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Redefining System Use Constructs through Insights into Information Systems Success

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Abstract – Information Systems (IS) encompass the cohesive combination of software, hardware, data, individuals, and protocols that collaborate harmoniously to produce, manipulate, retain, and dispense data inside an organization. These systems are specifically developed to facilitate and enhance business operations, aid in managerial decision-making, and assist in strategic planning. This study critically analyzes the complexities of achieving success in Information Systems (IS) by thoroughly examining the Delone and McLean (1992) model and subsequent changes proposed by Seddon. The study examines the connections between different constructs and research methods to clarify the important role of system utilization and its impact on user satisfaction, perceived usefulness, and overall advantages. In addition, it explores the changing understandings of the system usage idea, specifically in situations where use is voluntary or required. By combining results from several studies, this research enhances our comprehension of the aspects that contribute to the performance of information systems. It provides significant insights for both academic research and practical implementation in organizational environments. This will help organizations make better decisions and implement strategies more effectively.

Keywords – Seddon Model, Delone and Mclean Model, Construct Interrelation, User Satisfaction, Information System Success, Modified Seddon Model, Intention to Use, Voluntary and Mandatory Contexts.

I. INTRODUCTION

Business Intelligence (BI) systems provide pertinent information to decision makers via data analysis [1]. Many firms use BI because of its potential to have a major influence on company performance [2]. Despite a reduction in IT spending in 2009, BI remained a top priority for IT executives and continued to expand in 2010 as well, according to Işık, Jones, and Sidorova [3]. According to Paradza and Daramola [4], BI was considered the most significant among application and technological advancements. BI has maintained its top position for the last three years, as reported by Simon [5]. The revenue for BI, analytics, and performance management had a 13.4% growth in 2010 compared to the previous year, resulting in around $10.5 billion in sales. Hence, the effectiveness of BI or Information Systems (IS) systems has great significance for firms that have made investments in them. It is crucial to note that the deployment, administration, and assessment of IS vary across public and private sector enterprises [6].

Public companies allocate significant financial resources towards the installation of various IS. However, most research on evaluating IS mostly focuses on organizations in the private sector [7]. The limited number of IS assessment studies conducted have mostly focused on information systems in the healthcare sector or government. Multiple definitions of IS success exist, and several measurements have been used in evaluating IS performance over time. According to DeLone and McLean (D&M) (1992), the achievement of a structure is a complex notion that is hard to define and quantify due to its multifaceted nature. Therefore, they introduced their model, comprising of 6 metrics, that may be used to evaluate the

effectiveness of numerous IS. This particular model, which is considered the most influential model for measuring the effectiveness of IS, has been referenced 4700 times according to Google Scholar as of April 24, 2012 [8].

Over the last four decades, several frameworks have been created to quantify the influence of IS. The D&M framework (1992) has been broadly regarded as the prevailing paradigm for assessing the performance of information systems. Some theories and models that could be mentioned are as follows: The modified Delone and McLean (2003) framework, the Soh and Markus (1995), the Seddon model (1997), the Planned Behaviour Theory (1985), the Technology Reception model (1986), the Theory of Reasoned Action (1975–1980), and User participation (1984) Gonzales (2008). The Delone and McLean (1992/2003) framework, together with the competing Seddon framework of 1997, has been the most significant among these models [9]. We have used the operationalization method developed by Rai et al. (2002) to conduct a comparison between the two models. Specifically, we have substituted the term "Use" with "System Dependence" and replaced "Individual Impact" with "Perceived Usefulness" for the respective constructs.

In this scenario, we are conducting a comparison between two frameworks and an adapted version of Seddon, inside a Business Information System (BIS). The BIS is used by actual IT experts in real-life situations among numerous Peruvian organizations who employ this structure. Another factor to deliberate is the concept of System Use (referred to as System Dependence in this work), which has shown poor performance in numerous frameworks of IS Success. The capacity to assess the presentation of IS by assessing their effects or results is directly linked to an organization's capability to monitor its overall organizational outcomes. Thus, it is essential for IS managers to take a proactive approach in developing organizational performance assessment tools to provide a structure for assessing the consequences of IS. The objective should be to evaluate the success of an IS throughout its entire lifecycle, by evaluating its alignment with strategic goals and objectives, using an appropriate measurement technique, and incorporating the results into the organization to facilitate organizational learning [10]. Regrettably, this is not the prevailing norm in several firms. Practitioners often have to depend on their intuition or cost/benefit analysis instead of using more thorough assessment methods [11]. One drawback of using cost/benefit methodologies to assess effectiveness is that some studies have encountered challenges in establishing a clear connection between expenditures in information technology and measurable advantages for organizations.

The aim of the research is to fill a significant knowledge gap in the comprehension of IS achievement by conducting a comprehensive examination of the Delone and McLean framework, as well as the later revisions suggested by Burton-Jones and Straub, and Seddon. The reason for conducting this review is rooted in the intricate and diverse characteristics of IS achievement, which include conditions like user satisfaction, data quality, system quality, and system usage. This research aims to give significant intuitions for both academia and industry by examining the interrelationships between these components and investigating the shifting conceptualizations of system use. Organizations aiming to efficiently utilize technology and stay competitive in today's digital landscape must prioritize understanding the elements that subsidize to the achievement of IS. Furthermore, this study enhances the notional progress in the field of IS by combining findings from many studies and presenting detailed viewpoints on the dynamics of IS success.

Section II reviews relevant literature sources related to the research. Section III presents the methodology employed in composing this research, which integrates quantitative analysis, and sample analysis. Section IV and Section V present a detailed discussion of the results describing construct relationships, and system use constructs and intent. Lastly, Section VI presents a summary of the findings providing practical recommendations to the firms that are willing to enhance their investment in IS and willing to achieve higher performance by relating the present theories with practical examples.

II. RELATED WORKS

The continual investigation of information system success is of interest to both practitioners and scholars, as well as management stakeholders. Tengö et al. [12] emphasize the significance of the system and may be used as a foundation for future choices about similar systems. Multiple methodologies exist for estimating the effectiveness of IS. The D&M IS success framework (D&M framework) is well recognized and considered the most reliable metric. The D&M framework was first developed in 1992 and then revised with some revisions in 2003 [13]. This research specifically examines the metrics outlined in the revised model. The model presents six interconnected characteristics of IS achievement: data quality, use, service value, net benefits, system value, and user happiness.

Schultze and Leidner [14] highlighted the absence of a technical foundation in IS study and posed the inquiry of determining the reliant on variable in IS study. Jain and Sobek [15] asserted that surrogate metrics such as user happiness or hours of use will persist in misleading researchers and avoiding the problem of information theory. In response to his inquiry on the dependent variable, several scholars have endeavored to ascertain the elements that contribute to the effectiveness of IS. Primarily, many studies focused on different facets of IS performance, hence complicating the task of drawing comparisons. To categorize the extensive collection of literature and merge many ideas and discoveries into a complete framework, DeLone and McLean (1992) published their first IS Success framework. Seizing upon Shannon and Weaver's (1949) triangular information model [16] and Mason's (1978) extension of the effect or efficiency level [17], DeLone and McLean established six separate criteria for IS success: organizational effect, individual effect, system value, user satisfaction, data quality, and use.

Using this paradigm, Vogel [18] categorized the empirical investigations that were issued in seven prestigious IS journals from January (1981 to 1988). Their analysis confirms the assumption that the many indicators of achievement may be classified into the six main interdependent and interconnected groups they propose. The authors' IS Success framework aimed to include these characteristics into a holistic model. The D&M IS Success framework has gained prominence in IS

research owing to its frequent citations in top journals. Despite several shortcomings identified by Lutfi et al. [19], the model has rapidly become a dominant assessment framework, in part because of its simplicity and ease of understanding, as noted by Viavattene et al. [20]. In reply to D&M`s need for more refinement and verification of their framework, other scholars have endeavored to expand or redefine the initial framework.

Subiyakto and Ahlan [21] argue that the D&M IS Success framework lacks completeness. They propose the inclusion of additional aspects in the framework or provide substitute frameworks of success, such as those proposed by Muradian et al. [22]. Other researchers concentrate on applying and confirming the model. DeLone and McLean (2002, 2003) introduced an efficient IS success framework a decade after their first publication, taking into account the examination of several contributions to the original model [23, 24, 25]. The main distinctions among the updated and original model are as follows: (1) the inclusion of service value to explanation for the significance of support and service in thriving e-business structures; (2) the incorporation of purpose to use as a substitute measurement of user attitude; and (3) the consolidation of organizational impact and individual impact (II) into a more concise net assistances construct. **Table 1** lists the six characteristics that make up D&M (1992) model: organizational effect, user satisfaction, II, usage, system and information quality. Delone and Mclean (1992) advanced their framework by including three stages of data, as proposed by Shannon and Weaver (1949), as well as Mason's (1978) extension of the impact level.

Table 1. Create Descriptions Using the D&M IS Success Framework

Constructs	Definition	Measuring variables
Organizational Impact (OI)	The potential financial gains for the organization resulting from the utilization of the IS system.	Cost savings, increased coordination, overall success, enhanced quality, managerial control, and enhanced decision-making.
Individual Impact (II)	This concept signifies users' enhanced comprehension of the IS situation and its impact on users' performance.	Awareness, decision-making efficiency, personal efficiency, work performance, knowledge acquisition, utility, task creativity.
Satisfaction (SAT)	These variable measures the amount of user satisfaction by using the IS which has been emphasized as a critical aspect for the success of the IS.	The criteria used to evaluate the user's experience include adequacy, efficacy, pleasure, information satisfaction, system satisfaction, and overall satisfaction.
Intentions to use/Use	This structure represents how its users use IS.	Actual use served as a gauge for the intended and actual uses. Utilization frequency and intention to (re)use
System Quality (SQ)	The system`s usability properties	Availability, simplicity, trustworthiness, efficiency, and adaptability
Information Quality (IQ)	The output value that users can generate using the data system.	Reasonability, format, completeness, clarity, and applicability

Abdel-Karim, Pfeuffer, and Hinz [26] argues that including both causal and process descriptions in DeLone & McLean's (1992) model results in several potentially ambiguous interpretations, hence reducing the model's overall usefulness. DeLone & McLean's (1992) model has three separate models that represent various interpretations of IS Use. The first model is a sequential description of events that pertain to the achievement of an IS. The second framework is a depiction of the conduct that arises as a consequence of IS achievement. Lastly, the third model is a variation-based representation of IS achievement. Floropoulos et al. [27] identifies three potential interpretations of IS Use in the DeLone & McLean (1992) framework: (1) as an occurrence within a process that ultimately affects individuals or organizations; (2) as a variable that is dependent on future IS use in a model of variance; and (3) as a variable that serves as a substitute for the advantages derived from use.

Tam and Oliveira [28] presents an alternative model, building upon DeLone & McLean's (1992) model, which highlights the causal conditions of the relationships among distinct categories and distinguishes between the variance framework of IS achievement and the alteration framework of behaviors consequential from IS achievement. Seddon's IS success framework has three categories of variables: (1) metrics for System and Information Quality; (2) overall conceptual metrics for the net advantages of IS use (i.e. User Satisfaction and Supposed Practicality); and (3) additional metrics for the net advantages of IS utilization. Seddon (1997) argues that IS Use should be seen as a behavior rather than a measure of success. Hoffman and Novak [29] suggests replacing D&M`s (1992) IS Use with Supposed Practicality, which is a more comprehensive assessment of the overall assistances of IS use. This modification allows Seddon's model to be applicable to both voluntary and involuntary use situations.

While Use, one of the six criteria of IS achievement in D&M's inventive framework, is often included as the reliant flexible in IS achievement studies, we concur with Pakes [30] that the extent to which a structure is used is not a suitable evaluate of IS Achievement. The use of a resource does not guarantee achievement, just as the absence of utilization does not equate to lack of success. In our conceptual modeling environment, the use of “Use” as a success attribute seems to be inappropriate. As a result, Saadé and Bahli [31] substituted the word “Use” with the more appropriate term “Perceived Usefulness” (PU) since it is not only the act of using something that determines the success of an IS, but rather the advantages extracted from its usage. Seddon provides a definition of PU as “the extent to which a discrete believes that using a specific system has improved their job presentation”.

Users appraise the IS in terms of its usefulness after using it to complete a specific activity. In other words, they conduct a retrospective evaluation of the PU. Conceptual modeling scripts, such as those discussed by Moody [32], are also assessed based on their usefulness, which is considered a desirable assessment feature. Upon engaging with the conceptual modeling script, such as during activities to validate requirements, users will evaluate the script's efficacy in articulating and conveying their perspective on the domain and the information system needs. Therefore, users will assess the script`s usability, which will, among other factors, influence their overall quality assessment. Practical Utility (PU) is the third component in our user assessment approach for theoretical modeling scripts.

Seddon [33] used the Seddon framework (1997) and the D&M framework (1992) to assess the accuracy of both models. Both models demonstrated a satisfactory level of conformity. They deliberated on a third option, which included making alterations to the Seddon framework. DeLone and McLean (1992) recognized a connection between several constructions and individual effects, leading to the estimation that perceived usefulness is linked to individual impacts. Wang [34] developed a framework consisting of five concepts: structure usage, system quality, user satisfaction, supposed practicality (individual effect), and information quality. In addition, they illustrate the extent to which the system relies on other systems. The Seddon model was adjusted to include a similarity link among system usage (system reliance) and perceived usefulness in order to get the most accurate fit and explanation of variation.

III. METHODOLOGY

The models employed are quantitative in nature, and they analyze the firm that uses the BIS via the lens of the individual user. All the instruments, including the survey and the model, were pilot tested. The study was conducted using Structural Equations. Several models, such as DeLone and McLean, Seddon, and Modified Seddon, are used to analyze the model. Financial institutions, food manufacturers, consumer marketing, pension funds, the Peruvian government, cosmetics, market research, and credit card businesses are all part of the study's representative sample. Those businesses aren't required to use BISs, and consumers may get the same information via other means; yet, BISs are often seen as quasi-volitional or quasi-mandatory because they are more difficult to use and may not provide as accurate of data for analysis.

Quantitative Analysis

To confirm that the data satisfied all the requirements for a multivariate analysis, many tests were conducted. The tests assessed many factors such as the normal distribution, homoscedasticity, data completeness, outliers, and linearity among the dependent and independent constants. The regularity of all constants was evaluated using the Kolmogorov-Smirnov test. The EQS program for SEM validated the multivariate normal distribution by eliminating variables that did not fulfill this condition. All 29 items included in the research have complete data sets. There was a limited number of descriptive variables that had missing data. We confirmed the existence of homoscedasticity by using the Levene and Barlett test to assess the homogeneity of variance among the reliant, independent, and mediator variables. The variables IIDU and IIWU were found to have problems, which were addressed using mathematical operations. Specifically, the variables were raised to the power of three and then divided by seven. We performed linear regressions for all conceivable combinations of independent and dependent variables to verify their linearity. Additionally, we visually examined the residuals to confirm their random distribution, which we saw to be the case.

We conduct a comparison between the Seddon framework and an adapted version of it, known as the DeLone and McLean framework, utilizing a trial of firms that use BIS. The original sample size consisted of 110 surveys; nonetheless, after removing a small number of exceptional instances, the final sample size was reduced to 104. The components were evaluated using a seven-point scale, namely the expressive disparity, ordinal, Likert, and ratio scales. There are 29 statements in the questionnaire that cover each of the six components. The questionnaire underwent three rounds of translation subsequent to its collection from many sources. Adhering to the appropriate research procedure requires using a sequence of translators to translate between English, Spanish, English, and Spanish once more. The rationality of the fabricates was confirmed using nomological, face, discriminant, and convergent rationality. We obtained favourable construct legitimacy statistics. The CFA and Structural model demonstrated high general reliability coefficients, with Cronbach's alpha measuring 0.95 and Rho at 0.97. A pilot study was done using Exploratory Factor Analysis with Varimax rotation and Principal Components. The test included 68 observations and aimed to confirm that each item in the questionnaire was associated with a single notion and to verify the questionnaire.

Sample Analysis

After establishing the Measurement model, a regular approach was followed, which began with the Confirmatory Factor Analysis (CFA). In structural equations, the Supreme Possibility Approximation approach was utilized, along with the Robust correlative technique from the EQS software. At first, all of the observable variables were used to build the CFA. Henseler, Ringle, and Sarstedt [35] detailed many methods that were used to improve the model's fit, including X^2, CFI, Average Variance Extracted (AVE), RMSEA, and multivariate normal distribution correction. Then, using 22 items culled from 104 observations, the last Confirmatory Factor Analysis (CFA) was calculated. Statistical analysis was conducted using Minitab, and structural equations were solved using EQS version 6.1.

IV. RESULTS

The Delone and McLean (1992) framework of IS success is often referenced and has significantly improved our comprehension of IS achievement. The researchers categorized the current indicators of achievement into six distinct categories: Satisfaction, IQ, SQ, OI, II, and Use. The authors propose that when creating an instrument and measurement model for a specific context, it is important to carefully choose the constructs and measures, taking into account contextual factors like organization structure or size, technology, and discrete system features. However, only a small number of research provide detailed explanations for their selection of success concepts and applied metrics.

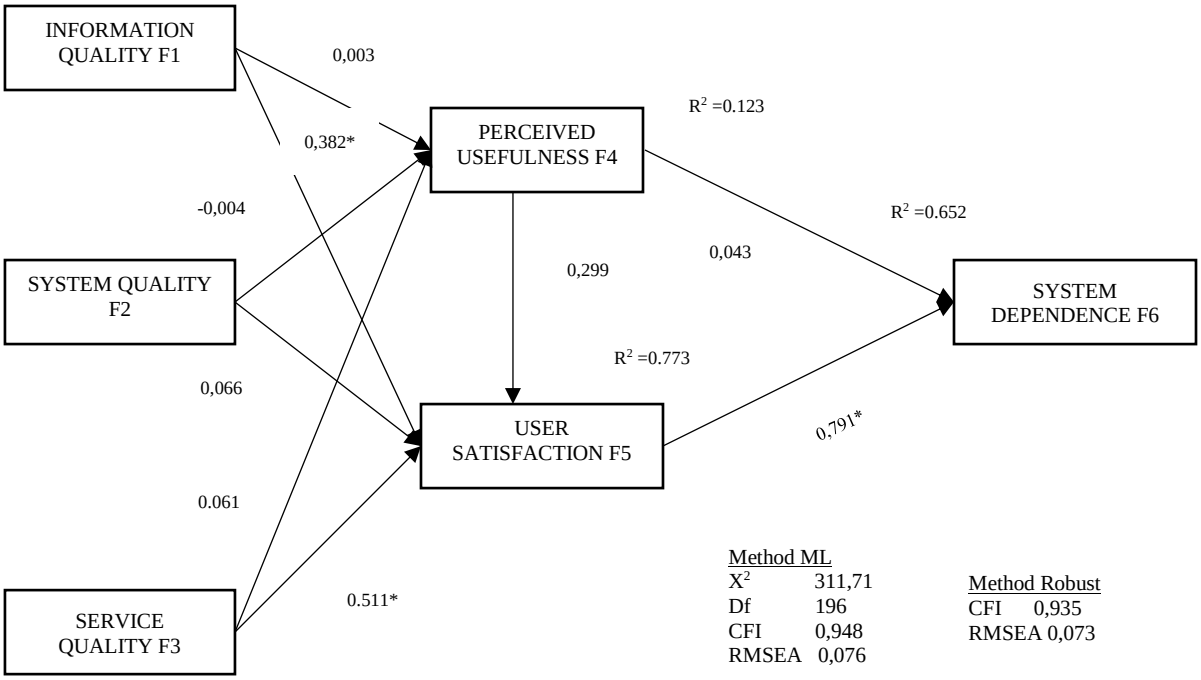

Fig 1. Delone and Mclean Mechanical Framework.

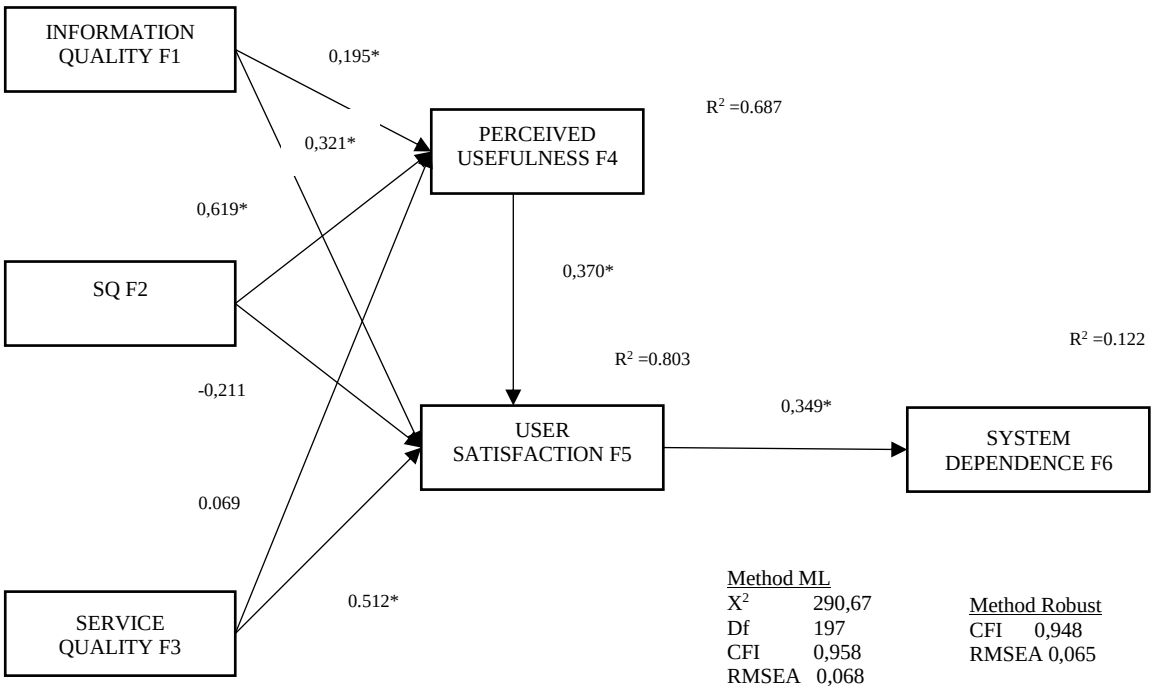

Fig 2. Seddon Modified Model.

Bushway, Johnson, and Slocum [36] proposed a two-step method for choosing measurements in a research project. . Lolić et al. [37] stress the significance of taking into account the "function" and "structure" of measures. The former pertains to the process of choosing elements that are most pertinent to the study framework and situation, while the latter refers to the process of choosing measures for the selected essentials that connect the constructs into a nomological system. The

Mechanical Framework was advanced after the conclusion of the CFA. **Fig. 1** displays the structural framework derived from the D&M model, illustrating the connections among fabricates and the amount of variation clarified for every reliant construct using R^2.

Three significant links were identified in this study, with a significance level of alpha 0.05. These connections include user happiness (77.3%), supposed usefulness (individual influence) (65.2%), and system reliance (system usage) (12.3%). The mediator concept, User Satisfaction, has robust correlations with the autonomous constructs, Service and Data Quality. Similarly, the notion of Supposed Practicality (II) is sturdily linked with User Satisfaction. SQ, however, is an independent concept that is not strongly connected to the mediator constructs. There is no statistically significant correlation among the independent and dependent constants and the concept of system dependency (system usage). The constant of determination (R^2) for the reliant variable "Perceived Usefulness (Individual Impact)" is 65.2%. There is no apparent relation among System Necessity and any of the other model components. It is crucial to consider that when evaluating the success of a system, it is more meaningful when users have the freedom to decide whether or not to use it. In contrast, when users are obligated to use the system, they do not have a choice

The Seddon model results, shown in **Fig. 2**, reveal the associations between the fabricates and the amount of variation clarified for each reliant construct using R^2. The second model reveals five statistically significant associations (alpha 0.05). These relationships explain 12% of the variation in System Necessity, 80.3 percent in User Satisfaction, and 68.7% in Supposed Usefulness (Individual Influence). User satisfaction is an intermediary notion that has significant connections with the separate constructions of service and information quality. Furthermore, there is a robust association among the reliant variable, System Necessity (System Use) and User Satisfaction. The autonomous structure There exists a notable correlation among the User Satisfaction fabricate and the Supposed Practicality mediator fabricate, and System Quality and II mediator fabricate. The reliant fabricate, System Use, is specified as 12.2 percent (R^2).

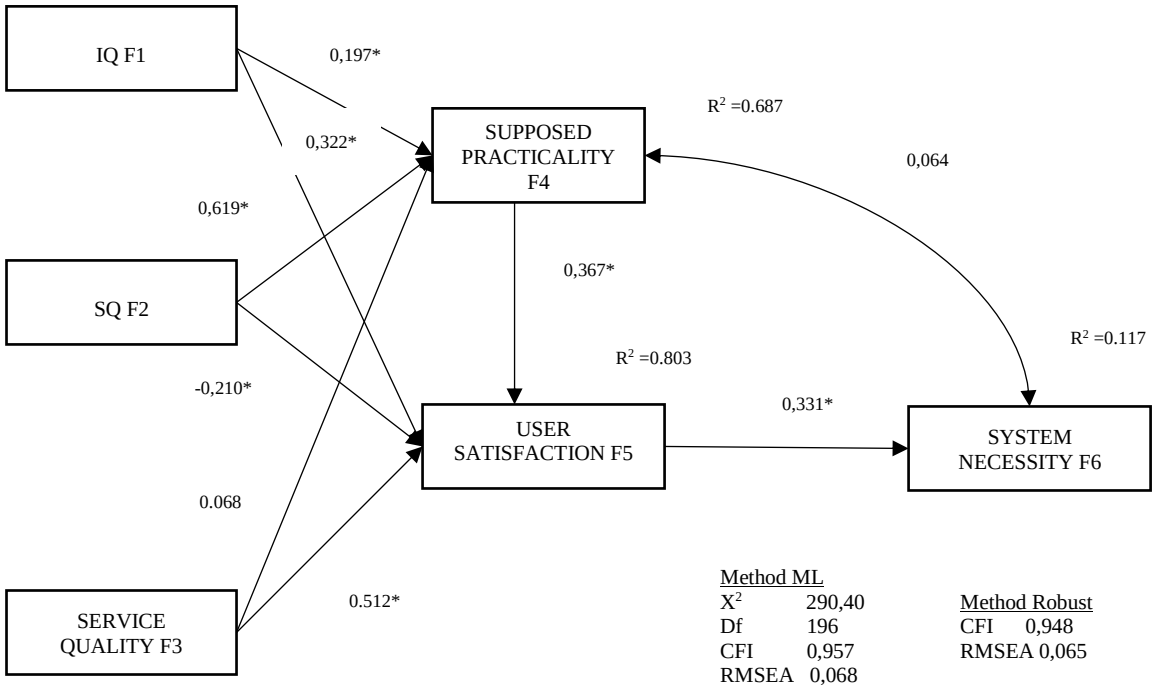

Fig 3. Adapted Seddon Mechanical Framework.

Fig. 3 shows the findings for the updated Seddon model, which include the linkages among the variance and constructs clarified for each reliant construct via R^2. The final model shows six significant relationships (alpha 0.05), with the following: 68.7% for supposed practicality (individual effect), 80.3% for user satisfaction, and 11% for system dependencies (system use). User satisfaction is a mediator concept that has strong relationships with data and service quality, two separate constructs. Similarly, System Dependence (System Use), a dependent concept, is suggestively related to User Satisfaction. There is a strong connection among the sovereign variables System and Information Quality and the mediator variable Supposed Usefulness (Individual Influence). Additionally, there is a strong connection among Supposed Usefulness (Individual Influence) and the user satisfaction construct. Eleven-point 7% (R^2) explains the dependent concept, System Necessity (System Use).

The three frameworks may be compared in **Table 2.** The Seddon model is considered the most superior, followed by the Modified Seddon model, which closely resembles the original model. Lastly, the DeLone and McLean framework is ranked third. The Seddon framework outperforms the other models in terms of CFI (0.96 compared to 0.95 and 0.96), RMSEA (0.07 compared to 0.08 and 0.07), R^2 of Apparent Practicality (0.69 compared to 0.69 and 0.65), and R^2 of User Fulfilment (0.80 compared to 0.79 and 0.80). The Seddon framework elucidates the importance of the Scheme Necessity fabricate in

comparison to other fabricates within the framework, such as the Adapted Seddon framework. However, the D&M model does not provide such an explanation. The DeLone and McLean framework offers a more comprehensive explanation of System Dependence, with an R^2 value of 0.123, compared to 0.122 and 0.117 for the other models. Furthermore, the Modified Seddon model accounted for six important relations among constructs, whereas the Seddon model accounted for five, and the DeLone and McLean framework accounted for three.

Table 2. Comparison and Contrast of the Three Frameworks

Statistics	Seddon	DeLone and McLean	Modified Seddon
X^2	290,67	311,71	290,40
R^2 Average described	0.54	0.52	0.54
CFI - Comparative Fit Index	0.96	0.95	0.96
R^2 System Use	0.12	0.12	0.12
RMSEA	0.07	0.08	0.07
R^2 User Satisfaction	0.80	0.79	0.80
R^2 Supposed Practicality (Individual Effect)	0.69	0.65	0.69
Degrees of Freedom	197	196	196
Total significant relations between constructs	5	3	6
Substantial relation of the System Necessity Fabricates with other Fabricates	Yes	No	Yes

Further similarities may be drawn from the study conducted by Duan et al. [38]. Notably, significant discrepancies exist between their findings and the D&M framework, but there are less disparities with two frameworks proposed by Seddon. The primary alterations may be attributed to the fact that Burns [39] research was conducted only with students from a single institution, while this study was conducted with IT department leaders from many firms. Another comparison may be made with the research conducted by Elbashir, Collier, and Davern [40], where they discovered a significant correlation (**) among User Fulfilment and BI Use (referred to as System Necessity in their study). In this research, we saw a consistent relationship in two out of the three frameworks. Specifically, we found no relationship in the D&M framework, but we did see a relationship in both the Modified Seddon framework and the Seddon framework.

V. DISCUSSION

Construct Relationships

Following the establishment of the first D&M IS Success framework by DeLone and McLean in 1992, other writers have conducted empirical and theoretical investigations on the model.

Table 3. Construct Interrelations

Antecedents	→	Ind.	Explained constructs	Org.
System use				
User SAT	→	+	System use	0
System value	→	~	``	~
Net benefits	→	+	``	0
Service value	→	0	``	0
Information value	→	~	``	0
Net benefits				
System quality	→	++	Net benefits	0
User satisfaction	→	+	``	+
System use	→	+	``	+
Service quality	→	+	``	0
Data value	→	+	``	0
User SAT				
SQ	→	+	User SAT	0
Net benefits	→	++	``	0
System use	→	+	``	0
Information value	→	++	``	0
Service value	→	+	``	0
0, insufficient data				
++, strong support				
~, mixed support				
+, moderate support				

In addition to the components mentioned above, the interrelationships between these constructs have also attracted significant study. DeLone and McLean (2003) have previously included and merged some of these results into their updated model. In a comparable vein, Morschheuser et al. [41] conducted an inclusive analysis of the literature on IS achievement issued from 1992 to 2007. They synthesized the results to provide an overall evaluation of the empirical and theoretical backing for the existing framework. Based on their research, we want to emphasize the key discoveries on the interconnections between 15 pairs of constructs by examining the corresponding dependent variables. **Table 3** provides a summary of these linkages at both organizational (Org.) and the individual (Ind.) levels. **Table 3** does not indicate the direction or strength of the relationships, but rather emphasizes the level of evidence that current research provides for each relationship.

System Use

At the distinct level, the meta-data conducted by Liu et al. [42] demonstrates a combination of varied and moderate evidence supporting the clarification of system usage. Among the three value measures, system value has garnered the most extensive focus in the literature. Nevertheless, there is only little proof to substantiate the concept that the usage of a structure may be attributed to the inclusive quality of the system. Out of the nine investigations, all of them found a favorable connection with system usage. However, seven studies did not find any meaningful findings for this particular model route. Similarly, information quality is also subject to this observation, particularly since just six research, as examined by Goffin et al. [43], first investigated this correlation. Insufficient data is currently available to investigate the relationship between service quality and make any definitive conclusions.

Many studies have examined user satisfaction and have consistently shown a favorable correlation. The feedback loop from net benefits to structure utilization operates under the same principle. Existing research indicates that both linkages get a reasonable level of support in general. The effect of system use at the structural level remains largely unexplored. No research has examined the influence of user fulfilment on structure utilization in a structural environment. Only the effects of structure quality have been extensively examined in a significant number of research. The findings, nevertheless, are rather equivocal since they revealed positive, negative, mixed, and nonsignificant associations. Significant effort is still required, particularly within the context of organizations, to thoroughly examine the propositions of the IS success model.

User Satisfaction

When comparing the actual usage of a structure to the propositions on user happiness, the research on the distinct level of the D&M IS Success framework consistently supports favorable associations. Most studies undertaken to date have shown a substantial positive correlation between both data and system quality and user happiness. The findings on service quality, however, only provide a combination of positive and negative evidence for its capacity to elucidate customer pleasure. Although it is not often studied, the connection among use and user fulfilment is only somewhat supported in the existing research. Nevertheless, the existing investigations mostly demonstrate favorable connections, as shown by McKeen, Guimãrães, and Wetherbe [44].

Moreover, the correlation between net benefits and user fulfilment has been shown to be quite significant. Bettencourt and Brown [45] emphasize that there is insufficient evidence to definitively determine the factors that contribute to user satisfaction at the organizational level. The interrelations between the five components that contribute to user pleasure were explored no more than four times. Upon examining the value constructs, the existing research have consistently shown a favorable correlation. The impact of System Use and overall advantages, however, demonstrate a combination of outcomes. Just like the study on system utilization, exploring user happiness in an organizational setting continues to be a compelling subject for future research on the effectiveness of information systems.

Net Benefits

Net benefits are a crucial factor in IS achievement study, serving as the primary dependent variable in the D&M IS Success framework. When examining the individual level, recent studies have shown substantial evidence supporting all interconnections. The association among net benefits and system quality is generally favorable, while the impact is mostly influenced by system usage and user happiness. Although less often researched, the same applies to the value of data and services. The usage of the structure is somewhat positively associated with net benefits, despite six research evaluated by Kuo and Hsu [46] showing no meaningful results.

All the evaluated research uniformly concluded that the concept of user satisfaction is positively connected with the net benefits of a system. Therefore, recent investigations have convincingly confirmed this association. Insufficient comprehensive data is a significant obstacle for evaluating the D&M IS Success Framework at the structural level. Three out of the five potential antecedents lack enough coverage to reliably establish their correlations with net benefits. The constructs of system utilization and system quality are adequately addressed to provide a modest level of evidence for their positive correlation with net assistances. Although there is less research on the overall advantages of net assistances at a structural level, most of the existing studies suggest a favorable correlation with other related factors.

System Use Construct and Intent

The method utilizes a success variable. Utilization is a kind of conduct, while Intention to Utilize is a mindset. The user employs the utilization of IS to carry out actions and acquire knowledge. Mardiana, Tjakraatmadja, and Aprianingsih [47]

provided a definition for “Intention to Use” as the users' perception of their probability of using the Information System (IS)”. Franque et al. [48] provided a definition for “Intention to Use” as the anticipated future use of an information system or its outcomes. The concept of Intention to Use is most often explained as the user's defiance towards IS, as stated by Petter et al. in 2013. System use refers to the consumption of an IS or its output, which may be measured based on actual use or self-reported usage.

System usage is the extent and way in which both staff and consumers make use of the functionalities provided by an information system. For instance, factors such as the quantity of use, the frequency of usage, the manner in which it is used, the suitability of its use, the scope of its use, and the intended objective of its use. Cenfetelli and Bassellier [49] have chosen to measure the purpose to use and system use in IS studies using various indicators. These indicators include the frequency and amount of use, the number of reports generated or self-reported usage, enjoyment, anticipated future utilization of an IS or its output, willingness to use, and the number of requests for information for specific reports. Multiple studies have been conducted on system utilization, user happiness, and the individual effect, with conflicting results. Certain scholars posit a clear association among the use of a system and an individual's presentation, while others have not discovered any connection between these constructs. There is a clear association among User Satisfaction and System Use, while other writers argue that this correlation does not exist. Brisswalter, Collardeau, and Arcelin [50] have shown a clear correlation among the Individual Impact and System Use.

Voluntary and Mandatory Contexts

In their study, Ali et al. [51] inspected the effect of user satisfaction on the use of Intranet and its correlation with the presentation of middle managers within an organizational setting. They also analyzed the causal relationship and impact of use and user resistance in both required and voluntary contexts. The research showed that consumption is a key factor in explaining the percentage of variation in managers' performance. The study's findings suggest that managers are compelled to utilize the Intranet due to a lack of other options to fulfill their work responsibilities, resulting in little resistance.

Observations have shown that use significantly impacts the performance of managers, making it one of the key elements that determine individual presentation. Cheng et al. [52] did a study on the impact of data technology on the achievement of e-learning structures in a required environment. They used Partial Least Squares (PLS) to inspect the findings and discovered an extensive association among the use of technology and its II. The researchers contrasted this study with the research done by Lowry and Gaskin [53], which focused on a voluntary setting and using LISREL to analyze the data. Sun and Ping [54] discovered substantial connections between both constructs. In addition, Hair, Howard, and Nitzl [55] study, which was done in a compulsory setting and analyzed the data using PLS, did not find any substantial correlations among the two constructs.

In their study, Callon and Rabeharisoa [56] conducted a meta-data to examine the impact of user engagement in IS. They discovered that the concept Initially, it was believed that use was significant in voluntary circumstances. Initially, researchers such as DeLone and McLean (1992) established that individuals have control over the phase of Use based on their individual capability, including intention and attitude. Subsequent research has further shown that the consistency of users' usage makes the structure use fabricate significant. Sjöberg et al. [57] examined the use of an electronic clinic record structure in a compulsory setting. They discovered that comprehending the relationship between important technical acceptance concepts and use required a complex abstraction of the use concept, which includes factors such as the amount of time spent utilizing the scheme, the time of use, as well as the manner of use. While Mansoori and Lackéus [58] advocated for the use of context-specific measurements to assess the use construct, rather to relying on lean measures such as time spent utilizing the scheme, they acknowledged that lean trials may be suitable in some circumstances. Gamage, Ayres, and Behrend [59] conducted a meta-data of over 50 lessons that employed the D&M model to assess the accuracy and descriptive capability of the Use component. They suggested that this fabricate should be enhanced in order to develop substantial connections with other fabricates and elucidate the influence of an IS framework.

Novel Approaches to Understanding the System Use Construct

Sørebø et al. [60] attempted to elucidate the System Use concept by proposing a model that includes an intermediary construct called Intention to Use, as well as autonomous constructs associated with Task-Technology Fit: Accessibility Fit, Representation Fit, Contextual Fit, Intrinsic Fit. Additionally, the model incorporates the construct of Behavioural Control. Seventy percent of the variability in the Purpose to Use construct and sixteen percent of the feasibility in the System Use construct could be clarified by them.

Karaboğa and Akay [61] redefine the idea of system utilization in certain situations, using a two-phase approach consisting of defining and selecting. This technique enables researchers to develop accurate metrics of system use within a specific setting. The first stage requires the establishment of the system's purpose and identification of fundamental assumptions. During the selection process, the system's use must be developed in accordance with its structure and functionality. In order to offer a clearer clarification of the System Use construct (intensity, frequency, and duration), Lakhal, Khechine, and Pascot [62] employed a mediator construct called Behavioral Potentials, as well as two autonomous constructs known as Facilitating Conditions and Behavioral Intentions. These constructs were utilized in a longitudinal sector study, and were able to account for approximately 60% to 65% of the variability observed in the reliant construct, System Use.

In their study, MacKenzie, Podsakoff, and Podsakoff [63] conducted further research to refine the System Use Construct. They used a model that included the intermediary construct Behavioral Intention, as well as independent constructs such as

Hedonic Presentation Expectancy, Presentation Expectancy, Enabling Aspects, Social Impact, and Effort Expectancy. The dependent construct in their model was System Use, which was measured by volume, frequency, Cognitive Absorption, intensity, and Deep Structure Use. Osborne [64] was able to explain 71% of the alteration in the reliant construct. The system use construct (also known as the system dependency construct) and the perceived usefulness construct (also known as the individual impact construct), as well as other constructs like user satisfaction, have been found to be associated in inconsistent ways, as we have demonstrated. Particularly when describing the voluntary or forced context, it is unclear whether the System Use fabricate has a substantial and direct association with other fabricates. In addition, Dagher [65] has attempted to redefine this notion by studying factors that influence its use. Their research has yielded satisfactory explanations for the System Use construct, with a variance explained ranging from 60 to 65 and 71%.

VI. CONCLUSION

This research aims to determine the efficiency of IS by comparing the existing D&M framework and its modifications offered by Burton-Jones and Straub, Seddon and other scholars. We build up relations and models to get more comprehensible view of the problem area of IS success. The findings of the present study also support the significance of structure use as well as the impact it has on the level of satisfaction, perceived usefulness, and the recognition of the benefits. The comparison of the several models and the integration of the result from other studies has provided a better comprehension of factors, which impact the effectiveness of IS. For this reason, there is no doubt that the process of implementation of an IS system is influenced by the synergy that is created by its elements. Thus, the need for higher level of understanding of IS and the need to take into consideration the context when evaluating its efficiency is underlined. In addition, it is necessary to admit that the examined processes related to the dynamics of technology and organizations are not static and require further development of the corresponding theoretical and empirical research. Conclusions of this research provide practical suggestions to firms that are willing to increase investment in IS and willing to gain higher performance by relating the existing theories with practical examples. Thus, it becomes important to know the determinants of IS success in the context of a firm's development and its adaptation to new digital world.

CRediT Author Statement

The author reviewed the results and approved the final version of the manuscript.

Data Availability

The datasets generated during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interests

The authors declare that they have no conflicts of interest regarding the publication of this paper.

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