Evaluating the Acceptance of iProSES: A Web Based Inventory System for Food Sector MSMEs Using the Technology Acceptance Model (TAM)

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ABSTRACT

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| --- |
| This study evaluates the effectiveness, user acceptance, and impact of iProSES, a web-based inventory management system designed to facilitate automation and transition from manual, paper-based processes among MSMEs in the food sector within the Philippines' MIMAROPA region. Employing a mixed-methods approach, including quantitative surveys, system usage logs, and qualitative interviews, the research assesses system quality based on ISO/IEC 9126 standards and user acceptance through the Technology Acceptance Model (TAM). Results reveal a high overall user satisfaction score of 4.68, along with strong perceptions of usefulness (4.78) and ease of use (4.89). The system significantly enhanced inventory accuracy, operational efficiency, and error reduction, supporting sustainable adoption prospects. Regression analysis identified usability and functionality as critical predictors of acceptance, while qualitative feedback highlighted challenges such as internet connectivity issues and ongoing maintenance costs. Overall, iProSES demonstrates promising potential as an economical, user-friendly tool that can improve productivity in resource-constrained MSMEs, provided that barriers related to digital preparedness and infrastructure are addressed. |

*Keywords: Integration, Inventory, MSMEs, System, Technology*

1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are recognized as a core component of economic growth, especially in developing countries (International Labor Organization, 2018). These firms contribute more than 50% to the GDP, account for over 80% of total employment, and help reduce the unemployment problem in these developing countries (World Bank, 2020). MSMEs provide self-employment opportunities in rural areas and foster an entrepreneurial and business culture where previously there was none (United Nations Conference on Trade and Development, 2019). In addition, they are versatile, which permits changes in product and service offerings. Such nimbleness fosters innovation and ensures long-term viability, as it allows for a quick response to many external factors, thereby enhancing productivity (OECD, 2021).

Small and medium-sized enterprises (SMEs) offer entrepreneurial prospects and economic advancement to the population in underdeveloped areas, thanks to their presence in rural regions and their ability to create jobs (Tambunan, 2019). They also face a combination of challenges, including poor technology, inadequate management skills, and limited knowledge of operational improvement (Tambunan, 2019). There is often an acute lack of essential partnerships between investors and the appropriate markets or advanced technologies necessary for production (World Bank, 2021).

Information technology stands as a prime example of a sector that has been thoroughly examined for the use of technology (Dwivedi et al., 2021). The rise of web-based technologies in developing regions has surged tremendously, integrating them into the business world (Dube & Mukhongo, 2021). Even though numerous businesses fall under the category of micro, small, and medium-sized enterprises (MSMEs), their productivity leaves much to be desired, as evidenced by their contribution of only 61% of the GDP, which indicates that they are plagued by a lack of funding, educated personnel, or modern technologies (Pedraza, 2021). The assessment of inventory systems is relevant today because of the misconception that a company holds an enormous stock amount for day-to-day operations. Accumulating out-of-stock products can lead to stockout situations or the wastage of resources due to holding surplus inventory (Gupta & Verma, 2020). A typical cyclic problem is commonly encountered in corporate inventories (Akbar & Tracogna, 2018). Effectively controlling inventory levels in an organization requires a practical approach to strategy regarding overstocking and understocking (Gupta & Verma, 2020).

The onset of COVID-19 forced businesses to change with the addition of technology, and this has now marked it a necessity to keep up with changes. Although the pandemic has released its grip, small and medium enterprises (SMEs) are still heavily reliant on technology to keep their assets and customers engaged. In most cases, their adoption of technology is due to the need to meet customer needs (Mia et al., 2024). Additionally, the research discusses the application of a hybrid model that combines fully online and partially offline marketing and sales approaches. This approach has been proven highly effective in maintaining sales, expanding the customer base, and increasing profitability (Idris et al., 2021).

As discussed in the prior section, digitalization offers a competitive advantage through superior networking, innovation, and branding. All of these factors together improve business resilience and longevity (Sudari & Pambreni, 2025). MSMEs that are willing to adopt digital and modern technologies tend to be more agile and adaptive, as well as smarter in maneuvering through and leveraging disruptions. Also, to assist businesses and solve these problems, the Department of Science and Technology DOST established The Small Enterprise Technology Upgrading Program (SETUP). As Luna and Santos noted in 2022,

The SETUP program took a holistic approach for every participating firm, comprising a comprehensive assessment of the technologies needed, sourcing procedures for technology-implementing processes, and the implementation of these processes. With this program, firms were able to conduct a technological assessment, diagnose appropriate solutions and source technologies, and optimize installation and procurement workflows. The DOST initially focused on a pilot project with a small group of companies but has since expanded its funding to support the purchase of technologies that aid Micro, Small, and Medium Enterprises (MSMEs). This initiative aims to encourage access to financed funds for capital-augmenting production technology-enhanced expenditures.

OMSC and DOST have jointly created an iProSES inventory processing system tailored for the MIMAROPA region. The productivity control systems and inventory management functions of local MSMEs will be enhanced through the use of this software. By December 2022, all project deliverables had been completed and provided to the beneficiaries. This evaluation aimed to examine how well the Technology Acceptance Model (TAM) methodology ICC evaluated the appropriateness and effectiveness of the ISO 9126 software development criteria design and evaluation supremum standards as in Stylos et al. (2021).

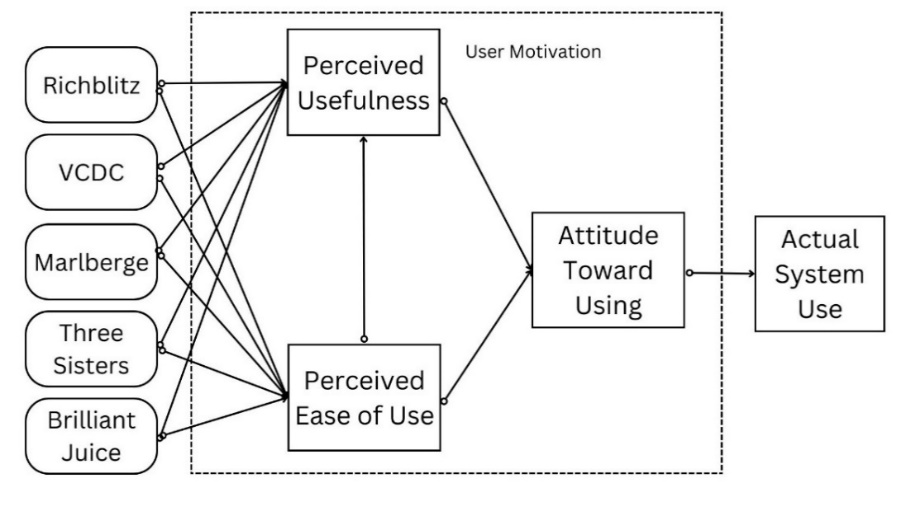
This evaluation aimed to assess how effectively the system captured and retained the critical insights and experiences that informed the dissemination of benefits to MSMEs (Malik et al., 2022). Collectively, these findings, along with those from DOST, have significantly influenced OMSC's plans and strategies. The results have helped resolve the barriers to the adoption of technology-driven business processes, operational efficiency, and environmentally sustainable practices for small businesses. (Alonso & Perea, 2023; Malik et al., 2022).

The interpretation of feedback from identified stakeholders, such as recent innovations in technology for MSMEs, examines the customer experience and system usability. For instance, business owners are able to manage and maintain customer engagement through the feedback systems offered via email and phone. These services can be accessed remotely, providing enhanced convenience without requiring a physical presence. Additionally, various other services facilitate communication between site operators and sellers. Finally, this research looked at the particular impacts MSMEs underwent post-implementation of the systems and how these impacts matched the previously described qualitative features in the correlation matrix which was prepared prior (Kilay et al., 2022; Mujianto et al., 2023).

2. methodOLOGY

**2.1 Research Paradigm**

MSMEs, as indicated in Figure 1, have applied the Technology Acceptance Model (TAM) Framework to consider the acceptance criteria of the inventory process evaluation system, iProSES. TAM considers acceptance indicators such as its usefulness, ease of use, likelihood of use, and actual usage. The focus of the researchers was on value addition in food processing to assess the effectiveness perception of MSMEs. Concerned MSMEs, who were system users, also raised accessibility queries. The evaluation of accessibility and perceived value determines the likelihood of usage. Attaining full integration of the system would streamline incorporation into MSME workflows. We conducted surveys, interviews, and observations to determine the acceptance of MSMEs and subsequently analyzed the data.



**Fig. 1. Research Paradigm**

**2.2 Research Design**

A mixed-method approach has been adopted with the intent of measuring the adoption, impact, and usability of the iProSES inventory system on micro, small, and medium-sized enterprises (MSMEs) in the MIMAROPA region. The quantitative component of the study included cross-sectional surveys assessing respondents' perceptions of the MSME System in terms of its performance, perceived usefulness, ease of use, overall satisfaction, TAM (Davis, 1986)- based user acceptance, and several other related metrics. This approach also enabled the evaluation of several key software quality attributes, as defined in the ISO/IEC 9126 software quality standards: functionality, reliability, usability, efficiency, maintainability, and portability (Mulyadi & Othman, 2022; Gupta & George, 2021).

The goal of the assessment was to determine how well the iProSES system aligns with the TAM and ISO 9126 models in terms of usability and effectiveness. Relevant system metrics concerning user acceptance and satisfaction were calculated within a descriptive and inferential statistical framework (Khan & Ullah, 2022; Mulyadi & Othman, 2022). Qualitative findings complemented quantitative results gathered through focus group discussions (FGDs) and semi-structured interviews, which aimed to explore barriers to acceptance and participants' suggestions for system design improvements to enhance overall system acceptance. Individual interviews and focus group discussions (FGDs) highlighted dominant issues and patterns based on stakeholder recommendations, enabling participants to express both collective and individual perspectives (Gonzalez & Williams, 2022; Green & Browne, 2021).

**2.3 Participant Sampling and Selection**

In this study, a combination of purposive sampling and stratified random sampling was employed in both quantitative and qualitative approaches. For the quantitative part, the researchers applied stratified random sampling to achieve a representative sample of MSMEs from the Mindoro and Marinduque provinces. Respondents were grouped into three primary strata: DOST personnel, MSME owners, and inventory control staff. From each stratum, ten participants were randomly selected, providing inclusion from all critical primary user roles necessary to make robust statistical conclusions. This approach minimized variability within each subgroup, which in turn was beneficial for the generalizability of the MSME results.

In addition, for statistical analysis, a different set of 20 respondents, including MSME personnel, DOST personnel, and IT specialists, was independently selected using a proportional stratified sampling technique. To ensure that all perceived and evaluated groups were represented during the implementation and evaluation of iProSES, these subgroups were sampled equally, which motivated the capture of diverse perceptions. For the qualitative aspect, 30 key informants were included explicitly because they had proactively participated in the implementation of the iProSES system and possessed varying degrees of involvement with digital transformation projects. They included MSME employees and owners along with DOST personnel who had been longstanding advocates for technology adoption by MSMEs. These informants were essential to include, given the rich descriptive information they would provide concerning the myriad problems, possibilities, and practicalities of integrating iProSES into the workflows of the relevant organizations.

**2.4 Data Collection**

A structured questionnaire based on the ISO/IEC 9126 software quality standards and the Technology Acceptance Model (TAM) containing key attributes: effectiveness, system satisfaction, and ease of use. The usage of the iProSES system on engagement. Users' perceptions and experiences of the iProSES system were evaluated using Likert-scale items, alongside system usage logs where applicable, as objective measures of engagement. The user-defined lived experiences included challenges, failure points, and system improvement suggestions, explored in focus group discussions and supplemented with semi-structured interviews. Contextual factors that influence the adoption and usability of a system through these qualitative approaches are examined.

To capture and collect data from micro, small, and medium enterprises (MSMEs) as comprehensively as possible, a quantitative online survey was administered. The instrument was constructed from tested frameworks that met the ISO 9126 benchmarks and had been previously used to enhance reliability and validity. Its objective was to gauge participant sentiments regarding the system’s usability, efficiency, usefulness, and overall satisfaction as objectively as possible. For the qualitative component, the interviews and FGDs were recorded and meticulously transcribed verbatim to enable thematic analysis. This facilitated the examination of recurring themes and patterns along with critical success factors regarding the implementation and sustained use of iProSES.

**2.5 Data Analysis**

The evaluative acceptance and effectiveness of the iProSES system were analyzed, along with its user acceptance, through quantitative data collected using structured surveys. These surveys used descriptive and inferential statistical methods. The researchers included means and standard deviations, measuring usefulness, ease of use, system uptime, satisfaction, and other metrics, providing a holistic perception of the user's attitude towards the system. The survey's internal cross-checks were evaluated using Cronbach's alpha coefficients, with a threshold value of 0.70 or above for acceptable reliability. The observed consistency across item responses suggests that the measurement tool has good overall reliability.

A multiple regression analysis was employed as part of the inferential analysis to identify the most significant factors affecting overall user satisfaction, which was considered the dependent variable. The independent variables were perceived usefulness, ease of use, and system reliability. These were chosen based on the Technology Acceptance Model (TAM) and were supported by the correlation matrix's interrelationships. This method enabled the determination of how much each predictor contributed to overall satisfaction. Additionally, Pearson correlation coefficients were calculated to assess the strength and direction of relationships associated with our continuous variables, including perceived usefulness, system usage frequency, ease of use, and satisfaction. The strong positive correlations observed with r = 0.90 for perceived usefulness reinforced the validity of these constructs as key determinants of system acceptance.

The criteria for measuring the different levels of system acceptance were the mean scores and standard deviations of key TAM-based constructs. Mean scores higher than 4.0 on a 5-point Likert scale signified that user acceptance was high. This not only corroborated the positive reception of the system among MSMEs but also highlighted its potential for long-term acceptance. To examine the differences in satisfaction across diverse stakeholder groups, a one-way ANOVA was conducted using the responses of MSME owners, staff members, and DOST personnel. For identified differences deemed significant, post-hoc analyses using Tukey HSD were conducted to reveal which pairs of groups were significantly different.

Thematic analysis was applied to all qualitative data that was derived from semi-structured interviews and focus group discussions (FGDs). They were analyzed by systematically coding interview transcripts to capture user experiences and challenges, such as poor internet access in remote regions, along with their recommendations for improving the system. Thematic analysis enables the integration of qualitative and quantitative data, allowing researchers to capture more dimensions of the iProSES system's functional performance and its contextual impact.

**2.6 Ethical Considerations**

Ethics were strictly followed throughout the research process. To protect participants' sensitive data, data privacy, and confidentiality were given top priority. Following the ethical research criteria was crucial; thus, all necessary permissions and approvals were obtained to perform the study ethically and responsibly, respecting the rights and privacy of all participants.

3. results and discussion

**3.1 Evaluation of iProSES system using 9125 Framework**

To evaluate the overall quality and effectiveness of the iProSES system, user feedback was assessed using six quality attributes derived from the ISO/IEC 9126 software quality model: functionality, reliability, usability, efficiency, maintainability, and portability. As shown in Table 1, the mean scores across all criteria were consistently high, ranging from 4.76 to 4.95 on a 5-point Likert scale, indicating that users perceived the system as excellent in all evaluated dimensions. The low standard deviations (ranging from 0.1 to 0.24) suggest minimal variability in responses and strong consensus among respondents regarding the system’s performance. Usability received the highest mean score of 4.95, reflecting users’ positive perception of the system's intuitive interface and ease of use. Reliability, with a mean score of 4.76, was the lowest among the criteria; however, it still falls within the "Excellent" range, indicating a high level of confidence in the system’s consistent operation.

These findings demonstrate that the iProSES system not only satisfies functional requirements but also performs exceptionally well in terms of reliability, usability, efficiency, maintainability, and portability—key indicators of high-quality software. The alignment of the system with these quality characteristics suggests its potential to enhance operational efficiency and productivity among MSMEs in the MIMAROPA region. Nonetheless, continuous evaluation and iterative improvements remain essential to sustain and further enhance the system's compliance with evolving user needs and software quality standards.

**Table 1. Evaluation of the iProSES system using the 9126 Framework**

|  |  |  |  |
| --- | --- | --- | --- |
| **Criteria** | **Mean** | **Standard Deviation** | **Interpretation** |
| Functionality | 4.82 | 0.213437 | Excellent |
| Reliability | 4.76 | 0.226623 | Excellent |
| Usability | 4.95 | 0.1 | Excellent |
| Efficiency | 4.83 | 0.235702 | Excellent |
| Maintainability | 4.78 | 0.201384 | Excellent |
| Portability | 4.85 | 0.219848 | Excellent |

**3.2 Level of Acceptance of iProSES system**

User acceptance of the iProSES was assessed through two core constructs: perceived usefulness and perceived ease of use. Table 2 summarizes the descriptive statistics and internal consistency measures for each construct. The results presented in Table 2 indicate a high level of system acceptance, with mean scores of 4.78 for perceived usefulness and 4.80 for ease of use rated "Highly Acceptable," indicating that users find the system beneficial and easy to operate.

The Cronbach's alpha values of 0.86 for usefulness and 0.89 for ease of use reflect strong internal consistency, confirming the reliability and coherence of the measurement items. The low standard deviations further demonstrate uniformity in user responses, reinforcing the validity of the observed acceptance levels. The high scores imply that MSME users recognize the system's potential to enhance operational efficiency, particularly in inventory management. Users reported that the system facilitates daily business processes and is easy to navigate, indicating that its interface effectively reduces barriers to adoption and supports sustained usage.

While the overall feedback is overwhelmingly positive, incorporating user suggestions can further improve usability and accessibility. Continuous user engagement and iterative development are crucial for meeting the evolving needs of MSMEs and ensuring the long-term effectiveness of the system. These findings underscore the importance of perceived usefulness and ease of use in driving successful technology integration, ultimately leading to increased productivity and improved business outcomes.

**Table 2. Level of Acceptance of iProSES system**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **Mean** | **Standard Deviation** | **Cronbach’s Alpha** | **Interpretation** |
| Usefulness | 4.78 | 0.201384 | 0.82 | Highly Acceptable |
| Ease of Use | 4.80 | 0.4 | 0.79 | Highly Acceptable |
| **Overall Acceptance** | **4.79** | **0.231241** | **0.85** | **Highly Acceptable** |

**3.3 Predicting Overall Acceptance of iProSES**

To identify the most significant predictor of overall user acceptance, a multiple regression analysis was conducted using the six ISO/IEC 9126 quality attributes as independent variables. The dependent variable was Overall Acceptance, while the independent variables included functionality, reliability, usability, efficiency, maintainability, and portability. The regression model explained 73% of the variance in overall acceptance (R² = 0.73), indicating that the selected software quality attributes are strong determinants of user perception. Among the predictors, Usability emerged as the most significant contributor to overall acceptance (β = 0.221, p < 0.001), followed by functionality (β = 0.182, p < 0.001) and portability (β = 0.098, p = 0.009). These findings emphasize that users value not only how well the system performs its intended tasks but also how easily it can be used and adapted across different environments. In contrast, reliability, efficiency, and maintainability did not show statistically significant relationships with overall acceptance (p > 0.05), although maintainability approached significance (p = 0.078), suggesting a potential influence worth further investigation. These results align with TAM principles, reinforcing that usability and functionality are critical factors influencing technology acceptance. Moreover, the inclusion of portability as a significant predictor highlights the importance of adaptability in systems serving geographically diverse or mobile user groups such as MSMEs.

**Table 3. Multiple Regression Analysis Predicting Overall Acceptance of iProSES**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Predictor Variable** | **Unstandardized Coefficients (B)** | **Standard Error** | **Standard Coefficients (B)** | **T-Value** | **P-Value** |
| Constant | 0.034 | 0.027 | - | 1.258 | 0.209 |
| Functionality | 0.187 | 0.041 | 0.182 | 4.561 | 0.001\* |
| Reliability | 0.012 | 0.039 | 0.011 | 0.309 | 0.757 |
| Usability | 0.214 | 0.038 | 0.221 | 5.623 | 0.001\* |
| Efficiency | -0.043 | 0.036 | -0.045 | -1.198 | 0.231 |
| Maintainability | 0.065 | 0.037 | 0.062 | 1.765 | 0.078 |
| Portability | 0.102 | 0.039 | 0.098 | 2.618 | 0.009\* |

**3.4 Outcomes in the Implementation of the iProSES System**

The correlation matrix shown in Table 4 captures the relationships among key software quality attributes—functionality, reliability, usability, efficiency, maintainability, portability, and compliance with specific reference to the iProSES system. To determine functionality-based performance enhancements, Pearson correlation coefficients were calculated to assess the degree to which these attributes were associated, revealing the extent to which improvements in one attribute would impact other attributes. A moderate negative correlation is observed between functionality and efficiency (r = -0.394, p < 0.01). The greater the system's functionality, the perceived efficiency tends to decrease. As with many systems, added features or capabilities can introduce complexity, which impacts the user perception of the speed or resource efficiency with which tasks are performed. Usability was also negatively correlated with reliability, albeit moderately (r = -0.265, p < 0.01). Users found the system easy to use; however, they did not have complete confidence that the system would operate reliably under different conditions. It highlights the design element of a system's operation, which must be sufficiently flexible to accommodate user intuition while providing dependable performance to establish user confidence over time.

Among the positive correlations, the strongest was between portability and compliance (r = 0.391, p < 0.01), indicating that systems capable of adapting to different environments are more likely to meet regulatory and standardization requirements. Additionally, maintainability showed a significant positive relationship with compliance (r = 0.292, p < 0.01), suggesting that systems that are easier to modify or update are also more likely to remain compliant with evolving standards. Other pairwise comparisons revealed weak or non-significant correlations, supporting the notion that most quality attributes function independently within the system. This independence highlights the multidimensional nature of software quality, where each characteristic contributes uniquely to the overall effectiveness of the system and user satisfaction.

The correlation analysis reveals complex relationships between software quality factors in the context of iProSES. These insights contribute to an understanding of how system attributes interact and offer practical guidance for optimizing performance, reliability, and user acceptance.

**Table 4. Correlation Matrix for the Implementation of iProSES system**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Criteria** | **Functionality** | **Reliability** | **Usability** | **Efficiency** | **Maintainability** | **Portability** | **Compliance** |
| Functionality | 1.00 | -0.130 | 0.130 | -0.394\*\* | 0.082 | 0.179 | 0.102 |
| Reliability | -0.010 | 1.00 | -0.265\*\* | 0.111 | 0.094 | 0.028 | -0.096 |
| Usability | 0.130 | -0.265\*\* | 1.00 | -0.330\*\* | -0.171 | -0.181\* | -0.213\* |
| Efficiency | -0.394\*\* | 0.111 | -0.330\*\* | 1.00 | -0.141 | 0.076 | 0.194 |
| Maintainability | 0.082 | 0.094 | -0.171\* | -0.141 | 1.00 | -0.036 | 0.292\*\* |
| Portability | 0.179\* | 0.028 | -0.181\* | 0.076 | -0.036 | 1.00 | 0.391\*\* |
| Compliance | 0.102 | -0.096 | -0.213\* | 0.194 | 0.292\*\* | 0.391\*\* | 1.00 |

**3.5 User Satisfaction by Role**

Table 5 presents the results of a one-way Analysis of Variance (ANOVA) conducted to determine whether there are statistically significant differences in user satisfaction levels across different user roles, such as MSME owners, staff members, and DOST personnel. The F-value of 5.74, with a corresponding p-value of 0.004, indicates a statistically significant difference in mean satisfaction scores among the user groups (p < 0.01). The study suggests that at least one group reports a significantly different level of satisfaction compared to others. The between-group variation (sum of squares = 12.36) reflects the differences in satisfaction means across the three user roles. In contrast, the Within Groups variation (sum of squares = 135.22) represents the variability compared to between-group variance, suggesting that while differences exist between roles, there is also considerable variation in how individuals within each role perceive satisfaction. The user role has a statistically significant effect on perceived satisfaction with the iProSES system, indicating that different types of users experience or evaluate the system differently. This insight is valuable for tailoring future system improvements or training programs to meet the needs of specific user groups better.

**Table 5. One-way ANOVA Results for User Satisfaction by Role**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Source** | **Sum of Squares** | **DF** | **Mean Square** | **F-Value** | **P-Value** |
| Between Groups | 12.36 | 2 | 6.18 | 5.74 | 0.004 |
| Within Groups | 135.22 | 127 | 1.06 |  |  |
| Total | 147.58 | 129 |  |  |  |

**3.6 User’s Feedback**

As part of the qualitative portion of the study, participants took part in individual interviews and focus group discussions (FGDs) to gain an understanding of their experiences and perceptions of the iProSES system. Each interview and focus group was transcribed directly after collection. A methodical coding technique was employed, allowing for the mapping of recurring themes and patterns. Thematic analysis was also performed, utilizing sentiments expressed by MSME users, particularly their challenges and perceived opportunities, which were crucial in guiding the analysis of feelings. Analysis of qualitative data highlighted three principal themes; these include:

Ease of Use and System Accessibility

Several respondents noted that the iProSES system was user-friendly, even for those who are not technically inclined. Most participants valued the layout and the flow of the menus as they were easy to follow. "Even if we are not tech-savvy, we were able to use the system after one training," a user stated. Despite the numerous advantages technology offers, some users noted that an unreliable Internet connection was a barrier, especially in remote areas.

Operational Efficiency and Process Improvement

Users reported improvements in automation for manual activities, including inventory control, documentation, and reporting. The accuracy improvements achieved due to the adoption of electronic documentation were remarkable. The accuracy gained by users adopting electronic forms of documentation was pronounced. Improved systems facilitated better organization and retrieval of records. One user commented, “Our previous method of record keeping was handwriting everything. Now, we have systems that improve our records far beyond anything we could do manually.”

Barriers to Sustainability and System Adoption

Despite the system’s benefits, some users expressed concern about long-term adoption, given the system’s advantages. The most important issues raised concern the cost of ongoing maintenance for hosting and domain services, as well as the lack of technical support within the organization. As one user said: “The system is helpful, but we worry about the cost if we continue using it without assistance.” To strengthen these conclusions, qualitative feedback was validated against quantitative measures, such as SUS scores and system usage. Users with high usability ratings, for example, had overwhelmingly positive feedback in the interviews conducted. The opposite was true for lower engagement as well; users attributed poor internet connections as the main drawback, along with insufficient training.

4. Conclusion

This study evaluates the acceptance, impact, and usability of the iProSES inventory system among micro, small, and medium enterprises (MSMEs) in the MIMAROPA region. A quantitative assessment revealed an overall high level of satisfaction among users. Important factors, such as perceived usefulness, ease of use, and satisfaction with the system, were commonly scored more than 4.0 on a 5-point Likert scale. The study showed a good level of acceptance by the users and conformity to the TAM model. The internal consistency and reliability of the survey instrument supported the validity of the gathered data.

Regression analysis recognized usability and functionality as the most significant predictors of acceptance and also confirmed the significant role of usability features in user engagement. Correlation analysis confirmed usefulness and overall satisfaction – both key elements in technology adoption – as significantly positively correlated. One-way ANOVA results showed statistically significant differences in satisfaction levels across user roles, with MSME owners more satisfied than staff. The study suggests that targeted, tailored implementation strategies will maximize satisfaction for all stakeholders only when they are tailored to specific roles and their respective demands and usage patterns. Interviews and focus group discussions captured contextual shortfalls, such as low internet availability, which were significant for the practical problem-solving dimension of system enhancements.

The mixed quantitative and qualitative methods provided strong data triangulation, capturing both the empirical aspects and the real-life context of the system’s use. The other side of the iProSES system is its compliance with ISO/IEC 9126 software quality standards, which mixed methods confirm, highlighting impressive sustained adoption prospects among MSMEs. However, the system's design evolution, influenced by continuous user feedback, shaped the other side of the story.

This knowledge further informs the digital transformation's impact on SMEs, which can help policymakers, developers, and other relevant actors stimulate the implementation of technology in environments with limited resources. A longitudinal study is necessary to evaluate the long-term impact of iProSES adoption on MSME productivity. Perhaps other theoretical perspectives, such as the Diffusion of Innovations (DOI) theory, could help explain the adoption tendencies in different organizational cultures and industries. There is a need for collaboration between system developers and MSMEs to ensure that ongoing development initiatives are user-centered and responsive. These initiatives should focus on infrastructure development, capacity building, and intuitive design to improve adoption and long-term sustainability.

MSMEs stand to benefit from iProSES through enhanced operational efficiency, which can drive the adoption of more technology-focused activities. Its effective deployment enables additional innovations that aim to drive more inclusive, adaptable, and sustainable digital transformation in under-resourced environments.

Consent

Survey participants, interviewees, and focus group participants provided informed consent, and they were willing and aware.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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