, it should be noted that the data was collected from Indian SMEs. Thus, the definition used to define SMEs is in accordance with the MSMED Act, 2006. Some of the samples in the data might not fall under SMEs in other countries. Therefore, it would be interesting to explore and see if the increase in the number of samples from other countries such as China, Malaysia, Bangladesh, and Sri Lanka with different definitions could make any noticeable differences in the results. Second, this study considered only a few antecedents related to IMS and perhaps it is worthwhile exploring how other major antecedents related to IMS (e.g., critical success factors, reasons to implement IMS, presence of a consultant, IMS strategy, etc.) influence the IMS maturity and thus operational performance. Finally, this study has a generic sample representing SMEs from both, service, and manufacturing industry. It would be interesting to see if the path coefficients in the measurement model differ for the service and manufacturing industry. Also, future research can consider data from a specific industry to examine the relationships explored in this study.

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