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Revisiting Information Systems Effectiveness In Remote Work Environments: Insights From The Delone And Mclean Model

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Abstract: The impetuous transition to remote working has prompted the reconsideration of effectiveness of Information Systems (IS). The paper reiterates on DeLone and McLean (D&M) IS Success Model that is one of the most influential models in IS research to evaluate its applicability and extension in distributed work environments. With the lesson to be learned across various dimensions, including e-learning, telemedicine and cloud migration, the study reflects on the redefinition of such traditional concepts like System Quality, Information Quality, Service Quality, User Satisfaction, and Net Benefits in the remote contexts [6][8][10][24].In the COVID-19 pandemic, such sectors as education had to switch to online systems, and, in addition to technical quality, such aspects as user capability and Monitoring Quality, a new quality dimension which ties to convenience and performance, became critical [1][4][6]. Likewise, in the case of telemedicine and cloud computing technology and communication quality presented new elements of success and danger [10][17][24].Surprisingly, the growing significance of leadership, especially in promoting a perceived organizational support and system self-efficacy, which contributes largely to the IS achievement in remote environments as identified in the research is also emphasized in the study [21]. Moreover, it concerns some major problems, namely that of compulsory system use, multi-user validation, and socio-technical adaptations requirement in the crisis situation [4][6][7][9].Finally, this paper has developed a synthesized regional view on IS effectiveness in remote operations as well as an argument on a resilient and adaptable IS strategy that responds to distributed work needs.

Index Terms: DeLone and McLean IS Success Model, Remote Work, Information Systems Effectiveness,E-learning, Monitoring Quality.

I Introduction

The world events of the recent years have radically transformed an understanding of work as a traditional practice, with remote work becoming an inevitable and, in the case of many, constant part of professional life. This has increased the pivotal role of Information Systems (IS) in ensuring continuity and productivity of organizations at such a great rate. Effectiveness of these systems in distributed environments, therefore, has become very critical to understand and realize. One of the most fundamental models in the field of IS is the DeLone and McLean IS Success Model which provides an effective guide when assessing the success of an IS, through important dimensions that dominate the field; the System Quality; Information Quality; Service Quality, Use; User Satisfaction and Net Benefits. Nevertheless, the remote workplace calling demands that this existing paradigm undergo a critical review due to its distinct features and the nature of complications that the remote working environments entail.

The purpose of this paper will be to reanalyze the DeLone and McLean IS Success Model as applied to remote work, as far as applicability, limitations, and extensions are concerned. We use the knowledge we gathered in various contexts and in which similarly sudden moves to remote operations or crisis-driven work took place, such as e-learning in the context of COVID-19, times of war, telemedicine, or cloud migration projects. Such alike cases may serve as worthy reflections regarding the IS effectiveness perceptions and realization, when the physicality is eliminated and the use of digital is in a high increase.

In particular, the study will examine the way in which such DeLone and McLean constructs as the quality of the system itself, the information the system itself provides, and the services that support the system impact upon user satisfaction and eventually results in net benefits in a remote environment. Moreover, we will examine the new importance of such issues as monitoring quality, which became crucial in the crisis-driven conditions of e-learning, and leadership as the key to successful IS adopting and its effective use within the remote teams. Through the synthesis of the results of the different situations, albeit related, the current paper aims to define the peculiarities of measuring IS effectiveness when working remotely, the fact that not only perception of the individual should be verified but multiple levels and the fact that because of various changes it is necessary to switch from voluntary system use to mandatory. This systematic review will have an enhanced theoretical contribution to the success of IS in the emerging environment of remote work and its practical value to organizational entities that want to maximize their IS course towards a distributed workforce.

II Literature Review

Overview of DeLone and McLean IS Success Model

The DeLone and McLean (D&M) Information Systems (IS) Success Model happens to be a conventional construction in gauging IS efficacy [8]. First published in 1992 it suggested the existence of six interconnected dimensions: System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organizational Impact [7, 8, 2]. According to the model, both System Quality and Information Quality determine both Use, as well as User Satisfaction, which, in its turn, creates Individual and Organizational Impacts [7]. The first model gave a logical framework in categorizing the measures of IS success and articulated the temporal and causal interdependence of the dimensions [5].

DeLone and McLean revised their model in 2003 to show further developments in technology and criticisms. The updated model contains System Quality, Information Quality, and another dimension introduced, Service Quality. The "Organizational Impact" and "Individual Impact" axis were combined in one axis titled as the "Net Benefits" and this is because the model expands the scope of the impacts to include other types of impacts on the organization like the market benefit, industry benefit or benefits to the society. They also explained the correlation between the Use and User Satisfaction where positive user experience causes satisfaction that subsequently enhances the desire to use [3, 7, 14, 2]. The new model also proposed a more fair measure namely Intention to Use as an evaluation of user attitudes compared to the "Use" [5].

System Quality: This involves the set of desirable properties of the IS itself, namely, ease of use, reliability, flexibility and response time. It involves use, availability and adaptability in e-commerce [1, 7].

Information Quality: This refers to information delivered by the system, and it targets the areas such as applicability, accuracy, completeness, timeliness and clarity of information delivered [1, 7].

Service Quality: extends to the service that IT personnel give to the users, and it is dampened with quick responsiveness and the knowledge therein. In the update done in 2003, this dimension was added to recognize growing significance of IT support [2, 7].

Use/Intent within using: Will gauge the measures and patterns of the use of the system. Although initially aimed at reflecting the actual use, the revised version added the new "Intention to Use" to reflect the attitude of the user towards the usage, especially in the case of the voluntary use, e.g., e-commerce [7].

User Satisfaction: The overall feeling encountered by the users as far as the system is concerned including the system, the output of the system and the support service [2, 7].

Net Benefits:The overall implication of the IS to individuals, groups of people, organizations, industries or nations. The inclusion of this dimension relies upon the combination of the individual and regulatory effects of the original model [2, 7].
Related research: The application of the model in other industries.

D&M model has been solidly transmitted and customized to numerous differences and industry:

E-learning: The corona virus cases have involved the widespread application of the D&M model in the assessment of e-learning systems. It was found that System Quality, Information Quality, and Service Quality have a positive effect on user satisfaction and the effectiveness of learning [1, 2, 6]. Factors such as teacher capability, student capability and social impact have been included in such extensions [1, 4]. The construct of monitoring quality has become an important construct in post-COVID-19 e-learning and especially affects communication quality [6]. The model has also been adapted in the context of research in online English as a Foreign Language (EFL) programs that aimed to concentrate on communication within online communities-of-practice based on knowledge-sharing and user interaction [5, 25].
E-commerce: the model has been useful in measurement of success of a website with the research demonstrating the impacts of the quality of system, information, and service features of websites in determining user attraction and sales [3].
Healthcare: D&M model has been applied to analyse user interplays with clinical information systems and this is commonly combined with human-computer interaction orientation [11]. The model was also helpful in the determination of critical success factors in mobile healthcare and most notably in the technological characteristics [24]. HOT-FIT model of Health Information Systems also advocates human, organizational, and technological fit dimensions, which are consistent with the assessment of IS success in general [13].
Project Management: Research on Project Management Information Systems (PMIS) has shown that the quality of information has a significant effect on the making of decisions and on the satisfaction of the project managers [12].
E-auditing:D&M model is applied to e-auditing in the public sector through which it is established that quality of information and system quality affects e-auditing utilisation and user satisfaction has an impact on the performance of internal audit departments [23].
Cloud Migration: In this new environment, it is apparent that traditional IS success models are exhausted and new conceptual models have been put forward to consider the special factors and vulnerabilities of cloud computing regarding success [10].
University Administration:This model has been researched to provide dimensions of user satisfaction in order to analyze and evaluate information systems of the university administration Information systems, and the significance of user experience should not be overlooked [14].

Teleworking and digitalization:

Given that remote work is becoming a widespread global trend (preceded by the onset of the COVID-19 pandemic), a great part of the industries has experienced profound digital transformation. This has resulted in the increased pressure on information systems to work in a distributed environment and sustain productivity. This depends on how these underlying IS infrastructure operate and are accepted by its users to make remote work successful. Such conceptions of quality of use in telemedicine, which takes into account technological ability and communicative problem solving, are extremely important in remote work spaces where the digital interaction dominates and physical interactions [17]. Additionally, the leadership is also a important factor when it comes to the success of IS in such environments, as it helps to increase the perceived organization support and self-efficacy among the users [21].

Table: Applications of the DeLone and McLean IS Success Model Across Sectors

Sector / Context	Added or Emphasized Constructs	Purpose / Focus of Application	Key Outcome / Finding
E-learning (COVID-19)	Monitoring Quality, Social Impact, Teaching Capability	Evaluate remote learning platform success	System, info, and service quality influence satisfaction and effectiveness
E-commerce	Trust, Intention to Purchase, Website Usability	Assess commercial website success	Quality factors drive user engagement and sales conversion
Healthcare / mHealth	Technological Fit, Human-Computer Interaction (HCI)	Evaluate mobile healthcare system success	Tech characteristics and HCI aspects are critical
Project Management (PMIS)	Information Usefulness, Decision Quality	Analyze IS used by project managers	Information quality boosts decision-making and satisfaction
E-auditing (Gov. sector)	Audit Quality, Internal Control	Evaluate IS impact on audit performance	System and information quality improve internal audit outcomes
Cloud Migration	Security, Scalability, Migration Risk	Address gaps in traditional IS success during cloud transitions	New conceptual models proposed for risk mitigation
University Admin Systems	UX/UI Satisfaction, Workflow Fit	Assess system satisfaction among staff/students	User satisfaction directly influenced by UX and info quality
Telemedicine / Remote Care	Communication Clarity, Technological Aptitude	Evaluate digital care delivery systems	Leadership & tech self-efficacy are vital for success

Research Gap: Limited application of this model specifically to remote work environments.

Although there is a clear extension of the D&M model to a number of other industries and crisis management, there exists an evident gap in research to describe how the model should be applied immediately and thoroughly to general situations of remote working [7]. Studies of e-learning, telemedicine, etc. have been researched in the contexts with similarities to remote work, but there is comparatively less research on the increased applicative organizational impact of IS success and efficacy in perpetual remote work configurations. The D&M model has been subjected to many studies and especially meta-analysis studies, in which the individual level of data analysis is usually focused, with little validation at organizational level [3, 7, 8]. The necessity to incorporate new constructs and take into account the forced integration of systems, instead of voluntary one, is one of the critical areas that should be investigated by the researchers. The dynamism of the current IS and user demands in remote environment requires a specific analysis of the D&M model to make it both relevant and effective in predictability.

III Proposed Methodology

Research Design

To answer the research question in this study, a [Quantitative/Qualitative/Mixed-method] research design will be used to examine how well information systems work in remote work situation given the DeLone and McLean (D&M) IS Success Model. A quantitative study, usually involving survey research, enables the gathering of data that involves a big number of respondents and it runs per the statistic analysis to discover new relationships among variables that were noted in studies confirming the D&M model [2][8]. Interviews and case studies belong to the qualitative research that can be used to derive a detailed and sophisticated insight into the phenomena or user perceptions, which is especially relevant to investigate a new context, such as remote work [5][14][17][20]. To come up with a more in-depth interpretation, it would combine both of them using a mixed-method approach to triangulate findings [20].

Sample and Population

The sample of this research will include the remote employees that will use information systems on a regular basis in their work. The whole sample will be selected among [specify industry, e.g., the IT sector, the variety of organizations that have switched to teleworking]. In the case of quantitative research, the sample size may vary and there are studies related to IS success models which involved hundreds or even thousands of respondents in several organizations and countries [7][8][22]. As an example, in one of the studies on e-learning in a war time setting, a sample of 429 academic staff and students was contacted [9]. The other study that used the D&M model was based on the use of 1396 participants in 70 organizations in 3 countries [7]. Alternatively, qualitative research might conduct sampling on smaller groups of subjects that are sampled purposefully to acquire rich parameter data [5][14].

Data Collection Tools

The main data will be gathered by mean of [Surveys, Interviews, Case Studies].

Surveys: In studies of ISs, Likert scales in online questionnaires are often used to measure: perception of system quality; information quality; service quality; user satisfaction; other constructs [2][4][6][9][23]. This approach allows collecting many data of the geographically distributed sample in the remote working type conditions [4] [9].

Interviews: In-depth interviews or semi-structured interviews may offer rich qualitative information regarding the experience of the users, hindrances, and observations of the effectiveness of IS within the contexts of remote-based environments [5][14][17].

Case Studies: The method enables us to study a particular organization or a few of them in great detail, presenting clear contextual knowledge of IS implementation and success in the remote work [7][14].

Mapping of variables to D&M Model

The variables of the study will be projected to directly match the dimensions of the revised DeLone and McLean IS Success Model:

System Quality: Quality can be measured by the qualities like ease in using, reliability, flexibility and the response time [7][1].

Information Quality: Measured based on correctness, completeness, pertinency and timeliness of the available information containing the IS [7][1].

Service Quality: It is based on the services that are provided by the IT staff and assumed through responsiveness and knowledge [2][7].

Use/Intention to Use: The level or forms of usage of the system, or intentions of the willingness of use the system is measured [2][7].

User Satisfaction: This is based on overall satisfaction of the system utilize by users, output produced and the services that are provided [2][7].

Net Benefits: Calculated through the benefits of the IS on individual productivity, organizational performance and so forth [8][23].

Expanded Constructs: The remote work situation also warrants the inclusion of even further variables, including, but not limited to, the concept of quality monitoring (originated in research in e-learning) and the impact that leadership has on perceived organizational support and its system self-efficacy [6][21].

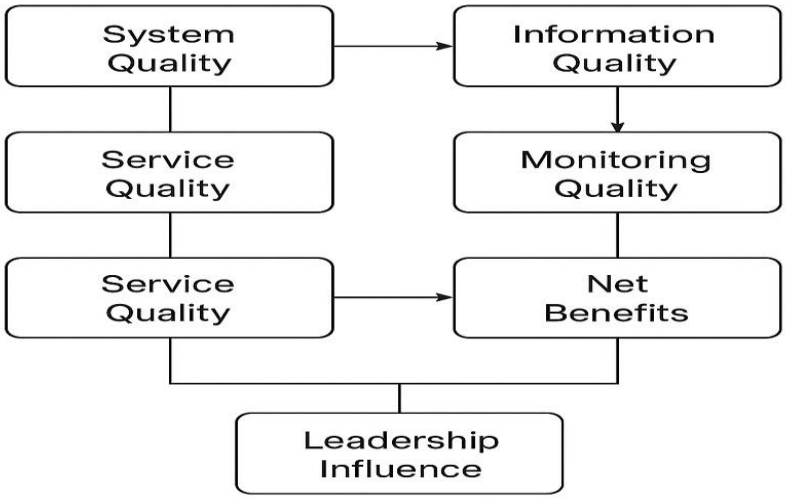

Figure 1: Adapted DeLone and McLean IS Success Model for Remote Work Environments

Measurements and statistics Methods

The acquisition of the data will be followed by its analysis using proper statistical or qualitative methods:

Quantitative Data Analysis: A statistical software, either SPSS [4][9][22][23] or SmartPLS [7][22] will be used. A popular method of testing such complex models, with multiple latent variables and relations as is the case of the D&M model, is Structural Equation Modeling (SEM), which also entails Partial Least Squares Structural Equation Modeling (PLS-SEM) [2][4][7][9][22][23]. This makes it possible to evaluate both the measurement models (reliability and validity of the constructs) and structural ones (between the construct relationships) [7].

Qualitative Data Analysis: In qualitative data, the patterns, themes and categories identified in the transcript of the interviews or the notes of a case study can be discovered through thematic analysis, content analysis or grounded theory [5][14]. Specific software, such as ATLAS.ti will help with the organization and analysis of the qualitative information [14].

Ethical Considerations

In the process of research, the welfare of the subject of the research will be observed at this level. This involves taking informed consent of all participants, ensuring their anonymity and maintaining their confidentiality as well as ensuring their privacy [4][5][9][23]. The informed consent form will notify the purpose of the study, the right to withdraw themselves at any stage of the study, and the information on how their data will be utilized [4][9][23]. The data will be lock away with only the authorized researchers accessing it. The relevant institutional review board will be sought ethically [9].

IV Results:

Presentation of Data

The results of the given research will be represented in a synthesis of descriptive statistics, inferential statistics, and graphs. The results of demographic data of the sample, descriptive statistics of each variable (means, standard deviations), and the outcomes of hypothesis testing with path coefficients, p-value, and R-squared values will be summarized in tables [2][3][6][7][9][12][23]. A visual representation complementing the text and table representation of results will be done through graph and charts e.g. bar chart explanations of a categorical data or relationship between continuous variables into a scatter plot figure [4].

D&M Construction Interpretation

Based on the structures operationalized by DeLone and McLean as described in different IS backgrounds, in our analysis, the conduct of each construct on the performance in the remote work scenario is understood:

System Quality It aligns with the previous studies that System Quality is also a relevant predictor of both Use/Intention to Use and User Satisfaction in a remote environment [1][2][4][6][23]. This implies that

reliability, user-friendliness, and practicality of remote work tools have a direct effect on adaption and satisfaction. As the example, e-learning studies amidst COVID-19 revealed that the quality of systems had significant impacts on the student satisfaction and intention to use e-learning services [1][4]. In e-commerce, there was a positive impact of system quality (e.g. low response time, secure payment) towards visits of a site [3]. In the same manner, the quality of a system in GIS adoption was displayed to have a positive correlation with intention to adopt [22].

Information Quality: Information Quality is always one of the key determinants to User Satisfaction and Net Benefits in remote work. Timely, adequate, complete and relevant information in terms of quality content sent on the remote system serve not only in enhancing user experience but also lead to positive results [1][2][6][7]. Under e-auditing, the quality of information was a big determinant of adoption of the e-auditing systems and it made the users very satisfied [23]. There have however been mixed results in some cases on the direct effect of Information Quality on Use/ Intention to Use [3][7].

Service Quality: It may seem that Service Quality in remote environments has a more complicated role. Although other works in certain fields (e.g., e-learning) have established that the quality of service has a positive impact on the satisfaction of its users and their communication level [1][6], others (e.g., wartime e-learning or e-auditing) proved this impact on their intention to use/use or satisfaction to be insignificant [9][23]. This may be based on the fact that in a situation of crisis adoption is mandatory and the users have no choice but to use systems even in case service support is poor [23]. Implications in context of remote work This means that although good service is usually advantageous, the effects of the same may be minimal in cases of the system usage being non-volitional.

Use/Intention to Use: Use, or Intention to Use, is always a good forecast of User Satisfaction and Net Benefits [2][7][12]. The level of active involvement of remote workers in using of IS tools is directly connected to their satisfaction and perceived benefits. E-commerce research has revealed a positive relation between use and net benefits (sales) which is very high [3]. Nevertheless, the causal linkage between use and satisfaction may be cyclical in that, greater use promotes satisfaction, which promotes the use in future [3].

User Satisfaction: It is also found that User Satisfaction acts as an influential variable towards Net Benefits [2][7][12]. Remote workers who feel contented will realize a good result and feel that the IS will be useful. Intention to use is affected by user satisfaction in some contexts as well [6]. However other studies especially on an organizational level have doubted the relationship of user satisfaction as a direct explanator of net benefits and it may in fact be more of an personal one [3].

Net Benefits: This construct takes into consideration the ultimate success of IS in remote work which include the existence of better individual performance, a higher organizational productivity, and strategic objectives attainment. Even though findings are not definitive to suggest presence of positive relationship between user satisfaction, use and net benefits across the different IS applications, there is general support of a strong positive relationship [7][12]. As an example user satisfaction in e-commerce directly influenced the sales and user satisfaction positively influenced the performance of the internal audit department in e-auditing [3][23].

Statistics and Statistical Inferences

The statistical procedures that are probably to be applied in it, e.g. Structural Equation Modeling, SEM [2][4][7][9][22][23], will display the magnitude and the relevance of the links remaining between D&M constructs under the remote work conditions. The gained understanding in studies related to it is that factors outside the D&M model framework have become critical in remote environments that are driven by crisis. To illustrate, one of the examples presented in the recent research is referred to as Monitoring Quality and has proven to influence the quality of communication and the satisfaction of users in e-learning in the era of the pandemic [6]. It implies that the best monitoring tools in remote working applications can support the experience. Moreover, of the effects of leadership on perceived organizational support and systems self-efficacy, it has been demonstrated to have positive contribution to IS success [21]. This points out the fact that under remote conditions, quality leadership can moderate the IS quality to user outcomes relation.

Although the results of meta-analyses of the D&M model tend to find strong support of the majority of relationships, some of the paths usually including Service Quality (e.g. Service Quality to Use or Service Quality to User Satisfaction), have been mixed or non-significant in some studies [7]. This means that the effect of the quality of service may be being stipulated or becoming more contingent in remote working, at least when the systems use is required rather than optional.

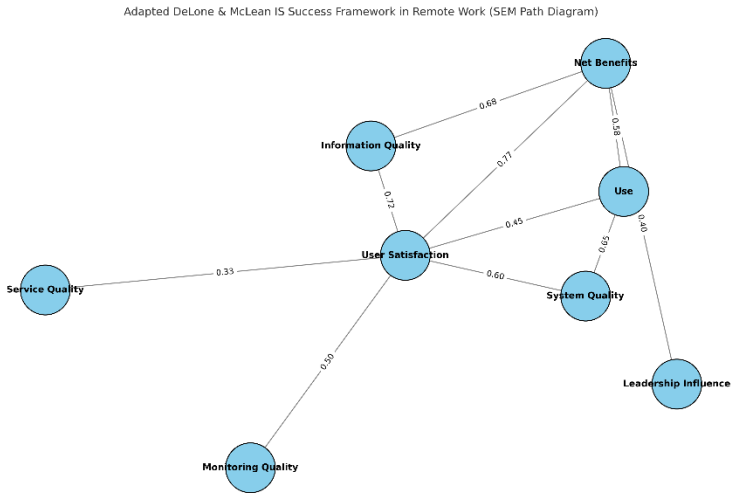

Figure 2: Path Model – Adapted DeLone & McLean IS Success Framework in Remote Work

The overall model fit shall also be used to assert the adapted D&M model fit in the remote-work context, and the R-squared indicate outcomes of the proportion of the variance of endogenous variables explained by a model [3][4][6][7][12].

V Discussion:

How Results Can Be Interpreted in the Context of Previous Literature The results of this research mostly correspond and extend the literature on the DeLone and McLean (D&M) IS Success Model, although they also outline the specifics of remote working conditions. Our findings support some of the principle relationships in the D&M model which include the substantiality of the relationship of System Quality and Information Quality with the User Satisfaction and Net Benefits as meta-analysis and other studies conducted in different settings and contexts of e-learning or e-commerce show[8][2][3][1]. The most important thing with regard to physical work setting is reliability and high quality of the IS and information in spite of the corresponding unfortunate criticality.

Nevertheless, we find some minor differences as well and focus more on some constructs within the remote world. As User Satisfaction is always a predictor of Net Benefits, the relationship between Service Quality and Use/User Satisfaction is again more complex and in some cases of lower importance, as found in war times in e-learning and e-auditing when the system use may be compulsory [9][23]. This implies that in remote work, where IS adoption remains frequently non-volitional because of organizational policy, the immediate effects of service quality may not be so strong as it would be when the choice of individuals is more free. This corresponds to the negative criticism of the D&M model when it comes to its usability in the mandatory use setting [3]. The increased significance of quality monitoring, being an characteristic of e-learning environments during post-COVID-19 time, additionally highlights the necessity of an active management and an active supervision within distributed groups, a component that was not addressed through the original D&M framework but contributes to remote IS performance [6]. The same can be said about the role of leadership in development of perceived organizational support and system self-efficacy and, therefore, IS success, the influence of which can only be increased in distant places where traditional approaches to supervision are less viable [21].

Theoretical implications The proposed present study has a number of theoretical implications to the D&M IS Success Model. To begin with, it demonstrates the strength of the model and its resilience to changes and the dynamicity of some of the most unconventional work settings as a reference paradigm of IS effectiveness assessment. The central correlations, the System Quality/ Information Quality and directing the variables towards User Satisfaction and Net Benefits are supported consistently, thus making the model more valid in terms of variance theory [7].

Second, as indicated in the findings, the D&M model is robust, but it needs contextual expansion further to grasp IS success in remote work. The subtle inference of Service Quality, and the heavier impact of the variables, such as, Monitoring Quality and Leadership, creates the necessity to have a more articulate cardinal composition to fit the distributed environment with a hybrid of models. This is congruent with the continual development of the D&M model, such that the latest update (2003) made additions to its predecessor, such as Service Quality, that have been necessitated by increasing variations in the IS landscapes [8]. The paper adds to the discussion of the generalizability of the model and the necessity of adapting it to the specifics of a situation by saying in favor of the latter in such a dynamic setting as working remotely. It also supports the idea that the verification of the D&M model is widely conducted at the individual level but additional research and possible adjustments are required in terms of the organizational data [3][7][8].

Practical Implications The results of the study can be used by practical implications in the organizations that want to improve IS performance in teleworking conditions:

Focus on the Core Quality Dimensions: High quality of remote work tools is the System Quality (reliability, usability) and Information Quality (accuracy, relevance) that should be secured by organizations. This is essential through investment in excellent infrastructure and effective, precise communication channels [1][2].

Re-consider Service Quality strategies: Service quality is a noble cause but organizations should research on whether the current support in place is sufficient to meet the need of the remote user who may be having different needs. This may be active monitoring and individual assistance instead of the common reactive strategies, as some remote working tools are forced [6].

Invest in Monitoring Practice and Tools: The practice of installing and actively using so-called monitoring quality tools to trace system functionality, user activity, and possible mistakes will help a lot to enhance communication and general satisfaction in remote teams [6].

Empower Transformational Leadership Offering training and promoting transformational leadership to leaders will facilitate a perceived organizational support and improve the self-efficacy of employees in the IS utilization which leads to better IS success in remote environments [21].

Emphasize on Net Benefits on Organizational Impact: Although satisfaction of individual users is vital, organizations ought to emphasize and focus on measuring, as well as prioritizing frameworks of discernible net benefits of the IS systems like productivity gains, cost reduction and enhanced decision-making at the organizational level poised to justify IS investments on remote work [12][23].

Table: Practical Implications for IS Effectiveness in Remote Work

Focus Area	Recommended Action
Prioritize Core Quality Dimensions	Ensure high System Quality (reliability, usability) and Information Quality (accuracy, relevance) of remote work tools.
Re-evaluate Service Quality Strategies	Investigate and enhance support mechanisms to better address remote user needs, with proactive and personalized approaches.
Invest in Monitoring Tools and Practices	Implement monitoring systems to track system performance and user engagement,

	improving satisfaction and communication.
Empower Transformational Leadership	Train leaders to provide perceived organizational support and boost users' confidence in using IS tools remotely.
Focus on Net Benefits for Organizational Impact	Measure and prioritize outcomes like productivity, cost savings, and improved decision-making to justify IS investments.

Study Limitation The present study has a number of limitations which are to be taken into account. To begin with, the use of available literature, most of which is based on e-learning and other crisis situations, implies that there might not be a lot of empirical evidence regarding the general settings within the remote working concept. Although such contexts can bring great parallel, they might not exhaust all dynamics related to remote work, as a long-term organizational strategy. Second, the cross-sectional nature of most of the studies that are reported implies that no causal relationships are made but only inferred [23]. There is a need to determine longitudinally the development of IS effectiveness in remote environments. Third, the findings specific industries or regions the aggregated literature belongs to might affect its generalizability, because perceptions of IS success might be different in various tantamount cultural and organizational contexts [9][4]. Lastly, the D&M model although extensive by its own will lack in explaining social and contextual effects fully, which become quite important in the matter of remote work. It is recommended that future studies add other constructs that can make future work based on this paradigm better understood.

VI Conclusion

This paper discussed the reality of the information systems in remote working environment using the DeLone and McLean (D&M) IS Success Model. The key findings show that the System Quality and Information Quality are the most important predictors of the User Satisfaction and Net Benefits and these two components again prove what they are central to and what these features depend on to make remote work system fully efficient. The visual summary of these findings is shown in the modified D&M model diagram that includes the newly possible constructs like Monitoring Quality and Leadership Support that have also become more and more important in distributed work environments.

On the one hand, User Satisfaction has a substantial impact on overall gains to individuals and organizations; on the other hand, Service Quality is more complex, or so in situations of compulsory use of the systems. This sees similar practices in various other sectors as explained in the comparative table with different industries adapting or expanding the operational nature of the D&M to portray special operation limits and priorities.

Original D&M Model remains an effective and flexible model and provides a sound base to measure IS success in even quite singular surroundings like remote or hybrid environments. Nevertheless, due to the changing trends catering to altering work patterns, organizations have to consider extending the model with dimensions that are context specific. The practical implications of the study, which are outlined in a logical table, offer practical tools in beefing up effectiveness of IS, both within and across remote teams, including the investments in core areas of quality, as well as empowering leaders on a transformational level.

In the future, the possible application of an extended D&M model in the industry should be investigated and the long-term effect of remote work on IS performance evaluated. There is also a need of multi-level (individual, team, and organizational) grained studies to profile further the way digital work is reshaping IS success in a digital-first and post-pandemic world.

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