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Developing Management Information Systems Using the Lens of Organizational Culture: an End-User Participation perspective A prospective study of the views of a sample of End User in a number of faculties of the University of Mosul

Assistant Professor :Ahmed zuhair Tawfiq [1], *lecturer :Rasha Duraid Hanna* [2]

[1] *College of Administration & Economics, , University of Mosul ،Mosul, Iraq*

[2] *College of Administration & Economics, , University of Mosul ،Mosul, Iraq*

ahmed_zuhair@uomosul.edu.iq
rasha_duriad@uomosul.edu.iq

Abstract. The research objectives to identify the impact of organizational culture on the contribution of the ultimate End User in the development of management information systems. Research has adopted a model composed of four elements of the culture of organizational namely: attention to detail and the results, positive competition, innovation, work teams, and the contribution of the ultimate End User in the development of Management Data Systems has identified six elements: lack of participation, participation Avatar, participate through advice, Post ratification, participating design, to participate in all stages of development. Necessary to search through a questionnaire collected data also designed for this purpose, either Vtkont research sample of 70 End User in a number of faculties of the University of Mosul. To accomplish the purposes of the investigation has identified a set of hypotheses that have been adopted. To test the hypotheses have been using a range of statistical methods. tousled search to a set of conclusions, The most important of these is the existence of a statistically significant effect of organizational culture on the participation of the End User in developing management information systems by creating positive attitudes among Users towards participating in development processes.

Keywords: Organizational Culture, End User Involvement Management Information System Development

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تطوير نظم المعلومات الادارية باستخدام عدسة الثقافة التنظيمية: منظور مشاركة المستفيد النهائي
دراسة استكشافية لآراء عينة من المستفادين في عدد من كليات جامعة الموصل

أ.م.د.أحمد زهيرتوفيق[1] ، م.رشا دريد حنا[2]

[1] *كلية الادارة والاقتصاد ، جامعة الموصل ، الموصل ، العراق*
[2] *كلية الادارة والاقتصاد ، جامعة الموصل ، الموصل ، العراق*

ahmed_zuhair@uomosul.edu.iq
rasha_duriad@uomosul.edu.iq

المستخلص. هدف البحث إلى التعرف على اثر الثقافة المنظمية على مشاركة المستفيد النهائي في تطوير انظمة المعلومات الإدارية. وقد اعتمد البحث نموذجا مؤلفا من أربعة عناصر للثقافة المنظمية وهي: الاهتمام بالتفاصيل والنتائج، المنافسة الايجابية، الابتكار، فرق العمل ،أما مشاركة المستفيد النهائي في تطوير انظمة المعلومات الإدارية فقد حددت بستة عناصر هي: عدم المشاركة ، المشاركة الرمزية ، المشاركة من خلال النصيحة، المشاركة بالمصادقة ،المشاركة بالتصميم ،المشاركة بكل مراحل التطوير . كما جمعت البيانات اللازمة للبحث عن طريق استبانة صممت لهذا الغرض، اما عينة البحث فتكونت من (70) مستفيد نهائي في عدد من كليات جامعة الموصل. ولتحقيق أهداف البحث حددت مجموعة من الفرضيات التي تم اعتمادها. ولاختبار فرضيات البحث تم استخدام مجموعة من الاساليب الاحصائية .وتوصل البحث إلى مجموعة من الاستنتاجات ،ومن أهمها وجود أثر ذو دلالة إحصائية للثقافة التنظيمية على مشاركة المستخدم النهائي في تطوير نظم المعلومات الإدارية من خلال خلق اتجاهات إيجابية لدى المستخدمين نحو المشاركة في عمليات التطوير.

الكلمات المفتاحية : الثقافة المنظمية ، مشاركة المستفيد النهائي في تطوير انظمة المعلومات الإدارية.

Corresponding Author: E-mail: rasha_duriad@uomosul.edu.iq

Introduction

Organizational culture is one of the greatest prominent recent approaches to management alteration and improvement. In general, organizational culture delivers the context that describes the working style within organizations and distinguishes it from other organizations. The performance of beneficiaries in organizations is influenced, in one way or another, by various internal and external factors. Thus, the culture of the organization plays an significant character in prompting beneficiaries' participation in the development of management information systems (MIS). Given the rapid advancements in information and communication technologies, which are among the main elements impacting MIS, there is a pressing need for continuous system development. Therefore, it is essential to focus on organizational culture as a means to understand management practices that enhance beneficiaries' participation in MIS development. Accordingly, this research will focus on the impact of organizational culture and its relationship with beneficiary participation in MIS development.

Section One: Research Methodology

First: The Research Problem

Users have played a clear role in the development of information systems, as information system users have become key players in the success of designing and implementing these systems, and their participation has become one of the most important factors and variables taken into account by the managements of organizations seeking to obtain information systems that enable them to achieve their goals. Organizational culture is of great importance to the end user as it influences their behaviour, which is acquired through learning from the society in which they live. It provides the individual with the ability to communicate and assigns them a role in fostering development within the organization. One of the most important aspects of the modern era is organizational culture., necessary for organizations to face challenges and keep pace with changes. This can only be achieved by having well-qualified beneficiaries capable of adapting to constant change and contributing to its success. Therefore, it is crucial to encourage an environment where end-user participation in developing MIS is promoted, ensuring their commitment to the development process and its plans. From this standpoint, the existing investigation aims to explore the impact of organizational culture on end-user participation in MIS development. For research purposes, the problem can be formulated through the following questions:

1. Does organizational culture affect end-user participation in developing MIS?
2. Is there a significant correlation between organizational culture and end-user participation in MIS development?
3. To what extent do end-users participate in the development of MIS within the researched organization?

Second: The Importance of the Research

The significance of this research stems from the following aspects:

1. It addresses two variables that play a crucial role in the functioning and behavior of organizations. The topic of organizational culture is a modern concept in organizational behavior studies, while end-user participation is an essential aspect of MIS operations.
2. It promotes a culture of development through the active and effective participation of beneficiaries in MIS development.
3. It seeks to understand whether the system and nature of the researched organization's work allow and encourage end-user participation in MIS development.
4. It highlights the crucial role organizational culture plays in enhancing end-user participation in MIS development.

Third: Research Objectives

The beneficiary is the fundamental element upon which the success and effectiveness of MIS depend. Organizations should give more attention to the end-user and study the significance of the influence of organizational culture magnitudes on their participation in the development process. Based on the aforementioned points, this research aims to achieve several objectives, which can be summarized as follows:

1. Conducting a theoretical review of available sources to develop a theoretical framework and provide an academic contribution to the research variables, which are continually evolving topics.
2. Assessing the reality of organizational culture and emphasizing its importance in enabling end-user participation in the development of MIS.
3. Utilizing beneficiary insights to improve MIS and making them active participants in development processes.
4. Encouraging the participation of beneficiaries affected by MIS development and fostering teamwork in handling development processes.

Fourth: The Hypothetical Research Model

In light of the research problem and to achieve its objectives, a proposed model has been developed to diagnose the influence of organizational culture on the extent of end-user participation in the development of management information systems (MIS). Figure (1) illustrates the model that has been derived.

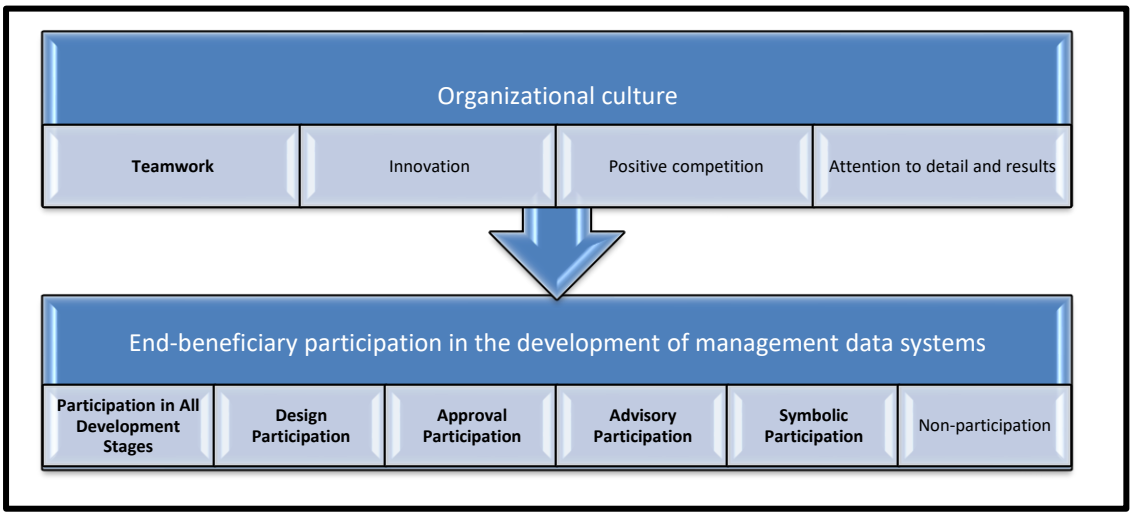

Figure (1) Default search form

Source: Prepared by the Researchers

Fifth: Research Hypotheses

In line with the research objectives and to test its model, the subsequent hypotheses have been expressed:

1. Organizational culture does not affect end-user participation in the development of management data systems.

2. End-user involvement in the creation of management information systems is not significantly correlated with organizational culture.
3. End-user contribution in the improvement of management data systems is neither absolute nor nonexistent; rather, participation ranges between these two levels.

Sixth: Data Collection and Analysis Methods

Theoretical Aspect: The research relies on various sources, including references and literature (books, research papers, theses, dissertations, and articles) that focus on organizational culture and end-user participation in MIS development, to establish a scientific background for the study.

Practical Aspect: The researchers utilized several necessary tools to collect data for this part of the research:

A. Personal Interviews:

Interviews were conducted with the participants to gain a general understanding of the two dimensions of the research. The interviews also helped clarify any ambiguous items in the questionnaire and provided necessary explanations to ensure accurate responses that support the research.

B. Questionnaire:

The questionnaire was the primary tool for data collection. In its design, clarity was ensured to diagnose and measure the two dimensions of the research. As there was no pre-existing scale to measure these dimensions, the researcher relied on previous studies and research that addressed these dimensions to construct the measurement scale for this research, referencing sources like:

- Robbins (2003, 525)
- Tepeci (2001, 9)
- McKenna (2000, 480)
- Smith (2004, 2)
- Al-Attiyah (2003, 326)
- Bocij et al. (2003, 500)
- Alter (1996, 340)
- Mousa (2013, 209)
- Al-Murad (2006, 72-73)
- Al-Buheisi & Miqdad (2013, 31)
- Palanisamy & Sushi (2001, 74).

Description of the Questionnaire:

The questionnaire, used to gather the necessary data for the study (Appendix 1), comprised two sections. The first section focused on the organizational culture dimension and included four variables: (1) attention to details and results, (2) positive competition, (3) innovation, and (4) teamwork. The second section focused on end-user participation and included six variables: (1) non-participation, (2) symbolic participation, (3) participation through advice, (4) participation through endorsement, (5) participation in design, and (6) participation in all stages of development. A seven-point Likert scale stayed used in the inquiry form.

Reliability of the Questionnaire:

To verify the validity of the scale, the Reliability Alpha (Cronbach's Alpha) was used. The alpha coefficient was around 93.4%, indicating a very high level of reliability compared to the standard alpha value for social sciences research, which is 60%.

Seventh: Statistical Analysis Methods

Several statistical tools were employed to test the hypotheses, using the statistical software SPSS (Version 13). The statistical methods included:

1. Spearman's Rank Correlation Coefficient: Used to quantity the power of the association between two variables.

2. Simple Linear Reversion Test: Applied to measure the effect of the independent variable on the dependent variable.
3. Fuzzy Logic: Used to determine the percentage obtained in each field by applying a proposed function to the responses of the sample individuals to each field's items. This was done using Excel, based on the arithmetic means and standard deviations.

Eighth: Research Methodology

The research adopted the descriptive-analytical method, which quantitatively and qualitatively describes the studied phenomenon by collecting, classifying, and analyzing information. This approach seeks to uncover the relationships between the different dimensions of the phenomenon, providing sufficient interpretation to reach general conclusions that contribute to understanding the present, diagnosing the current situation, and identifying its causes.

Ninth: Description of the Research Population and Sample

For the application of this research, it was necessary to identify organizations characterized by intellectual knowledge and expertise. Based on this, the University of Mosul was chosen as the field for conducting this research. Several colleges within the university(College of Administration and Economics, Arts, Environment, Political Science, Education) were selected, and the research sample consisted of the beneficiaries in these colleges. The reason for this selection is that these colleges possess advanced computer information systems. A total of 70 questionnaires were distributed to beneficiaries in these colleges, and 60 were returned, resulting in a response rate of 86%.

Morgan's eye size chart has been adopted.

https://x.com/SaudiAcademics/status/1698206471823978539?lang=ar

Tenth: Demographic Description of the Research Sample

The data presented in Table (1) provides an analytical description of the demographic characteristics of the research sample. It shows that nearly two-thirds of the accused are male. Additionally, 68.3% of the sample are married. The age of the respondents is concentrated mainly in the middle age categories, particularly in the ranges of 26-30 and 31-35, with 75% and 13.3% of the respondents belonging to these age groups, respectively.

In terms of educational attainment, more than half of the accused hold a bachelor's degree, accounting for 60%, indicating a good level of scientific knowledge among the respondents. Regarding years of service in their current job positions, more than half of the respondents have less than five years of practice. Similarly, their total years of service reflect their participation in training courses during their tenure, with 45% of the respondents having attended one training course, while the rest were distributed almost equally across other training sessions.

Table (1): Demographic Characteristics of the Study Sample

Category	Attribute	Frequency	Percentage (%)
Gender	Male	34	57%
	Female	26	43%
	Total	60	100%
Highest Degree (Ph.D.)	Ph.D.	6	10%
	Total	60	100%
Marital Status	Married	41	68.3%
	Single	19	31.7%
	Total	60	100%
Age Groups	26–30 years	45	75%
	31–35 years	8	13.3%
	36–40 years	5	8.3%
	41–45 years	1	1.7%
	Total	60	100%

Duration of Service at Current Position	1–5 years	35	58.3%
	6–10 years	21	35%
	11–15 years	3	5%
	21–25 years	1	1.7%
	Total	60	100%
Total Duration of Service	1–5 years	33	55%
	6–10 years	23	38.3%
	11–15 years	3	5%
	21–25 years	1	1.7%
	Total	60	100%
Educational Attainment	Bachelor's Degree	36	60%
	Higher Diploma	9	15%
	Master's Degree	9	15%
Training Courses	None	10	16.7%
	1 course	27	45%
	2 courses	11	18.3%
	3 or more courses	12	20%
	Total	60	100%

Source: Prepared by the researchers

Section Two: Organizational Culture / Conceptual Framework

First: The Concept of Organizational Culture

Organizational culture leaves a significant imprint on an organization, giving it a distinct personality that sets it apart from others. It provides a framework that defines how work is performed and establishes the standards by which individuals are connected to the organization. Additionally, it motivates employees to perform their tasks with precision, enhances their level of commitment and satisfaction, and fosters unity and solidarity among followers of the organization in accomplishing its goals. Various scholars have defined the concept of organizational culture. Daft (2004, p. 361) defines it as a set of morals and behavioural norms that guide the beliefs and concepts shared by the organization's members, which are also taught to new members. Netta (2005, p. 4) refers to it as a mode of life for a specific group of entities who are aware of the laws governing the behaviour of its members, functioning as a system of shared standards. Gray & Denston (2006, p. 595) view it as a system of core morals accepted through the organization, shaping its philosophy regarding employee policies, the methods by which responsibilities stay proficient, and the expectations and philosophies mutual via its members. Ang & Massingham (2007, p. 6) describe it as the set of values brought by the organization's members — both leaders and employees — from the external environment into the internal one. Lastly, Al-Qaryouti (2009, p. 172) defines organizational culture as the basic expectations and morals established by a specific group to acclimatize to and address exterior and interior effects, which are approved upon and must be taught to new workers within the organization. These values and assumptions serve to shape how individuals perceive and think about matters in ways that align with the organization's formal objectives.

Second: The Significance of Organizational Culture

The success of an organization is closely linked to its organizational culture, as the manner in which the organization operates, its strategic orientations, core values, prevailing attitudes, behaviors, and beliefs all play a crucial role in determining its success. Organizational culture facilitates the integration of employees' daily activities to attain the objectives set for them and helps the organization adapt effectively to the external environment while responding to rapid changes (Daft, 2004, p. 365). Organizational culture is a fundamental factor influencing an organization’s capability to alteration and retain pace with ongoing developments, particularly technological advancements. The more supple and forward-looking an organization’s values are, the more capable it is of

embracing change and benefiting from it (Al-Rakhimi, 2000, p. 58). Additionally, organizational culture acts as a formula in which the present personalities of individuals merge with the organization's goals, forming a shared set of values that guide this interaction. Thus, the fulfilment of individual aspirations becomes aligned with the organization's achievements (Salo, 2011, pp. 37-38). Workers function within a single organizational structure rather than carrying out their duties independently or as they see fit. Consequently, organizational culture, including its norms of behavior and values, defines the expected job behavior of employees, as well as the nature of relationships among them and with external entities, including performance levels, problem-solving methodologies, and training approaches. This culture broadens employees' awareness and understanding of the changes occurring in their work environment, providing a reference framework through which they interpret events and activities. Hence, the role of organizational culture in shaping professional behavior, which leads to the achievement of organizational goals through professional development, ensures that employee behavior aligns with the organization's objectives and professional conduct (Pierce, 2004, p. 96). In conclusion, organizational culture is the core foundation from which all organizational activities begin. It is indispensable for both internal and external coordination, representing the correct path an organization should follow to sustain its effectiveness, efficiency, and goal achievement.

Third: Dimensions of Organizational Culture

An organization's unique culture is what makes it stand out from the competition and gives its workers pride, particularly when it prioritizes values like creativity, excellence, and leadership. It is also a key component that influences the organization's flexibility and ability to stay up to date with changing trends. The more adaptable and progressive an organization's values are, the more likely it is to welcome change and reap its benefits. Conversely, the more the values tend to stability and caution, the less capable and willing the organization will be to innovate. Researchers have described organizational culture through various dimensions, after analyzing and interpreting all its related aspects to provide an objective representation of its content and essence, as identified by Robbins (2003, p. 525), Tepeci (2001, p. 9), McKenna (2000, p. 480), Smith (2004, p. 2), and Al- Al-Attiyah (2003, p. 326):

1. Attention to Detail and Results:

The organization sets a clear work program by initially focusing on the details and results related to its operations, ensuring that it retains highly skilled and competent employees. These employees, in turn, feel a robust sense of belonging to the organization, as their expertise and work skills foster this connection through their ability to contribute to the organization's success. This culture creates ambition within individuals and encourages them to actively and positively participate in achieving organizational goals. Employees are expected to be precise, attentive to details (such as data and documented decisions), and skilled in judgment, analysis, and thoroughness.

2. Positive Competition:

This dimension reflects the extent to which employees behave as though they are engaged in fair competition. It requires the creation of a positive competitive environment within the organization, characterized by a challenge in meeting expectations, equal opportunities for promotion and advancement, and the perception of organizational justice. Positive competition is shaped by several factors, including the availability of promotion opportunities, role challenges, a positive competitive environment, and perceptions of fairness within the organization.

3. Innovation:

Innovation refers to the creation of a work environment conducive to creativity, where organizational culture encourages initiative, prioritizes individuals over predetermined rules, and responds quickly to changes in the environment. Organizations open to innovation accept new ideas with minimal resistance, making them more receptive to new concepts and methods. This is achieved by reducing rigid work rules and operational guidelines. Employees who perceive a high level of organizational support feel indebted to the organization and, as a result, are motivated to reciprocate through positive attitudes and behaviors, such as engaging in innovation and development efforts.

4. Teamwork:

Successful organizations emphasize the value of teamwork, recognizing its importance in compensating for individual weaknesses through the strengths of team members. Teams help build consensus, commitment, and motivation to work, fostering relationships of love, respect, and selflessness among individuals while minimizing errors. A cohesive organization is better prepared to face all circumstances. This requires carefully selecting teams to achieve a balance between personal skills and professional systems, ensuring the integration of individuals who share similar goals and possess the basic skills for teamwork. Team interaction and cooperation should be continuous rather than individual efforts, with teams fulfilling individual needs, providing information, material rewards, and helping employees achieve goals that would be difficult to accomplish alone.

Section Three: End-User Participation in the Development of Management Data Systems / Conceptual Framework

First: The Concept of End-User Participation

End users now production a important part in the success and implementation of management data systems (MIS). Their participation has become one of the most critical factors considered by organizations aiming to acquire information systems that enable them to achieve their objectives. This focus on end-user involvement has consequently increased the level and scope of their participation in the development process of MIS, from offering opinions and suggestions regarding the system design to leading the development and design team. Al-Kubaisi and Harahush (1989, p. 9) define participation as an individual's expression of their needs, desires, and perspectives. Poutsma (2001, p. 5) describes it as the process by which employees are allowed to influence their work, the circumstances below which they work, and the outcomes of their labor. Maher (2007, p. 509) sees it as employees' involvement in matters that affect them, which makes them more likely to accept and actively participate in organizational development initiatives, sometimes even proposing and driving improvements. Andraos and Maayeh (2008, p. 45) explain it as users exercising influence over how their work is organized and executed. For management, the areas of focus in user participation should be contribution, decision-making, consultation, and support. In the context of information systems, end-user contribution denotes to the involvement of users or their representatives in the system development process (Turban & Aronson, 2001, p. 737). Zhang et al. (2002, p. 208) describe it as the approaches used to involve users in aspects such as system design, implementation, and usage. Terry & Standing (2003, p. 469) define it as the contribution to the system development method, stately as a set of actions done via users or their representatives. Donson (2003, p. 5) refers to it as the behaviors and events of potential users or their representatives throughout the system development method.

Thus, end-user participation in system development is vital to achieving the primary goal: creating an information system that helps the end user realize their full potential in terms of creativity and initiative, thereby contributing to the organization's goals.

Second: The Importance of End-User Participation

The fact that end users are the main users of management information systems (MIS) makes their involvement in their development crucial. As a result, it is expected of them to comprehend the current system in its entirety , including its advantages, disadvantages, weaknesses, and the challenges they face in their daily tasks. They are also well-aware of their needs and requirements. The basic idea behind end-user participation is that they are the ones performing the actual work activities, and soliciting information from them, as well as involving them in matters related to their work, can provide insights that the development team may not have.

Furthermore, involving end users positively impacts their psychological well-being, which will undoubtedly make it easier to implement the system and encourage their support in making the MIS successful in achieving its goals. Thus, the importance of end-user participation comes from the fact that they are better qualified to determine how to improve their work and meet their needs. They are also more likely to commit to and trust the final system when given the occasion to contribute in the development method (Mousa, 2013, p. 210). This participation allows end users to assert their presence by contributing their opinions, and it enables them to help solve problems that concern their work activities or affect their work environment. Through participation, they become familiar with

system issues and the reasons behind changes, so they are not surprised by them, and they can contribute to solving these problems. This strengthens their motivation to propose improvements, modifications, and suitable solutions.

Moreover, involving end users makes them feel valued when their suggestions and opinions are appreciated and taken seriously (Kanaan, 2007, p. 226). This, in turn, improves their productivity due to the direct link between the system's applications and the end users' requests. The end user is the one who best understands their information needs and is also the developer, this leads to higher outputs, better quality, innovation, creativity, and new discoveries. These outcomes result in greater acceptance, satisfaction, reduced workload, and increased efficiency. Additionally, it enhances relationships with MIS owners (McGill et al., 2000, p. 6).

To achieve these benefits, the organization must invest significant effort and resources and develop a strategic information resources plan that allows for the growth and flourishing of end-user participation. This includes system evaluation, improvement, and proper training and support for end users to help them understand and work with the final system, thereby contributing to its ongoing development.

Third: Types of End-User Participation

End-user participation can vary from no involvement to full engagement. The types of participation are as follows (Bocij et al., 2003, p. 500; Alter, 1996, p. 340; Mousa, 2013, p. 209; Al-Murad, 2006, pp. 72-73; Al-Buheisi & Maqdad, 2013, p. 31; Palanisamy & Sushi, 2001, p. 74):

1. No Participation:

The end user does not participate in system development, either due to a lack of desire or inability to engage, and the system is imposed on the user.

2. Symbolic Participation:

The user's opinion is sought regarding the system being developed, but their input is typically ignored.

3. Advisory Participation:

The user's advice and opinion are gathered through various methods, such as surveys, interviews, or meetings where system evaluation and review processes are discussed.

4. Approval Participation:

The end user approves the results presented by the development team regarding the system as a whole or at each stage of the development process, and they have the authority to halt any stage of the system's development.

5. Design Participation:

The end user is a member of the design team and actively contributes to the design activities of the system.

6. Participation in All Development Stages:

The end user is part of the MIS development team and contributes to all stages of the system development method.

Thus, the type of end-user participation reflects the extent of influence the user has in the development of the MIS resulting from the design process. The types of participation mentioned will be used as variables in this study to measure end-user participation.

Section Three: Testing Research Hypotheses

This section focuses on testing the research hypotheses as follows:

First Hypothesis:

Organizational culture does not affect end-user participation in the development of MIS.

To assess the nature of the effect proposed in the first hypothesis, the results in Table 2 indicate a important influence of organizational culture on end-user participation in the development of MIS. The calculated value of (F) was 93.708, which is higher than the flat rate of 4 at a significance flat of 0.05 and degrees of freedom (58, 1). The coefficient of determination (R^2) was 0.618, indicating that 61.8% of the variation in the organization's attitudes toward end-user participation in the development

of MIS is due to the effect of organizational culture, while the remaining 23.8% is attributed to other variables not included in the investigation model. Founded on the value of (β) and the (T) test, the outcome of organizational culture on end-user participation in the development of MIS was 0.786, with a calculated (T) value of 9.680, which is greater than the tabular value of 1.671. This reflects the respondents' ability to explain the effects of organizational culture on end-user contribution in the development of MIS. Accordingly, the first hypothesis is rejected, and the alternative hypothesis is accepted.

Table 2: The Impact Relationship Between Organizational Culture and End-User Participation in Developing Management Information Systems.

Explained Variable / **Response Variable**	**Organizational Culture**			
	R^2	**D.F**	**F**	
			Calculated	**Tabulated**
End-User Participation in Information Systems Development	**0.618**	**1 58**	**93.708**	**4**

At significance level (0.05), N=60

Source: based on the findings of the SPSS statistical program and prepared by researchers. The second hypothesis states that end-user involvement in the creation of management information systems within the surveyed organization is not significantly correlated with organizational culture. .

The data presented in Table (3) reveals a significant correlation between organizational culture and end-user participation in the development of management information systems (MIS). Regarding the strength of this relationship, the data indicates that it is strong, as the correlation coefficient was found to be (**0.734) at a significance level of (0.01). **As a result, we can accept the alternative hypothesis and reject the second one based on earlier findings.**

Table (3): Correlation Results Between Organizational Culture and End-User Participation in the Development of Management Information Systems.

Organizational Culture	
0.734	The involvement of end users in the creation of management information systems.

At significance level (0.01), N=60

Source: Prepared by the researchers based on the results of the SPSS statistical program.

The third hypothesis: (There is neither complete nor negligible end-user contribution in the development of administration data systems, but participation fluctuates between these two extremes).

To test the third hypothesis, the simplest mathematical model for testing fuzzy logic was used to fit the research scale (the seven-point Likert scale) using Excel software. The results of the fuzzy analysis were represented, and an overall perception of the fuzzy test results can be provided by illustrating the levels of participation and non-participation of the end-user in developing management information systems in the researched organization across all key dimensions, as shown in Figure (2).

In summary, the results indicate that there is end-user contribution in the development of administration data systems in the researched organization at a rate of 0.756, while the rate of non-participation was 0.244. At the dimension level, participation in design was the highest, reaching 0.794, indicating that the end-user's involvement as a member of the design team, through participation in determining the characteristics of the required management information system, contributes to its development in the organization.

Participation through advice ranked second with a value of 0.785, suggesting that users providing feedback and ideas via interviews significantly contributes to system development. Symbolic participation ranked third with a value of 0.776, while approval participation came fourth with a value of 0.743. However, participation in all stages of development was the lowest, with a value of 0.603.

In general, there is neither complete nor negligible end-user contribution in the development of administration data systems, but participation fluctuates between these two extremes. Therefore, the third hypothesis is accepted.

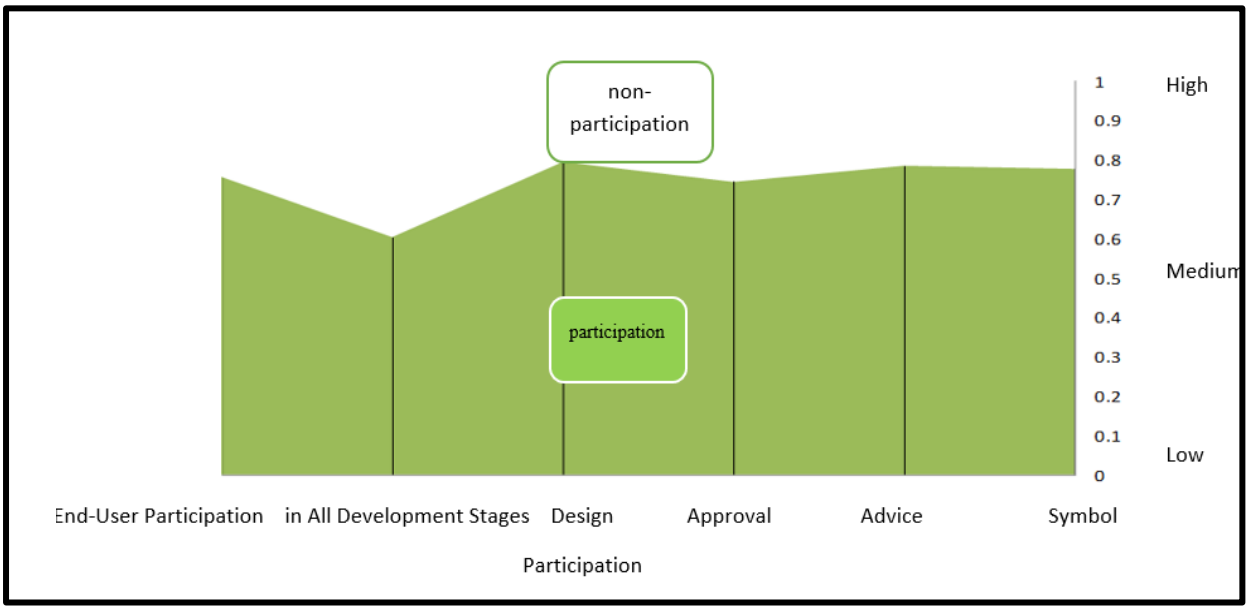

Figure (2): illustrates the participation/non-participation of the end-user in the development of administration information systems.

Source: Prepared by the Researchers

Fifth Section: Conclusions and Recommendations

This section presents the key conclusions reached by this research and attempts to formulate suggestions that can benefit future researchers and scholars, as well as assist the researched organization in enhancing its progress and achieving its objectives.

First: Conclusions

1. End-user participation yields numerous benefits, the most significant of which is the ability to develop information systems more effectively, quickly, and at a lower cost, in addition to the benefit of the end-user gaining knowledge, experience, and skills.
2. Instilling a high level of organizational culture among end-users fosters genuine relationships and a desire to participate in the development of administration data systems. This can be achieved by strengthening the supportive aspects of organizational culture for development processes, such as cooperation, innovation, and positive competition.
3. The presence of an appropriate culture within the organization creates a conducive organizational climate for end-user participation in the development of management information systems. It also contributes to creating effective information systems by establishing a common language, leading to a positive emotional environment that encourages intellectual motivation and end-users' belief in participating in the development method.
4. The concept of end-user participation has evolved in line with the advancements in management and organizational thinking. Participation is no longer limited to the user providing opinions and ideas; it now includes involving the end-user in system design and all stages of development.
5. The research results indicate a statistically important influence of organizational culture on end-user participation in the development of management information systems. The analysis results highlighted the importance of organizational culture in fostering positive attitudes among end-users toward participating in development processes.
6. The analysis results for the research dimensions show a significant correlation between organizational culture and end-user contribution in the development of management data systems.
7. The fuzzy logic analysis results reveal that end-user contribution in the development of management data systems within the researched organization was generally good. Some

dimensions showed relatively high participation rates in system development compared to others, such as design participation, advice participation, symbolic participation, and approval participation. However, participation across all stages of development was relatively low.

Recommendations

1. Enhance awareness within the researched organization at all levels about the significance of end-user contribution and its role in the successful development of administration information systems.
2. Work on improving the skills and abilities of end-users in the researched organization to engage in the development of management information systems by involving them in training programs. This will enable them to positively participate in the system development process.
3. Establish a program to incentivize users who contribute to creating, developing, or presenting new ideas that add value to the development of management data systems.
4. Revitalize and promote the dimensions of organizational culture within the researched organization, focusing on results, attention to detail, teamwork, and encouraging positive competition among users to contribute to the development process.
5. Foster and develop the creative and innovative capacities of end-users, enabling them to generate creative ideas that enhance the development of management information systems. This will also help them keep pace with the new challenges and changes in the era of the communications and information technology revolution.
6. Increase user contribution in the process of developing management information systems by promoting the principle of consultation and reliance on discussion forums, which contribute to enhancing work relationships. It is also essential to adopt constructive opinions, ideas, and suggestions from users.
7. Work on applying the principle of participation in the development of management data systems by increasing the levels of user involvement in all stages of system development.

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