Joinforcs: Journal of informatics and information system
Volume 1, (3) 2026, p. 87-92
E-ISSN : XXXX-XXXX

Expert System for Detecting Fear of Missing Out (FOMO) Symptoms on Social Media Trends Using the Dempster-Shafer Method

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Article Info

Article History:

Received Feb 15, 2026
Revised Mar 12, 2026
Accepted Mar 27, 2026

Keywords :
Dempster-Shafer, Expert Systems, Fear of Missing Out, Social Media, Symptoms.

Abstract

Fear of Missing Out (FOMO) is a psychological phenomenon that has become increasingly prevalent alongside the growth of social media usage and the rapid emergence of digital trends. The continuous exposure to online activities, social interactions, and trending content may influence individuals to experience anxiety, excessive curiosity, and a persistent desire to stay updated with information on social media platforms. This study aims to develop an expert system for detecting the symptoms and level of Fear of Missing Out (FOMO) related to social media trends by implementing the Dempster-Shafer method. The proposed method is applied to handle uncertainty in the diagnostic process by calculating belief and plausibility values based on user-provided symptoms. The system analyzes several indicators of FOMO, including difficulty controlling social media usage, spending excessive time accessing social media, feeling anxious when disconnected from online activities, frequently checking updates, and worrying about missing important events or information. The inference mechanism combines symptom evidence to determine the most probable FOMO level experienced by users. The system development process includes knowledge acquisition from experts, representation of symptoms and hypotheses, implementation of the Dempster-Shafer calculation, and system evaluation through testing. The testing results demonstrate that the developed expert system can provide diagnostic results that are consistent with expert assessments, achieving the highest confidence value for the High FOMO Level hypothesis of 0.80 or 80%. This research indicates that the proposed system can be utilized as an early detection tool to increase awareness of the psychological impacts of excessive social media use and support users in understanding their FOMO conditions.

1. Introduction

The development of information and communication technology has led to a significant increase in the use of social media in daily life. Social media not only serves as a means of communication, but also as a primary source of information and rapidly evolving trends. This condition gives rise to a psychological phenomenon known as Fear of Missing Out (FOMO), which is a feeling of worry or anxiety when individuals feel left behind from experiences that are considered important by others. The phenomenon of FOMO is becoming increasingly relevant along with the high intensity of user interaction with dynamic and real-time social media content [1].

FOMO is known to have a fairly serious impact on an individual's psychological state. Several studies show that FOMO correlates with increased levels of anxiety, stress, and the tendency to addictive behaviors towards social media [2]. In addition, individuals who experience FOMO tend to have low self-control in the use of digital media, thus potentially disrupting productivity and daily life balance. Therefore, an approach that is able to identify the level of FOMO early in order to minimize the negative impact it causes.

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One approach that can be used is the expert system, which is an artificial intelligence-based system designed to represent an expert's knowledge in the form of certain rules. The expert system is able to provide diagnostic results or recommendations based on the symptoms given by the user. However, in the case of FOMO that is subjective and uncertain, a method is needed that is able to handle uncertainty in the decision-making process. The method that can be used to overcome this problem is Dempster-Shafer. This method allows the combination of various pieces of evidence with a certain level of confidence to produce a decision. The advantage of the Dempster-Shafer method lies in its ability to accommodate uncertainty and ignorance, so it is suitable for application to systems based on uncertain symptoms or indicators [3].

Although a lot of research has been done on FOMO, most of it still focuses on analyzing the relationship between FOMO and social media use without developing a system that can automatically detect it. In addition, the use of the Dempster-Shafer method in the context of analyzing social media user behavior, especially in detecting FOMO on trends, is still relatively limited [4]. This shows that there is a gap in research that can be developed further. Based on these problems, this study aims to design and implement an expert system that is able to detect the level of FOMO on social media trends using the DempsterShafer method. It is hoped that the developed system can provide accurate results and help users understand their psychological conditions related to the use of social media.

2. Research Methodology

Data collection is carried out through literature studies and documentation from various relevant sources, such as scientific journals, books, research articles, and FOMO measurement instruments that have been used in previous research. The data is used as a basis for gaining knowledge about the characteristics and indicators of FOMO behavior.

Table 1. FoMo Symptoms

Symptom Code	Symptom Names In FoMo
G01	Not Aware of Time
G02	Can't Control Yourself
G03	Wasting Time

Table 2. FoMo Symptom Indicators

Indicator Code	FoMo Indicator
F01	Is it often that you use social media for longer than planned?
F02	Is there a loss of awareness of the duration of use?
F03	Do you feel like time flies by very quickly when using social media?
F04	Do you find it difficult to stop using social media?
F05	Do you keep social media open even when you're busy?
F06	Do you feel a strong urge to keep using social media?
F07	Do you have tasks and work delayed due to social media?
F08	Are you focused on studying or work interrupted?
F09	Are you aware of the unproductive use of social media?
F10	Do you feel regretful after using social media?
F11	Are you using social media without a clear purpose?

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Table 3. FoMo Symptom Indicators

Indicator Code	FoMo Indicator
F12	Do you often update with the latest trends or news?
F13	Do you check notifications often?
F14	Do you feel anxious if you don't open social media?
F15	Do you find it difficult to stop using social media?
F16	Do you think about social media when you're not in use?
F17	Do you want to open the app immediately after quitting?
F18	Do you find it difficult to focus because you think about online activities?
F19	Have you failed to reduce your time using social media?
F20	Have you tried to quit but it didn't work?
F21	Do you feel dependent on social media?
F22	Do you open social media for no apparent reason?
F23	Are you scrolling directionless? (endless scrolling)?
F24	Do you use social media just out of habit?

3. Results and Discussion

In the testing stage of the Fear of Missing Out (FOMO) symptom detection expert system on social media trends, a calculation process was carried out using the Dempster-Shafer method based on the symptoms chosen by the user. Each symptom has a density value (belief) that indicates a level of belief in a particular hypothesis.

Table 4. Symptom Hypothesis

Code	Hipotesis
P01	Low FoMo Levels
P02	Medium FoMo Level
P03	High FoMo Levels

Table 5. Symptom Knowledge Base

Symptom Code	Symptom Name	Hipotesis	Value of Belief
G01	Not Aware of Time	P02,P03	0,7
G02	Cannot Control Self	P03	0,8
G03	Wasting Time	P02,P03	0,6

Joinforcs: Journal of informatics and information system
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The uncertainty value is calculated by the formula: Pl(s) = 1 - Bel(s)
m1(θ) = 1 – 0.7 = 0.3 m2(θ) = 1 – 0.8 = 0.2 m3(θ) = 1 – 0.6 = 0.4

a. Dempster-Shafer

Calculation:
Combination of G01 and G02 Symptoms
First Symptom : G01
{P02,P03} = 0.7 θ = 0.3
Second Sympt om : G02
{P03} = 0.8 θ = 0.2

Table 6. Combination of G01 and G02 Symptoms

M1	M2	Irisan	Results
{P02,P03} 0,7	{P03} 0,8	{P03}	0,56
{P02,P03} 0,7	θ 0.2	{P02,P03}	0,14
θ 0.3	{P03} 0,8	{P03}	0,24
θ 0.3	θ 0.2	i	0,06

Number of Conflicts (K) = 0 because there are no empty slices.
Rumus kombinasi Dempster-Shafer:

$$m3(Z) = \sum m1 \frac{(X)m2(Y)}{1 - K)}$$

For P03:
m(P03) = (0.56 + 0.24) / (1-0) = 0.80 For {P02,P03}:
m(P02,P03) = 0.14 / (1-0) = 0.14 For θ:
m(θ) = 0.06 / (1-0) = 0.06

Table 7. Combination of G03 Symptom Results

m1	m2	Irisan	Results
{P03} 0,8	{P02,P03} 0,6	{P03}	0,48
{P03} 0,8	θ 0.4	{P03}	0,32
{P02,P03} 0,14	{P02,P03} 0,6	{P02,P03}	0,084
{P02,P03} 0,14	θ 0.4	{P02,P03}	0,056
θ 0.06	{P02,P03} 0,6	{P02,P03}	0,036
θ 0.06	θ 0.4	i	0,024

Table 8. Total Results G01, G02, G03

Total P03	Total P02,P03	Total θ
0,8	0,176	0,024

Based on the results of the calculation using the Dempster-Shafer method, the highest density value on the P03 hypothesis (High FOMO) was obtained of 0.80 or 80%. The results show that the user-chosen symptoms lead to a high level of Fear of Missing Out. Thus, the Dempster-Shafer method is able to help the FOMO diagnosis process by combining several symptoms to produce more objective decisions.

4. Conclusion

This study successfully designed and implemented an expert system to detect the symptoms of Fear of Missing Out (FOMO) against social media trends using the Dempster-Shafer method. This method is used because it is able to process uncertainty through the combination of several evidence or symptoms that have a certain level of confidence. Based on the results of the tests and calculation processes that have been carried out, the system is able to produce a diagnosis of the FOMO level with the highest confidence value on the P03 hypothesis, namely the High FOMO Level of 0.80 or 80%. The results showed that symptoms such as being timeless when using social media, difficulty controlling social media use, and the tendency to waste time had a strong influence on the emergence of FOMO in social media users. Using the Dempster-Shafer method, each symptom can be systematically combined to produce more measurable and objective decisions than the usual simple rules-based approach.

In addition, this study proves that expert systems can be used as a medium for early detection of excessive social media use behavior. The system developed is able to help users understand the level of FOMO tendency experienced so that they can increase awareness to control the use of social media more wisely. The application of the Dempster Shafer method also provides flexibility in the management of uncertain and subjective data, making it suitable for application in the case of digital behavioral analysis. However, this study still has limitations in the number of symptoms, belief values, and datasets used in the inference process. Therefore, further research is expected to add more symptom indicators, expand user data, and integrate other methods such as machine learning to make the system have a higher level of accuracy. With further development, this FOMO detection expert system is expected to be a useful solution in helping users understand the impact of social media use on their psychological state.

REFERENCES

[1] Salsabila Fiqh, Asniar Khumas, and Eka Sufartianingsih. "The Relationship Between Social Media Use Intensity and Fear Of Missing Out (FOMO) in Adolescents Active Users of Social Media in Makassar City." *Journal of Psychology*, vol. 3, no. 3, 2025.

[2] Nas, C. (2019). *The expert system diagnoses thyroid disease using the Dempster Shafer method*. Journal of Technology and Open Source, 2(1), 1–14.

[3] Kuswanto, J. *Expert System: Solving Cases of Damage to Washing Machines by Backward Chaining Method*.

[4] Abdel-Azim, A., et al. 2021. "The Association Between Fear of Missing Out and Internet Use: A Meta-Analysis." *Journal of Behavioral Addictions*, vol. 10, no. 4, pp. 879–900. https://doi.org/10.1556/2006.2021.00083

[5] Aryawan, I. K. B. M., Rahardian, R. L., and Arimbawa, I. G. N. P. 2025. "Comparative Analysis of the Certainty Factor and Dempster-Shafer Methods on the Identification System of Student Mental Disorders." *JIPI (Scientific Journal of Informatics Research and Learning)*, vol. 10, no. 4, pp. 3964–3979. https://doi.org/10.29100/jipi.v10i4.9432

[6] Istya, R. A., & Astutik, I. R. I. (n.d.). *An expert system for detecting mental health conditions in Generation Z uses the backward chaining method*. University of Muhammadiyah Sidoarjo.

[7] Syahputra, M. (2022). The expert system diagnoses encephalitis using the Dempster Shafer method. *SANTI Journal (Information Systems and Information Technology)*, 2(1).

[8] Alifah, N., & Pamudji, R. A. N. (2025). The expert system for detecting mental health in Generation Z uses the forward chaining and Dempster-Shafer methods. *IKRAM: Al Muslim Journal of Computer Science*, 4(2).

[9] Pratiwi, H., & Harianto, K. (2019). Comparison of ELM algorithms and backpropagation on students' academic achievement. *Journal of Computer Science & Informatics (J-SAKTI), 3*(2), 282–294. https://doi.org/10.30645/j-sakti.v3i2.147

[10] R. Malhotra and K. Lata, "Using Ensembles for Class-Imbalance Problem to Predict Maintainability of Open-Source Software," Int. J. Reliab. Qual. Saf. Eng., vol. 27, no. No. 05, p. 2040011, Oct. 2020, doi: https://doi.org/10.1142/S0218539320400112.

[11] B. C. Mourão, L. Karita, and I. Do Carmo Machado, "Green and Sustainable Software Engineering - a Systematic Mapping Study," in Proceedings of the XVII Brazilian Symposium on Software Quality, Curitiba Brazil: ACM, Oct. 2018, pp. 121–130. doi: https://doi.org/10.1145/3275245.3275258.

[12] J. Mancebo, C. Calero, and F. García, "Does maintainability relate to the energy consumption of software? A case study," Softw. Qual. J., vol. 29, no. 1, pp. 101–127, Mar. 2021, doi: https://doi.org/10.1007/s11219-020-09536-9.

[13] M. Gradišnik, T. Beranič, and S. Karakatič, "Impact of Historical Software Metric Changes in Predicting Future Maintainability Trends in Open-Source Software Development," Appl. Sci., vol. 10, no. 13, p. 4624, Jul. 2020, doi: https://doi.org/10.3390/app10134624.

[14] R. Saheb Nasagh, M. Shahidi, and M. Ashtiani, "A fuzzy genetic automatic refactoring approach to improve software maintainability and flexibility," Soft Comput., vol. 25, no. 6, pp. 4295–4325, Mar. 2021, doi: https://doi.org/10.1007/s00500-020-05443-0.

[15] M. J. Page et al., "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews," BMJ, p. n71, Mar. 2021, doi: https://doi.org/10.1136/bmj.n71.

[16] A. F. Herrera Ortiz et al., "A Practical Guide to Perform a Systematic Literature Review and Meta-analysis," Princ. Pract. Clin. Res. J., vol. 7, no. 4, pp. 47–57, Dec. 2021, doi: https://doi.org/10.21801/ppcrj.2021.74.6.

[17] N. Shaheen et al., "Appraising systematic reviews: a comprehensive guide to ensuring validity and reliability," Front. Res. Metr. Anal., vol. 8, Dec. 2023, doi: https://doi.org/10.3389/frma.2023.1268045.

[18] Y. Riyadi, M. Wahidin, and A. Elanda, "Systematic Literature Review of Service Operation Implementation in the Information Technology Infrastructure Library (ITIL) Framework in Indonesia: Research Trends, Benefits and Challenges," J. Interkom J. Publ. Ilm. Bid. Technology. Inf. and Commun., vol. 17, no. 2, pp. 81–97, Jul. 2022, doi: https://doi.org/10.35969/interkom.v17i2.232.

[19] P. Candra Susanto, D. Ulfah Arini, L. Yuntina, J. Panatap Soehaditama, and N. Nuraeni, "The Concept of Quantitative Research: Population, Sample, and Data Analysis (A Literature Review)," J. Multidisciplinary Science, vol. 3, no. 1, pp. 1–12, Apr. 2024, doi: https://doi.org/10.38035/jim.v3i1.504.

[20] N. Lestari, P. Paidi, and S. Suyanto, "A systematic literature review about local wisdom and sustainability: Contribution and recommendation to science education," Eurasia J. Math. Sci. Technol. Educ., vol. 20, no. 2, p. em2394, Feb. 2024, doi: https://doi.org/10.29333/ejmste/14152.