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### DIGITIZING STRATEGY FOR MSMEs IN BANYUMAS WITH A WEB-BASED PAVLOVIAN CONDITIONING APPROACH



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#### ABSTRACT

This study examines MSME digitalization through a Web-Based Pavlovian Conditioning approach in Cikakak Village by integrating the Technology–Organization–Environment (TOE) and Diffusion of Innovation (DOI) frameworks. The environmental context includes environmental uncertainty and government support, the organizational context focuses on CEO innovativeness, and the technological context emphasizes IT infrastructure. Innovation attributes analyzed under the DOI model include Relative Advantage, Compatibility, Complexity, Trialability, and Observability. Using a quantitative approach, data were collected through questionnaires and analyzed using Structural Equation Modeling (SEM) with LISREL software. The results show that Relative Advantage, Compatibility, Trialability, Government Support, and Environmental Uncertainty significantly influence website-based digital adoption among MSMEs. These findings indicate that MSME actors prioritize perceived benefits, alignment with existing business processes, and opportunities for experimentation when adopting digital technologies. In contrast, CEO innovativeness, IT infrastructure, complexity, and observability do not significantly affect adoption, suggesting that external support and environmental conditions play a stronger role in early-stage digital ecosystems. Theoretically, this study contributes by integrating TOE and DOI models to provide a more contextual explanation of MSME digital adoption in rural areas, emphasizing the dominant influence of environmental factors over organizational readiness in developing regions.

**Keywords:** pavlovian conditioning; digital transformation; msme; consumer behavior; website adoption.

#### INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) remain a major pillar of Indonesia's economic growth, contributing more than 60% of national Gross Domestic Product (GDP) and demonstrating sustained expansion in recent national economic reports through 2024. With more than 64 million MSMEs operating across diverse sectors, this segment holds substantial potential to enhance productivity and competitiveness through digital transformation. Recent studies define digital transformation as a strategic and organizational process of integrating digital technologies to fundamentally reshape business models, operational processes, and customer engagement patterns (Verhoef et al., 2021; Vial, 2021). In the MSME context, digital transformation has been increasingly recognized as a critical

mechanism for resilience, scalability, and long-term sustainability in uncertain environments (Kraus et al., 2022; AlNuaimi et al., 2022).

One of the most prevalent forms of digital transformation among MSMEs is the adoption of websites and e-commerce platforms to support marketing, branding, and sales activities. Contemporary research highlights that digital platform adoption improves market reach, operational agility, and customer data utilization, ultimately contributing to performance enhancement (Ainin et al., 2020; Dwivedi et al., 2021). The determinants of such adoption are frequently explained using the Technology–Organization–Environment (TOE) framework and Diffusion of Innovation (DOI) theory, which emphasize technological readiness, organizational capability, and environmental support as key drivers (Baker, 2021; Gangwar, 2020). These frameworks remain relevant in explaining MSME digitalization behavior in emerging economies.

However, recent empirical findings suggest that website adoption alone does not automatically translate into improved sales performance. Studies in digital consumer behavior indicate that ineffective user experience design, lack of emotional engagement, weak trust-building mechanisms, and limited interactive stimuli significantly reduce conversion rates (Rose et al., 2021; Lemon & Verhoef, 2022). This suggests that technological implementation must be complemented by behavioral design principles. Many MSME websites still function primarily as informational platforms rather than persuasive digital environments capable of influencing purchase decisions.

To address this gap, this study proposes integrating the Pavlovian (classical conditioning) approach into e-commerce website development for MSMEs in Cikakak Village. Contemporary behavioral research confirms that stimulus–response mechanisms remain relevant in digital interface design, particularly in shaping user engagement, trust formation, and loyalty (Hoyer et al., 2022; Bleier et al., 2020). In this framework, digital interfaces act as structured stimuli—such as visual cues, consistent branding, reward triggers, and responsive feedback—that elicit predictable psychological responses, including curiosity, satisfaction, and purchase intention. Repeated exposure and reinforcement mechanisms can strengthen behavioral conditioning, ultimately influencing consumer decision-making and repeat purchasing behavior.

Operationally, the Pavlovian approach is embedded into website architecture through persuasive design elements, gamified incentives, emotional branding signals, and adaptive feedback systems. By combining organic stimuli (design, color, imagery) and inorganic stimuli (discount triggers, notifications, reward systems), MSMEs can create interactive digital ecosystems that actively shape user responses rather than passively presenting information. Although the developed web-based system may include operational features such as inventory tracking and customer management, the primary contribution of this research lies in examining how Pavlovian-based interaction influences engagement and sales performance. Despite growing literature on MSME digital transformation, limited recent studies integrate behavioral psychology into website design as a strategic intervention mechanism. Most prior research emphasizes readiness factors, usability, or digital marketing strategies, leaving a theoretical and practical gap in stimulus–response-based digital innovation. Therefore, this study contributes by bridging digital transformation theory with behavioral conditioning principles, offering a novel interdisciplinary model to enhance MSME competitiveness in the digital era. Ultimately, this research aims to develop and empirically validate a Pavlovian-based web sales system that improves engagement, conversion rates, and adaptive business processes in an increasingly digital marketplace.

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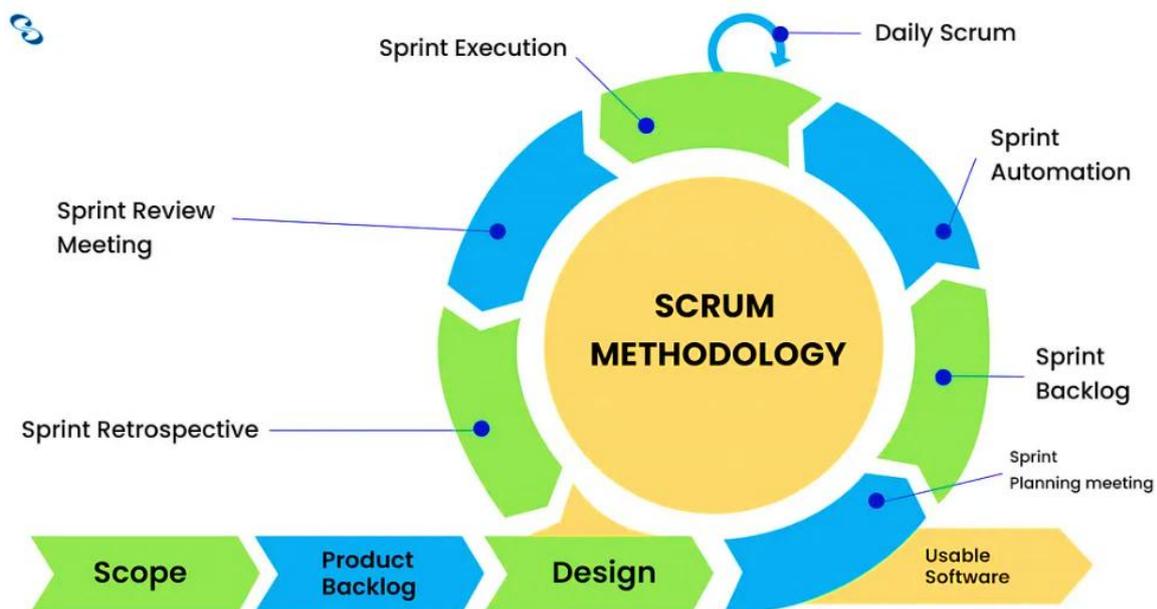
Beyond the behavioral dimension, this study also acknowledges the importance of contextual readiness factors by integrating the TOE and DOI frameworks into the research model. Technological readiness, organizational leadership orientation, and environmental pressures such as government support and market uncertainty are expected to moderate or strengthen the effectiveness of Pavlovian-based digital strategies. In dynamic and competitive environments, MSMEs must not only adopt digital platforms but also strategically design them to create differentiated customer experiences. Recent studies emphasize that customer experience (CX) has become a central competitive advantage in digital ecosystems, where emotional engagement and personalization significantly drive loyalty and revenue growth (Klaus & Zaichkowsky, 2021; De Keyser et al., 2020).

Furthermore, the acceleration of digital adoption following global disruptions has shifted consumer expectations toward seamless, trustworthy, and responsive online interactions. Customers increasingly evaluate digital platforms based on perceived credibility, transparency, and interactive responsiveness. Therefore, embedding conditioning principles into interface design may strengthen trust cues and reduce perceived risk, which are critical determinants of online purchase intention. This research thus extends digital transformation discourse by positioning behavioral conditioning as a strategic complement to technological investment. By integrating digital transformation theory, innovation adoption models, and

behavioral psychology, this study provides a more holistic framework for MSME digital competitiveness. The proposed Pavlovian-based web sales system is expected not only to enhance engagement and conversion rates but also to support adaptive learning processes within MSMEs, enabling continuous improvement in response to evolving consumer behavior and digital market dynamics.

## METHODS

This study adopts the Scrum method as its software development approach. Figure 1 is Scrum methodology, introduced by Jeff Sutherland and his team in the early 1990s, is an agile software development methodology. Subsequent enhancements to the Scrum framework were made by Schwaber and Beedle. The principles of Scrum are aligned with those of the agile manifesto and serve as a guide for development endeavors. This process involves a series of framework activities, including requirements gathering, analysis, design, evolution, and delivery. Within each framework activity, tasks are organized into iterative cycles known as sprints. The number of sprints required for each activity may differ based on the project's size and complexity.. Additionally, the work undertaken in each sprint is designed to meet particular project requirements and is continuously modified in real time by the Scrum team.



**Figure 1 . Scrum Methodology**

Source: Stackademic.com, 2023

In order to find the right respondents to realize the Pavlovian theory, data will be taken from MSMEs in Cikakak Village who are considered representative so that the software being developed can then be tested. The testing will be carried out using usability testing. Usability testing is a technique that assesses a product or site's UX (User Experience) by putting it through its paces with a group of users or clients. In order to determine whether or not the website development aligns with the original research output aims, usability testing is done by evaluating the usability of the product or site on a set of users or consumers.

The Scrum framework is widely recognized as an agile project management methodology that emphasizes adaptability, collaboration, and incremental value delivery (Denning, 2021; Schwaber & Sutherland, 2020). In contemporary research above 2020, Scrum is consistently identified as an effective approach for managing dynamic digital projects due to its responsiveness to evolving user requirements and rapidly changing business environments (Serrador & Pinto, 2021). Although originally developed for software engineering, Scrum has increasingly been adopted across multiple industries undergoing digital transformation.

In this study, Scrum is utilized as the development framework for designing and implementing a web-based sales system that integrates a Pavlovian-based approach for MSMEs. The selection of Scrum is grounded in its iterative sprint structure, continuous stakeholder collaboration, and systematic review mechanisms, which allow ongoing refinement based on user feedback (Schwaber & Sutherland, 2020). Through incremental development cycles, the methodology supports rapid prototyping, continuous evaluation, and adaptive improvement, ensuring that the system remains aligned with user needs and the dynamic digital ecosystem (Denning, 2021). The research method consists of several stages aligned with Scrum principles. First, the product backlog is defined based on the results of preliminary observations, interviews with MSME actors, and identification of system requirements related to digital sales activities, user engagement, and stimulus–response elements derived from the Pavlovian approach. The backlog includes functional requirements such as product display, transaction processes, user interaction features, and engagement-oriented design elements intended to influence user behavior. Second, the development process is carried out through a series of sprints, each lasting two to four weeks. During each sprint, the research and development team focuses on developing specific system features prioritized according to their value and relevance to MSME needs. At the end of every sprint, a functional prototype or product increment is produced and evaluated through testing and feedback sessions involving potential users and MSME stakeholders. This iterative cycle enables continuous refinement of both system functionality and user experience design.

Daily Scrum meetings or coordination sessions are conducted to monitor development progress, identify technical or design constraints, and ensure alignment between system objectives and research goals (Cohn, 2020). These meetings support transparency and collaboration among team members while allowing rapid problem resolution during development. Furthermore, sprint reviews and retrospectives are conducted at the end of each iteration to evaluate development outcomes, assess user responses, and identify areas for improvement (Sutherland, 2014). The evaluation results are then incorporated into the next sprint planning phase, ensuring that system improvements are based on empirical findings and user feedback. This iterative evaluation process is particularly important in implementing the Pavlovian approach, as stimulus–response effectiveness needs to be continuously tested and refined based on user interaction patterns. By applying Scrum methodology, this research ensures that system development remains adaptive, user-centered, and aligned with MSME operational needs. The final output of this method is a web-based sales system that has undergone iterative validation and refinement, enabling it to support MSME digital transformation while improving engagement, user experience, and potential sales performance.

This study adopts an integrated theoretical framework combining the Technology–Organization–Environment (TOE) model and the Diffusion of Innovation (DOI) theory to comprehensively analyze the determinants of MSME digital adoption. The TOE framework is utilized to examine adoption factors from three contextual dimensions. The technological

context evaluates the availability and adequacy of IT infrastructure as a supporting resource for website-based digitalization. The organizational context focuses on internal characteristics, particularly CEO innovativeness, which reflects leadership openness toward change and innovation. The environmental context assesses external pressures and support systems, including government support and environmental uncertainty, which may influence strategic digital decisions.

To strengthen the explanatory power of the model, DOI theory is incorporated to capture the perceived characteristics of innovation that directly affect adoption behavior. Five innovation attributes are measured: Relative Advantage (perceived benefits), Compatibility (alignment with existing business processes), Complexity (perceived difficulty of use), Trialability (opportunity for experimentation), and Observability (visibility of results). By integrating TOE and DOI, this study bridges contextual readiness factors with perceptual innovation attributes, providing a multidimensional understanding of digital transformation among MSMEs.

Methodologically, this research employs a quantitative approach using structured questionnaires distributed to 420 MSME respondents. The collected data were tested for validity and reliability using SPSS version 2023, ensuring measurement consistency. Furthermore, Structural Equation Modeling (SEM) was applied to analyze the relationships among variables and to test the proposed hypotheses simultaneously. This combined theoretical and methodological approach enables a more robust explanation of website-based digital adoption behavior in the MSME context. In terms of research methodology, this study integrates two main approaches: Scrum as the system development method and Structural Equation Modeling (SEM) as the analytical method. Scrum is applied in the development of the web-based sales system using iterative sprint cycles, continuous evaluation, and adaptive improvements based on stakeholder feedback. This agile approach ensures flexibility and responsiveness throughout the development process. Meanwhile, SEM is employed to test the theoretical framework integrating the Technology–Organization–Environment (TOE) model and Diffusion of Innovation (DOI) theory. The TOE framework examines technological (IT infrastructure), organizational (CEO innovativeness), and environmental (government support and environmental uncertainty) contexts, while DOI analyzes innovation attributes such as Relative Advantage, Compatibility, Complexity, Trialability, and Observability. The combination of Scrum and SEM provides both practical system development validation and rigorous empirical testing of the proposed digital adoption model.

## **RESULT AND DISCUSSION**

From this research, a total of 420 respondents were collected, and the data were tested and confirmed to be valid and reliable using SPSS version 2023. The Relative Advantage variable consists of five statement indicators used to measure respondents' perceptions of the benefits obtained from adopting website-based digitalization. The results indicate that respondents generally perceive digital adoption as providing efficiency, broader market reach, and improved business performance.

**Table 1. Respondents' Responses Regarding the Relative Advantage Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Relative Advantage	RA1	0	0	20	133	125	1374	85.07%
	RA2	0	3	84	117	96	1206	80.40%
	RA3	1	0	8	162	229	1417	88.65%
	RA4	0	5	14	164	128	1096	84.90%
	RA5	0	10	43	123	149	1656	87.7%
Average Value of the Relative Advantage Variable							1374.50	85.70%
Standard Deviation Value							47.35	2.78%

Source: Data processed, 2023

Table 1. Respondents' Responses Regarding the Relative Advantage Variable presents the distribution of respondents' answers regarding the Relative Advantage variable, which reflects MSME owners' perceptions of the benefits obtained from adopting website-based digitalization. This variable was measured using five statement indicators (RA1–RA5) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that the majority of respondents selected high response categories (scores 4 and 5) across all indicators, while very few respondents chose low scores (1 and 2). This pattern indicates that most MSMEs perceive website adoption as providing substantial advantages for their business operations.

Among the five indicators, RA3 recorded the highest percentage score (88.65%), suggesting that the benefit represented by this statement is the most strongly perceived by respondents. In contrast, RA2 obtained the lowest percentage (80.40%), although it still falls within a very high category. The score values for each indicator range from 1,096 to 1,656, reflecting a strong concentration of responses in the “agree” and “strongly agree” categories. Overall, these findings demonstrate that website-based digitalization is widely perceived as beneficial, particularly in terms of improving efficiency, expanding market reach, and enhancing business performance.

The average score for the Relative Advantage variable is 1,374.50, with an overall percentage of 85.70%, indicating a very high level of perceived benefit among respondents. This suggests that the advantages of digital adoption constitute a major motivating factor for MSMEs to implement website technology in their business activities. Furthermore, the standard deviation value of 47.35 (2.78%) indicates relatively low variability in responses, meaning that respondents' perceptions are fairly homogeneous. In other words, MSME actors tend to share a consistent view that website-based digitalization provides significant and tangible benefits. These results reinforce the argument that perceived relative advantage plays a crucial role in encouraging the adoption of digital technology among MSMEs.

**Table 2. Respondents' Responses Regarding the Compatibility Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Compatibility	CT1	0	1	29	59	71	1084	80.77%
	CT2	0	2	36	53	59	1073	80.03%
	CT3	1	8	35	54	52	1035	77.50%
Average Value of the Compatibility Variable							764.00	79.43%
Standard Deviation Value							24.51	1.03%

Source: Data processed, 2023

Table 2. Respondents' Responses Regarding the Compatibility Variable presents the distribution of respondents' answers regarding the Compatibility variable, which reflects the extent to which website-based digitalization is perceived as consistent with existing values, needs, experiences, and business practices of MSMEs. This variable was measured using three statement indicators (CT1–CT3) on a five-point Likert scale, where higher scores indicate stronger agreement. The results indicate that most respondents selected high response categories (scores 4 and 5) for all indicators, while very few respondents chose low scores (1 and 2). This pattern suggests that the adoption of website technology is generally considered compatible with the operational conditions and business characteristics of MSMEs.

Among the indicators, CT1 achieved the highest percentage score (80.77%), indicating that the aspect represented by this statement is perceived as the most compatible with respondents' business activities. CT2 follows closely with a percentage of 80.03%, while CT3 records the lowest percentage at 77.50%, though it still falls within a high category. The score values for each indicator range from 1,035 to 1,084, reflecting a strong concentration of responses in the “agree” and “strongly agree” categories. These findings imply that website-based digitalization aligns well with the needs and capabilities of MSMEs, although some aspects may require further adjustment or support to achieve optimal compatibility.

The average score for the Compatibility variable is 764.00, with an overall percentage of 79.43%, indicating a high level of perceived compatibility among respondents. This suggests that MSME actors generally believe that website adoption does not conflict with their current business processes, organizational culture, or customer interactions. Furthermore, the standard deviation value of 24.51 (1.03%) indicates very low variability in responses, meaning that respondents' perceptions are highly consistent. In other words, most MSMEs share a similar view that website-based digitalization fits well with their business context. These results highlight that perceived compatibility is an important factor supporting the adoption of digital technology, as technologies that align with existing practices are more likely to be accepted and implemented successfully by MSMEs.

**Table 3. Respondents' Responses Regarding the Complexity Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		1	2	3	4	5		
Complexity	Items	1	2	3	4	5		
	CX1	0	7	23	68	53	1074	80.10%
	CX2	0	5	23	62	60	1083	80.70%
	CX3	0	10	1	60	79	1055	78.63%
Average Value of the Complexity Variable							820.67	79.88%
Standard Deviation Value							12.23	0.72%

Source: Data processed, 2023

Table 3. Respondents' Responses Regarding the Complexity Variable presents the distribution of respondents' answers regarding the Complexity variable, which reflects MSME owners' perceptions of the level of difficulty associated with adopting website-based digitalization. This variable was measured using three statement indicators (CX1–CX3) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5) across all indicators, while only a small proportion chose lower scores (1 and 2). This pattern suggests that respondents generally perceive the complexity of website adoption at a manageable level, indicating that the technology is not considered excessively difficult to understand or implement.

Among the indicators, CX2 recorded the highest percentage score (80.70%), indicating that the aspect represented by this statement is perceived as the least problematic in terms of difficulty. CX1 follows closely with a percentage of 80.10%, while CX3 obtained the lowest percentage (78.63%), although it still falls within a high category. The score values for each indicator range from 1,055 to 1,083, reflecting a concentration of responses in the "agree" and "strongly agree" categories. These findings imply that although website-based digitalization may involve certain technical challenges, MSME actors generally feel capable of coping with the required skills and operational adjustments.

The average score for the Complexity variable is 820.67, with an overall percentage of 79.88%, indicating a high level of agreement among respondents regarding the statements measuring complexity. This suggests that the perceived difficulty of website adoption does not constitute a major barrier for most MSMEs. Furthermore, the standard deviation value of 12.23 (0.72%) indicates very low variability in responses, meaning that respondents' perceptions are highly consistent. In other words, MSME actors tend to share a similar view that the complexity of website-based digitalization remains within a manageable range. These results highlight that perceived complexity, while present, is not sufficiently high to hinder adoption, suggesting that MSMEs are increasingly prepared to engage with digital technologies as part of their business development strategies.

**Table 4. Respondents' Responses Regarding the Trialability Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Trialability	TR1	0	5	47	178	70	1213	80.87%
	TR2	3		48	180	67	1206	80.40%
Average Value of the Trialability Variable							1209.50	80.63%
Standard Deviation Value							4.95	0.33%

Source: Data processed, 2023

Table 4. Respondents' Responses Regarding the Trialability Variable presents the distribution of respondents' answers regarding the Trialability variable, which reflects the extent to which website-based digitalization can be tested or experimented with before full implementation by MSMEs. This variable was measured using two statement indicators (TR1–TR2) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5) for both indicators, while only a small proportion chose lower scores (1 and 2). This pattern indicates that respondents generally perceive website technology as something that can be tried on a limited basis prior to full adoption, thereby reducing uncertainty and perceived risk.

Between the two indicators, TR1 obtained a slightly higher percentage score (80.87%) compared to TR2 (80.40%), suggesting that the aspect represented by TR1 is perceived as marginally more feasible for experimentation. The score values for both indicators exceed 1,200, reflecting a strong concentration of responses in the “agree” and “strongly agree” categories. These findings imply that MSME actors feel they have opportunities to test website-based digital solutions—such as through pilot use, trial periods, or gradual implementation before committing fully to the technology.

The average score for the Trialability variable is 1,209.50, with an overall percentage of 80.63%, indicating a high level of perceived trialability among respondents. This suggests that the ability to experiment with digital tools plays an important role in encouraging MSMEs to adopt website technology. Furthermore, the standard deviation value of 4.95 (0.33%) indicates extremely low variability in responses, meaning that respondents' perceptions are highly uniform. In other words, most MSMEs share a consistent view that website-based digitalization can be tested beforehand, which helps reduce uncertainty and increases confidence in adoption decisions. These results highlight that trialability is a supportive factor in the diffusion of digital innovation, as technologies that can be experimented with prior to full implementation are more likely to be accepted by potential adopters.

**Table 5. Respondents' Responses Regarding the Observability Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Observability	OB1	4	4	14	95	33	1074	78.30%
	OB2	7	6	10	97	30	1039	77.77%
	OB2	6	5	24	100	15	1012	75.97%
Average Value of the Trialability Variable							632.670	77.34%
Standard Deviation Value							16.845	1.02%%

Source: Data processed, 2023

Table 5. Respondents' Responses Regarding the Observability Variable presents the distribution of respondents' answers regarding the Observability variable, which reflects the extent to which the results and benefits of website-based digitalization are visible and noticeable to MSME actors. This variable was measured using three statement indicators (OB1–OB3) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5) across all indicators, although a slightly larger proportion of respondents chose moderate and lower scores compared to previous variables. This pattern suggests that while the outcomes of digital adoption are generally visible, they may not be equally apparent to all MSMEs.

Among the indicators, OB1 achieved the highest percentage score (78.30%), indicating that the benefits represented by this statement are the most observable to respondents. OB2 follows closely with a percentage of 77.77%, while OB3 recorded the lowest percentage at 75.97%, though it still falls within a high category. The score values for the indicators range from 1,012 to 1,074, reflecting a concentration of responses in the “agree” category, with fewer selections in the “strongly agree” category compared to earlier variables. These findings imply that although MSME actors can observe the positive outcomes of website-based digitalization—such as improved business visibility or customer reach—the magnitude or immediacy of these outcomes may vary across businesses.

The average score for the Observability variable is 632.670, with an overall percentage of 77.34%, indicating a high level of perceived observability among respondents, albeit lower than the other innovation attributes examined in this study. This suggests that the visibility of digitalization outcomes, while evident, may require time or supporting conditions to become fully apparent. Furthermore, the standard deviation value of 16.845 (1.02%) indicates low variability in responses, meaning that respondents' perceptions are relatively consistent. In other words, most MSMEs share a similar view that the benefits of website-based digitalization can be observed, even though the degree of visibility may differ. These results highlight that observability plays an important role in reinforcing adoption decisions, as visible success and tangible outcomes can encourage wider acceptance of digital technology among MSMEs.

**Table 6. Respondents' Responses Regarding the IT Infrastructure Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		1	2	3	4	5		
	Items	1	2	3	4	5		
IT Infrastructure	IT1	0	0	8	82	60	1091	81.23%
	IT2	0	0	25	73	52	10866	80.90%
Average Value of the IT Infrastructure Variable							1088.50	81.07%
Standard Deviation Value							3.34	0.22%

Source: Data processed, 2023

Table 6. Respondents' Responses Regarding the IT Infrastructure Variable presents the distribution of respondents' answers regarding the IT Infrastructure variable, which reflects the availability and adequacy of technological facilities supporting website-based digitalization among MSMEs. This variable was measured using two statement indicators (IT1–IT2) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5) for both indicators, with almost no respondents choosing low scores (1 and 2). This pattern indicates that MSMEs generally perceive their IT infrastructure as sufficiently supportive of digital adoption.

Between the two indicators, IT1 recorded a slightly higher percentage score (81.23%) compared to IT2 (80.90%), suggesting that the aspect represented by IT1 is perceived as marginally more adequate. The high score values for both indicators reflect a strong concentration of responses in the “agree” and “strongly agree” categories. The average score for the IT Infrastructure variable is 1,088.50, with an overall percentage of 81.07%, indicating a high level of perceived readiness in terms of technological facilities. Furthermore, the standard deviation value of 3.34 (0.22%) indicates extremely low variability in responses, meaning that respondents' perceptions are highly consistent. Overall, these results suggest that adequate IT infrastructure serves as an important enabling factor for the successful implementation of website-based digitalization among MSMEs.

**Table 7. Respondents' Responses Regarding the CEO's Innovativeness Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		1	2	3	4	5		
	Items	1	2	3	4	5		
CEO's Innovativeness	CO1	0	4	31	176	89	1100	81.83%
	CO2	0	5	75	148	72	1037	77.63%
	CO2	2	1	58	162	77	1061	79.23%
Average Value of the CEO's Innovativeness Variable							766.00	79.57%
Standard Deviation Value							29.90	2.04%

Source: Data processed, 2023

Table 7. Respondents' Responses Regarding the CEO's Innovativeness Variable presents the distribution of respondents' answers regarding the CEO's Innovativeness variable, which reflects the extent to which MSME leaders demonstrate openness to new ideas, creativity, and willingness to adopt website-based digitalization. This variable was measured using three statement indicators (CO1–CO3) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5), with only a small proportion choosing lower scores. Among the indicators, CO1 recorded the highest percentage score (81.83%), followed by CO3 (79.23%), while CO2 obtained the lowest percentage (77.63%), though it still falls within a high category. This distribution indicates that business owners generally possess a positive orientation toward innovation and technological change.

The average score for the CEO's Innovativeness variable is 766.00, with an overall percentage of 79.57%, indicating a high level of perceived innovativeness among MSME leaders. The standard deviation value of 29.90 (2.04%) suggests relatively low variability in responses, meaning that respondents' perceptions are fairly consistent. Overall, these findings imply that the innovative attitude of business leaders is an important supporting factor in the adoption of website-based digitalization, as leaders who are receptive to new technologies are more likely to initiate and sustain digital transformation within their businesses.

**Table 8. Respondents' Responses Regarding the Government Support Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Government Support	GS1	47	42	11	35	15	3210	36.57%
	GS2	35	56	13	33	13	425	36.83%
Average Value of the CEO's Innovativeness Variable							423.0	36.70%
Standard Deviation Value							2.51	0.18%

Source: Data processed, 2023

Table 8. Respondents' Responses Regarding the Government Support Variable presents the distribution of respondents' answers regarding the Government Support variable, which reflects the extent to which MSMEs perceive assistance, policies, and facilitation from the government in supporting website-based digitalization. This variable was measured using two statement indicators (GS1–GS2) on a five-point Likert scale, where higher scores indicate stronger agreement. In contrast to previous variables, the results show that many respondents selected lower response categories (scores 1 and 2), while fewer respondents chose high scores (4 and 5). GS2 recorded a slightly higher percentage score (36.83%) than GS1 (36.57%), yet both values remain in a relatively low category. This distribution indicates that government support for digital adoption is perceived as limited or insufficient by most MSME actors.

The average score for the Government Support variable is 423.0, with an overall percentage of 36.70%, indicating a low level of perceived support from government institutions. The standard deviation value of 2.51 (0.18%) suggests very low variability in responses, meaning that respondents share a highly consistent perception regarding the lack

of support. Overall, these findings imply that insufficient government assistance—such as limited training programs, financial incentives, or infrastructure facilitation—may hinder the acceleration of website-based digitalization among MSMEs, highlighting the need for stronger policy interventions to promote digital transformation in this sector.

**Table 9. Respondents' Responses Regarding the Environmental Uncertainty Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Environmental Uncertainty	EU1	2	9	30	92	17	1066	79.57%
	EU2	2	4	19	45	80	1145	84.90%
Average Value of the Environmental Uncertainty Variable							756.00	82.23%
Standard Deviation Value							55.07	3.53%

Source: Data processed, 2023

Table 9. Respondents' Responses Regarding the Environmental Uncertainty Variable presents the distribution of respondents' answers regarding the Environmental Uncertainty variable, which reflects the extent to which MSMEs perceive changes and unpredictability in the external business environment, such as market dynamics, competition, and technological developments. This variable was measured using two statement indicators (EU1–EU2) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5), indicating that MSME actors generally perceive their business environment as uncertain and rapidly changing. Among the indicators, EU2 recorded a higher percentage score (84.90%) compared to EU1 (79.57%), suggesting that the aspect represented by EU2 is perceived as more strongly associated with environmental uncertainty.

The average score for the Environmental Uncertainty variable is 756.00, with an overall percentage of 82.23%, indicating a high level of perceived uncertainty among respondents. The standard deviation value of 55.07 (3.53%) shows moderate variability compared to other variables, suggesting that while perceptions are generally similar, some differences exist among MSMEs regarding the degree of environmental instability they face. Overall, these findings imply that a dynamic and uncertain business environment may act as a driving force for website-based digitalization, as MSMEs seek adaptive strategies and technological solutions to remain competitive and responsive to external changes.

**Table 10. Respondents' Responses Regarding the Pavlovian Conditioning Variable**

Variable	Statement	Alternative Answers					Score Value	Percentage
		Items	1	2	3	4		
Pavlovian Conditioning	PC1	2	1	2	115	40	1169	81.43%
	PC2	0	1	22	83	44	1317	86.30%
Average Value of the Environmental Uncertainty Variable							1268.00	86.37%
Standard Deviation Value							1.32	0.07%

Source: Data processed, 2023

Table 10. Respondents' Responses Regarding the Pavlovian Conditioning Variable presents the distribution of respondents' answers regarding the Pavlovian Conditioning variable, which reflects the extent to which MSME actors' adoption of website-based digitalization is influenced by habitual responses, repeated exposure, or associative learning from prior experiences. This variable was measured using two statement indicators (PC1–PC2) on a five-point Likert scale, where higher scores indicate stronger agreement. The results show that most respondents selected high response categories (scores 4 and 5), indicating that behavioral reinforcement and repeated positive experiences play an important role in encouraging digital adoption. PC2 recorded a higher percentage score (86.30%) compared to PC1 (81.43%), suggesting that the aspect represented by PC2 is more strongly perceived as influencing respondents' behavior.

The average score for the Pavlovian Conditioning variable is 1,268.00, with an overall percentage of 86.37%, indicating a very high level of agreement among respondents. The standard deviation value of 1.32 (0.07%) indicates extremely low variability in responses, meaning that perceptions are highly consistent across respondents. Overall, these findings suggest that conditioning effects—such as familiarity with digital tools, repeated successful use, or exposure to similar technologies—serve as strong drivers of website-based digitalization among MSMEs, reinforcing adoption behavior through learned positive associations.

It is evident from the preceding table that respondents rated the Pavlovian Conditioning variable with an average value of  $1268.00 \pm 1.32$  or 86.37% and a standard deviation value of 0.07% with an ideal value of 1500 (100%). Meanwhile, the range of total scores given by respondents to the Pavlovian Conditioning Variable was between 1169 (81.43%) – 1317 (86.30%), with the PC1 statement item receiving the highest score and the PC2 statement item receiving the lowest.

The results of the measurement model test for exogenous constructs can be seen through the loading factor coefficient values for each indicator which are presented in the following table.

**Table 11. Respondents' Responses Regarding the Pavlovian Conditioning Variable**

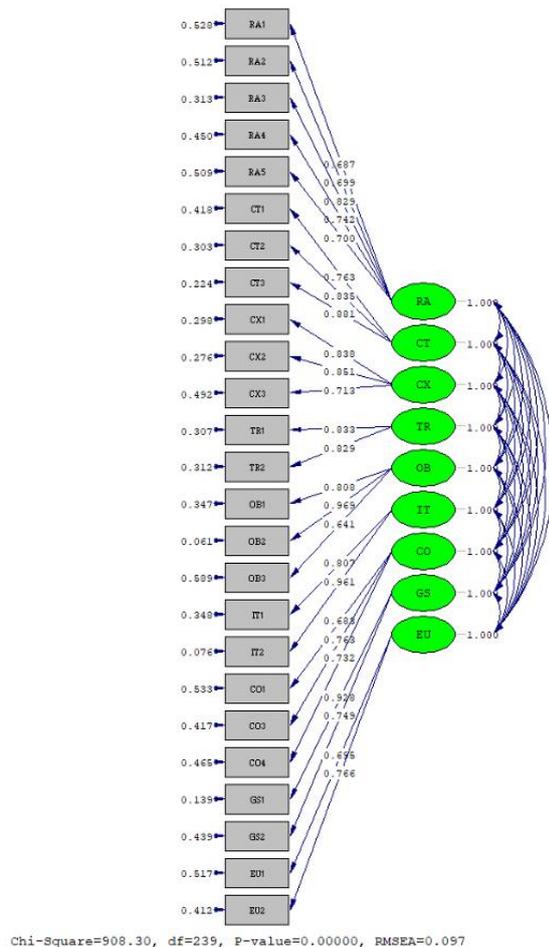
Variable Laten	Variable Manifest	$\lambda$	$\lambda^2$	$e$	$CR$	$VE$
Relative Advantage	RA1	0.665	0.452	0.226	0.823	0.536
	RA2	0.699	0.469	0.211		
	RA3	0.629	0.665	0.313		
	RA4	0.542	0.221	0.449		
	RA5	0.500	0.490	0.210		
Compatibility	CT1	0.665	0.262	0.416	0.765	0.662
	CT2	0.632	0.695	0.303		
	CT3	0.661	0.556	0.224		
Complexity	CX1	0.636	0.502	0.296	0.844	0.642
	CX2	0.621	0.524	0.256		
	CX3	0.513	0.206	0.492		
Trialability	TR1	0.633	0.694	0.296	0.715	0.691
	TR2	0.629	0.524	0.313		
Observability	OB1	0.606	0.623	0.345	0.724	0.666
	OB2	0.969	0.939	0.061		
	OB3	0.513	0.411	0.269		
IT Infrastructure	IT1	0.605	0.621	0.349	0.960	0.565
	IT2	0.961	0.924	0.056		
CEO's Innovativeness	CO1	0.606	0.466	0.234	0.724	0.526
	CO2	0.563	0.262	0.416		
	CO3	0.532	0.236	0.464		
Government Support	GS1	0.926	0.661	0.139	0.960	0.511
	GS2	0.549	0.261	0.439		
Environmental	EU1	0.692	0.4631	0.215	0.796	0.532
Uncertainty	EU2	0.566	0.265	0.413		

Source: Data processed, 2023

This study adopts an integrated theoretical framework combining the Technology–Organization–Environment (TOE) model and the Diffusion of Innovation (DOI) theory to comprehensively analyze the determinants of MSME digital adoption. The TOE framework examines adoption factors from three dimensions: technological (IT infrastructure),

organizational (CEO innovativeness), and environmental (government support and environmental uncertainty). Meanwhile, DOI theory captures innovation characteristics influencing adoption behavior, including Relative Advantage, Compatibility, Complexity, Trialability, and Observability. The integration of TOE and DOI enables a multidimensional analysis that connects contextual readiness with perceived innovation attributes.

This research employs a quantitative approach using structured questionnaires distributed to 420 MSME respondents. The data were tested for validity and reliability using SPSS version 2023 before being analyzed through Structural Equation Modeling (SEM) to examine the relationships among variables. Furthermore, Table 11, which presents respondents' responses regarding the Pavlovian Conditioning variable, indicates that each observed variable has a loading factor ( $\lambda$ ) greater than 0.5. This finding confirms that all indicators significantly contribute to their respective exogenous constructs. To ensure robust construct validity and reliability, the evaluation also considers the Variance Extracted (VE) and Construct Reliability (CR) values. The results show that VE values exceed 0.5 and CR values are greater than 0.7, demonstrating satisfactory convergent validity and internal consistency. Therefore, all exogenous constructs, including Pavlovian Conditioning, meet the recommended measurement standards and are appropriate.



**Figure 2 . Exogenous Construct Measurement Model**

Source: Lisrel Output, 2023

The figure 2. Exogenous Construct Measurement Model presents the measurement model (outer model) using Structural Equation Modeling (SEM) with LISREL, illustrating the relationships between observed indicators and their respective latent constructs.

The green circles (RA, CT, CX, TR, OB, IT, CO, GS, EU) represent latent variables, while the rectangular boxes (e.g., RA1–EU2) represent observed indicators. The arrows from the latent constructs to the indicators indicate factor loadings ( $\lambda$  values), which reflect how strongly each indicator explains its corresponding construct. Most loading factor values are above 0.5, indicating that the indicators adequately represent their latent variables. This supports acceptable convergent validity, as indicators with loadings greater than 0.5 are considered meaningful contributors to the construct.

The covariance relationships among latent variables are illustrated by the curved double-headed arrows on the right side of the model, indicating correlations between exogenous constructs. This suggests that the TOE and DOI variables are theoretically related but remain distinct constructs within the integrated framework. At the bottom of the figure, the goodness-of-fit indices are reported: Chi-Square = 908.30,  $df = 239$ ,  $p\text{-value} = 0.00000$ , and  $RMSEA = 0.097$ . The significant Chi-Square value indicates some discrepancy between the model and the data, which is common in large samples ( $n = 420$ ). The RMSEA value of 0.097 suggests a marginal to moderate model fit, slightly above the commonly recommended threshold of 0.08. This indicates that while the measurement model is acceptable, further refinement could improve model fit. Overall, the model demonstrates adequate construct validity and reliability, supporting the suitability of the latent constructs for subsequent structural model analysis.

**Table 12. Measurement Model**

Variable	Estimate	T-stat	t table	Explanation
RA	0.211	5.232	1.96	Significant
CT	0.325	3.06	1.96	Significant
CX	-0.234	-1.270	1.96	Not Significant
TR	0.403	1.569	1.96	Significant
OB	0.047	0.651	1.96	Not Significant
IT	0.006	0.248	1.96	Not Significant
CO	-0.031	-0.779	1.96	Not Significant
GS	0.258	1.742	1.96	Significant
EU	0.210	2.521	1.96	Significant

Source: Lisrel Output, 2023

Table 12. Measurement Model presents the results of the structural model analysis, showing the path coefficients (estimates), T-statistics, and significance levels of the relationships between exogenous variables and Pavlovian Conditioning (PC). The critical t-table value used is 1.96 ( $\alpha = 0.05$ ). The results indicate that Relative Advantage (RA) has a

positive and significant effect on PC ( $\beta = 0.211$ ;  $T = 5.232 > 1.96$ ), suggesting that perceived benefits strongly influence conditioned digital adoption behavior. Compatibility (CT) also shows a positive and significant effect ( $\beta = 0.325$ ;  $T = 3.06$ ), indicating that alignment with existing business processes enhances the conditioning effect. Similarly, Trialability (TR) demonstrates a positive and significant relationship ( $\beta = 0.403$ ), implying that opportunities for experimentation strengthen behavioral reinforcement.

From the environmental context, Government Support (GS) ( $\beta = 0.258$ ;  $T = 1.742$ ) and Environmental Uncertainty (EU) ( $\beta = 0.210$ ;  $T = 2.521$ ) are reported as significant, highlighting the important role of external pressures and institutional support in stimulating conditioned digital behavior. Conversely, Complexity (CX) ( $\beta = -0.234$ ), Observability (OB) ( $\beta = 0.047$ ), IT Infrastructure (IT) ( $\beta = 0.006$ ), and CEO Innovativeness (CO) ( $\beta = -0.031$ ) do not show significant effects ( $T < 1.96$ ). These findings indicate that organizational readiness and perceived difficulty are less influential compared to perceived benefits and environmental drivers in shaping Pavlovian-based digital adoption among MSMEs.

Overall, the results emphasize that perceptual and environmental factors play a more dominant role than internal organizational characteristics in influencing conditioned digital transformation behavior.

**Table 13. Testing of Research Models for Fit Quality**

Parameter	Acceptable Match Level	Model Index	Explanation
<b>GFI</b>	$GFI \geq 0.9$ (fit quality), $0.8 \leq GFI \leq 0.9$ (marginal fit)	0,856	Marjinal Fit
<b>RMR</b>	$RMR \leq 0.5$	0.052	Fit Quality
<b>RMSEA</b>	$0.05 < RMSEA \leq 0.08$ ( fit quality), $0.08 < RMSEA \leq 1$ (marginal fit)	0.082	Marjinal Fit
<b>NNFI</b>	$NNFI \geq 0.9$ (fit quality), $0.8 \leq NNFI \leq 0.9$ (marginal fit)	0.921	Fit Quality
<b>NFI</b>	$NFI \geq 0.9$ (fit quality), $0.8 \leq NFI \leq 0.9$ (marginal fit)	0.987	Fit Quality
<b>AGFI</b>	$AGFI \geq 0.9$ (fit quality), $0.8 \leq AGFI \leq 0.9$ (marginal fit)	0,876	Marjinal Fit
<b>RFI</b>	$RFI \geq 0.9$ (fit quality), $0.8 \geq RFI \leq 0.9$ (marginal fit)	0.909	Fit Quality
<b>CFI</b>	$CFI \geq 0.9$ (fit quality), $0.8 \leq CFI \leq 0.9$ (marginal fit)	0.971	Fit Quality

Source: Data processed, 2023

Table 13. Testing of Research Models for Fit Quality presents the overall goodness-of-fit evaluation of the research model using several fit indices to assess how well the proposed SEM model matches the empirical data. The Goodness of Fit Index (GFI) value is 0.856, which falls within the marginal fit category ( $0.8 \leq GFI \leq 0.9$ ). Similarly, the Adjusted

Goodness of Fit Index (AGFI) value of 0.876 also indicates marginal fit. These results suggest that although the model does not achieve the ideal threshold ( $\geq 0.90$ ), it still demonstrates an acceptable level of fit. The Root Mean Square Residual (RMR) value is 0.052, which is below the recommended threshold, indicating good fit quality. The Root Mean Square Error of Approximation (RMSEA) value is 0.082, slightly above the preferred upper limit of 0.08, placing it in the marginal fit category. This suggests that the model has moderate approximation error but remains within an acceptable range. Incremental fit indices show stronger performance. The NNFI (0.921), NFI (0.987), RFI (0.909), and CFI (0.971) all exceed the recommended threshold of 0.90, indicating good fit quality. These values demonstrate that the proposed model significantly improves fit compared to the null model. Overall, although several absolute fit indices indicate marginal fit, the strong incremental fit indices confirm that the research model is generally acceptable and suitable for hypothesis testing and structural analysis. Despite three indicators falling below the marginal fit criterion, the model fits well overall, as shown in the summary table of the model's goodness of fit. The research model is therefore classified as having a good fit.

## CONCLUSIONS

Based on the data analysis and discussion in the previous chapter, several important inferences can be drawn regarding the factors influencing website adoption using the Pavlovian Conditioning Method. The results indicate that government support, trialability, compatibility, relative advantage, and environmental uncertainty have a positive and significant influence on website adoption, with relative advantage emerging as the most dominant factor, suggesting that users are more likely to adopt websites when they perceive clear benefits compared to conventional methods. Compatibility also shows a significant positive effect, indicating that alignment between website features and users' existing habits, needs, and preferences plays a crucial role in encouraging adoption. Trialability further strengthens adoption decisions, as opportunities for users to test and experience website features directly increase familiarity and positive responses through conditioning processes. In contrast, complexity does not demonstrate a significant influence, implying that perceived difficulty does not substantially hinder adoption, possibly due to supportive interface design or user guidance that reduces perceived barriers. Meanwhile, observability, IT infrastructure, and CEO innovativeness show positive but statistically insignificant effects, suggesting that although these factors support adoption, their influence is not strong enough to be considered decisive. On the other hand, external factors such as government support and environmental uncertainty significantly contribute to adoption decisions, highlighting the importance of policy encouragement and market dynamics in shaping user behavior. Overall, the findings emphasize that perceived benefits, compatibility with user expectations, and opportunities for direct experience are key drivers of website adoption within the Pavlovian Conditioning framework, providing valuable insights for businesses and policymakers to enhance adoption strategies by focusing on user-centered design, reducing perceived barriers, and strengthening external support mechanisms. For future research, it is recommended to expand the research scope by involving more diverse MSME sectors, incorporating longitudinal approaches to observe long-term adoption behavior, and integrating qualitative methods to gain deeper insights into decision-making processes. Such improvements may strengthen the explanatory power of future studies and provide a more comprehensive understanding of MSME digital transformation.

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