Developing a Website for Organizing Information Systems about Board Games

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Abstract

Purpose: The main objective of this research is to analyze data and information concerning board games to enhance their description and accessibility on business websites, as well as to create a website dedicated to organizing information about board games.

Methodology: The study collected data from the "Board Game Everyday Cafe" website. The data were categorized using a classification approach, such as abstract strategy, action/dexterity, adventure, and more. This classification process entailed identifying key concepts and attributes within the dataset and assigning appropriate categories based on these concepts. Tools such as phpMyAdmin and MySQL were employed for database management, while coding languages like PHP, HTML, CSS, and JavaScript were utilized for website development, with WordPress being used for designing the main page. Metadata elements were identified according to the schema.org standard.

Findings: The study identified 227 board games from the "Board Game Everyday Cafe" website, categorized into various genres such as abstract strategy, action/dexterity, and adventure. Metadata elements were established based on the schema.org standard to describe each game

comprehensively. Website components, including home, collection, detail, and login/insert pages, were outlined for efficient data organization.

Applications of this study: This study's findings can be applied in various areas, including board game businesses, e-commerce platforms, and web development. Board game businesses can utilize the categorized data to enhance their inventory management and customer experience. E-commerce platforms can implement similar classification approaches to organize and present board game listings effectively. Web developers can leverage the outlined website components and metadata elements for designing and developing board game-related websites with improved functionality and user engagement.

Keywords: Board games, Metadata, Website development, Schema.org, Data categorization

1.   Introduction

The board games have surged in popularity, particularly among the younger generation, who enjoy the competition and triumph they offer. Board gaming has also become a cherished pastime across various age groups, fostering communal engagement during holidays and leisure hours. Enthusiastically embraced by diverse groups, including Generation Z students, working professionals, and middle-aged Generation Y individuals (Parment, 2015), board gaming is widely accepted because it brings families together and creates enjoyable interactions, evoking smiles and laughter (Shaw, 2015). This activity transcends demographic boundaries, captivating a diverse range of people in society, and serves as a pivotal tool for nurturing interpersonal bonds and honing essential skills crucial for holistic development in a complex global society (Singer & Singer, 1990).

Board games have roots deeply embedded in the traditional games familiar to the Thai populace, including both board games and chess. According to Tangpakdee (2022), board games represent a genre of games characterized by the utilization of diverse materials and equipment in conjunction with structured game mechanics. These games typically entail intricate rules and regulations, necessitating players to employ strategic prowess or even rely on chance (Prapinpongsakorn, 2022). Moreover, board games often boast visually appealing designs and captivating aesthetics that entice individuals to engage in gameplay. Comprising both two-dimensional and three-dimensional components, board games are tangible entities that offer tactile experiences. Furthermore, developers have harnessed the essence of these games, utilizing them as a foundation for digital adaptations accessible through online platforms and applications, thereby facilitating convenient updates and expansion of game libraries. Consequently, board games serve as a source of enjoyment for individuals spanning various age demographics in contemporary society.

Board games in Thailand experienced a period of prosperity around 2014 to 2015 due to manufacturers and developers introducing innovative mechanisms and strategies to engage players

in new and exciting ways, enhancing the basic gameplay with creativity (Achawanantakul, 2021). This surge in popularity is supported by statistical data from 2018, indicating that the board game market's value exceeded 240 billion and is projected to increase further to 370 billion, representing a 9% growth over the next four years (Longtunman, 2018). The growing popularity of board games in Thailand is also reflected in initiatives like the Monopoly editions for Phuket, Chiang Mai, and Bangkok. These localized versions highlight the cultural and historical aspects of Thai cities, further integrating board games into the cultural fabric and tourism sector (TAT Newsroom, 2022). The Tourism Authority of Thailand (TAT) announced the upcoming release of "Monopoly: Chiang Mai Edition", set for 2023. This follows the success of the "Monopoly: Phuket Edition" launched in March 2022. The new edition will feature Chiang Mai's cultural sites, historical landmarks, and businesses. Locals and tourists can suggest locations to be included by emailing or via the game's Facebook page. Additionally, a Chiang Mai edition of the card game Top Trumps will be released. Both games are developed by Winning Moves UK in partnership with TAT. Furthermore, the market for board games in Thailand is bolstered by the cultural resurgence of traditional gaming and the integration of digital elements into physical games. This trend is not unique to Thailand but is part of a broader global increase in board game popularity, driven by the appeal of social interaction and the tactical challenges they offer. The overall market size for board games is substantial and continues to grow, supported by innovations and diversified game themes that cater to a wide range of interests (Global Market Insights Inc., 2024).

Board games have been gaining popularity in Thailand, driven by several key trends and developments. The rise in interest can be attributed to a growing community of enthusiasts and the establishment of dedicated spaces like board game cafes, which have become social hubs for gamers. These cafes provide a venue for people to gather, play, and purchase board games, reflecting the increasing demand for community-oriented gaming experiences (Global Market Insights Inc., 2024). Particularly notable is the surge in cafe openings near educational institutions like schools and universities, signaling positive growth prospects. Traditionally patronized by students, these cafes are now attracting a diverse customer base spanning various age groups. "Board Game Everyday Cafe", situated near a university, exemplifies this trend, enjoying widespread popularity among students and the broader community seeking an engaging and enjoyable social environment.

From studying information about board games, it has been found that there are currently more than 1,000 different types of board games. Generally, there is a store manager, also known as the Gamemaster (GM), who manages and teaches players how to play the games. Although there is a GM at the store to give advice to players, they still struggle to adequately meet the needs of all players due to the large number of games and players available simultaneously (Brediger, 2021).

The lack of game masters has resulted in delays for customers who need help learning the game's rules or mechanics, which hinders the overall experience at the store.

According to Aaker & Joachimsthaler (2000), website performance is crucial for attracting users. Customizing quality website content for each user helps draw attention and increase user satisfaction. Website design and development should take into account human limitations, such as natural language data analysis and grouping. A flexible structural design and accessibility that can dynamically update data based on user needs open up avenues for creating engaging and meaningful user interactions.

Therefore, the researcher has initiated a project applying information science concepts to address challenges and enhance the operational efficiency of establishments. The project aims to design and develop a website for "Board Game Everyday Cafe", utilizing the concept of classification to categorize content effectively. Organized classification facilitates user navigation and information retrieval. Designing the content structure is pivotal in website development, involving defining the layout of each webpage and planning the presentation of information in a logical sequence to ensure a seamless and efficient user experience.

2. Objectives

2.1 To analyze data and information concerning board games.

2.2 To develop a website dedicated to organizing information about board games.

3. Literature reviews

3.1 Knowledge Organization Approach

3.1.1 Theoretical Foundations

Knowledge organization (KO) is a fundamental aspect of information science, dealing with the systematic categorization, classification, and indexing of information to facilitate retrieval and use. This literature review explores the theoretical foundations, methodologies, and applications of knowledge organization, with a particular focus on digital and web-based environments. The theoretical underpinning of knowledge organization is grounded in various classification theories and philosophies. Traditional approaches to KO, such as library classification systems (Dewey Decimal Classification, Library of Congress Classification), have evolved to address the complex needs of digital information systems. Hjørland (2013) argues that KO should be understood within the context of domain analysis, where the classification is influenced by the epistemological and social contexts of the domain in question. Similarly, Beghtol (2003) highlights the importance of considering user perspectives and cultural contexts in the development of classification schemes.

3.1.2 Methodologies

Several methodologies have been developed to implement effective knowledge organization systems. Faceted classification, as proposed by Ranganathan (1933), allows for the flexible categorization of information using multiple attributes or facets, making it particularly suitable for digital environments where complex queries are common. Controlled vocabularies and thesauri, such as those developed by the Getty Research Institute, provide standardized terminologies that enhance consistency and accuracy in information retrieval. The application of machine learning and artificial intelligence in KO is also gaining traction. Automated classification systems leverage algorithms to categorize large datasets efficiently, as seen in the development of ontologies and semantic web technologies. These systems improve information retrieval by understanding the contextual relationships between concepts, as discussed by Shadbolt, Berners-Lee, & Hall (2006).

3.1.3 Applications

The principles of knowledge organization are applied across various fields, including library and information science, digital humanities, and e-commerce. In libraries, KO facilitates the systematic arrangement of books and resources, enhancing discoverability. Digital libraries and repositories, such as the Digital Public Library of America (DPLA), employ metadata standards like Dublin Core to ensure interoperable and accessible collections. In the realm of e-commerce, effective KO enhances user experience by enabling precise product categorization and search functionality. Websites like Amazon and eBay utilize sophisticated taxonomies and ontologies to organize their vast inventories, facilitating efficient product discovery and recommendation systems.

3.2 Website Services and Development Processes

Website development is a multifaceted field that encompasses various processes and services aimed at creating functional, user-friendly, and aesthetically pleasing web interfaces. This literature review explores the essential components of website services and the development processes, examining the theoretical underpinnings, methodologies, and practical applications within the domain.

Website services refer to the range of functionalities and support mechanisms provided by websites to meet user needs and enhance user experience. These services can be broadly categorized into front-end services, back-end services, and integrated systems.

3.2.1 Development Processes

Website development processes encompass a series of stages that guide the creation of websites from conception to deployment and maintenance. The typical phases include planning, design, development, testing, deployment, and maintenance.

1) Planning: The planning phase involves defining the website's purpose, target audience, and functional requirements. Krug (2013) highlights the importance of user research and

competitive analysis during this stage to ensure the website meets user expectations and stands out in the market.

2) Design: During the design phase, wireframes and mockups are created to visualize the website's structure and layout. Interaction design principles, as discussed by Cooper, Reimann, & Cronin (2014), are applied to ensure that the website is intuitive and engaging. Graphic design tools such as Adobe XD and Sketch are commonly used for creating visual prototypes.

3) Development: The development phase involves coding the website based on the design specifications. Front-end development utilizes HTML, CSS, and JavaScript to build the visual and interactive aspects of the website (Duckett, 2014). Back-end development focuses on server-side logic, database integration, and application programming interfaces (APIs).

4) Testing: Testing is a critical phase where the website is evaluated for functionality, performance, security, and usability. Automated testing tools like Selenium and manual testing techniques ensure that the website operates correctly across different browsers and devices (Fewster & Graham, 1999).

5) Deployment: Once testing is complete, the website is deployed to a live server. Continuous integration and deployment (CI/CD) practices, as described by Humble & Farley (2010), facilitate the smooth transition from development to production environments.

6) Maintenance: Post-deployment, the website requires regular updates and maintenance to fix bugs, improve performance, and add new features. Content updates, security patches, and user feedback are integral to the ongoing maintenance process (Ries, 2011).

In this research, the Knowledge Organization Approach plays a crucial role in systematically categorizing and organizing information about board games. By adopting this approach, the project ensures that each board game is accurately classified into specific genres. This classification is based on identifying key concepts and attributes within the dataset, which facilitates easy navigation and retrieval of information. By combining the Knowledge Organization Approach with comprehensive website services and development processes, the research project successfully creates a well-organized and user-friendly website.

4. Methodology

The primary objective of this study is to analyze and organize information concerning board games by employing a knowledge organization approach. This aims to systematically categorize this information. This categorization will serve as a foundation for enhancing and developing websites for organizations that offer board game services.

4.1 Data Collection

Information and news about 227 board games were collected from a board game service provider in Khon Kaen Province, Board Game Everyday Café, a popular venue with three branches.

This café serves as a hub for board game enthusiasts, offering a welcoming environment where players of all ages can gather to enjoy a wide variety of games. Featuring an extensive collection of popular board games, it serves as a significant site for studying the board game culture. The 227 board games that were the same in every branch were selected at the time of the study. The analysis will cover various characteristics, including game mechanics, theme, number of players, playing time, level of complexity, and user reviews. Exploring these characteristics of board games is important for improving user experience. Understanding the mechanics, themes, and other features helps tailor recommendations and create a more enjoyable experience for players, leading to higher customer satisfaction and retention.

4.2   Knowledge Organization Approach

A knowledge organization approach was employed to systematically categorize the collected data. This method involves organizing information in a structured manner to facilitate understanding and retrieval. The categorization process began by identifying relevant attributes and characteristics of board games that could inform the organization of information on the website (Hjørland, 2016). Categories were established based on commonalities and distinctions observed within the dataset, aiming to create a structured framework for organizing board game information effectively. The steps involved in applying this method include identifying relevant attributes, establishing categories based on observed patterns, and creating a structured framework for organizing the data to enhance accessibility and usability.

4.3   Development of Categorization Information

The categorized information served as the foundation for further development of the website's board game information services. Each board game was assigned to one or more categories based on its attributes, allowing users to navigate and access information according to their interests and preferences. Categories may have included game type (e.g., strategy, party, cooperative), thematic elements (e.g., fantasy, sci-fi, historical), complexity levels, player demographics, and other relevant criteria.

4.4   Integration with Website Services

The categorized data is seamlessly integrated into the website's current infrastructure, bolstering the user experience and accessibility of the board game information service, with a particular emphasis on leveraging metadata for describing board games. To achieve this, we employed schema.org markup to enrich the metadata associated with each board game entry. This integration empowers users to navigate the platform more efficiently, enhancing their capacity to search, filter, and browse board games with precision.

5. Research results

5.1   Results of the study of data and information about board games

The Table 1 presents the classification of board game types along with their descriptions. Each game type is categorized based on its distinct characteristics and gameplay features. For instance, abstract games involve strategic planning and problem-solving to defeat opponents, while children's games focus on simplicity and vibrant colors to promote child development. Family games emphasize uncomplicated rules to facilitate interaction between children and adults, whereas party games prioritize group play and social interaction akin to social gatherings. Secret agent games involve investigation and espionage themes, while strategy games simulate complex situations such as battles or business expansion. Thematic games feature storylines reminiscent of dramas or novels, and wargames require strategic warfare tactics inspired by historical events. Finally, the "Uncategorized" category encompasses games not fitting into the predefined classifications provided by the board game packaging or referenced on the website.

Table 1 Board Game Collection Summary

Order	Game Type	Description	Game Example
1	Abstract	Abstract games involve solving problems to defeat opponents, requiring strategic planning or altering problem-solving approaches during gameplay.	'Chess', 'Checkers (Draughts)', 'Go (Wei Qi)', 'Hive', and 'Santorini'
2	Children	Children's games are simple and straightforward, designed for children to play. The games focus on vibrant colors and promote child development.	'Candy Land', 'Yummy Yummy Pancake', 'Sorry!', 'The Game of Life Junior', and 'Five Little Fish'
3	Family	Family games have uncomplicated rules to allow children to play and converse with adults. Emphasis is placed on fostering relationships within the family.	'Uno', 'Apples to Apples', 'Ticket to Ride: First Journey', 'Codenames: Pictures', and 'Ouch!'
4	Party	Party games require group play, emphasizing relationship-building and human interaction similar to social gatherings.	'Codenames', 'Yogi', 'Pictionary', 'On a Scale of One to T-Rex', and 'Werewolf (also known as Mafia)'
5	Secret Agent	Secret Agent games involve investigation, often with themes of espionage. Players typically assume the role of undercover agents.	'Spyfall', 'Codenames: Pictures (with a spy theme variant)', 'Secret Hitler', 'The Resistance', and 'Spy Alley'

Order	Game Type	Description	Game Example
6	Strategy	Strategy games require planning skills, often simulating challenging and complex situations such as battles or business expansion.	'Risk', 'Axis & Allies', 'Terraforming Mars', 'Twilight Struggle', and 'Hegemony: Lead Your Class to Victory – Crisis & Control'
7	Thematic	Thematic games feature storylines reminiscent of dramas or novels. Players assume various character roles within the storyline.	'Betrayal at House on the Hill', 'Dead of Winter: A Crossroads Game', 'Dream On!', 'Gloomhaven', and 'Mansions of Madness'
8	Wargames	Wargames require strategy in conducting warfare, drawing inspiration from historical wartime events.	'Axis & Allies', 'Memoir '44', 'Twilight Struggle', 'Warhammer 40,000', and 'Commands & Colors: Ancients'
9	Uncategorized	Games not categorized within the board game packaging and referenced on the website.	'Settlers of Catan (Catan)', 'Ticket to Ride', 'Carcassonne', 'Pandemic', and '7 Wonders'

Table 2 Board Game Categories

Order	Category	Description
1	Abstract Strategy	Games of strategy to defeat opponents, with no specific theme, emphasizing simplicity.
2	Action/Dexterity	Physical competitive games focusing on agility.
3	Adventure	Games themed around adventure and exploration, often involving mysteries.
4	Age of Reason	Games themed around history from the late 17th to late 18th centuries.
5	American West	Games themed around the United States in the late 19th century.
6	Ancient	Games themed around ancient history, typically around 3,000 years ago, often focusing on Egyptian, Greek, and Roman themes.
7	Arabian	Games themed around the Arabian Peninsula in the Middle East, often fantasy-oriented.
8	Animals	Games themed around animals, often involving players taking on roles of different animals.
9	Aviation/Flight	Games revolving around aviation mechanics, such as airplanes, helicopters, or drones.
10	Bluffing	Games where players must deceive others to win.
11	Book	Games designed with rules that can be played using common gaming equipment such as boards, cards, or dice.
12	Card Game	Games played primarily using cards as the main component.

Order	Category	Description
13	Children's Game	Games with simple gameplay and rules suitable for children.
14	City Building	Games about building cities where players must manage efficiently.
15	Civilization	Games about city management where players hire citizens to build civilizations to defeat other players.
16	Comic Book/Strip	Games themed around characters from famous comic books.
17	Dice	Games primarily played using dice, often involving rolling them.
18	Deduction	Games requiring various forms of logic and deduction in play.
19	Educational	Games focused on specific knowledge development.
20	Economic	Business simulation games where players allocate resources in their businesses.
21	Environmental	Games themed around managing or conserving the environment.
22	Electronic	Games played primarily using electronic devices such as computers.
23	Expansion for Base-game	Supplementary games, including additional components or extra gameplay rules from the base game.
24	Exploration	Games centered around exploration, where players discover or trade for new territories to find desired goods.
25	Fantasy	Games themed around magic and supernatural situations.
26	Farming	Games where players engage in farming, managing agricultural land and livestock.
27	Fighting	Combat-themed games where in-game characters fight against each other.
28	Horror	Games with themes and plots related to supernatural horrors.
29	Humor	Comedy-themed games emphasizing shared laughter among players.
30	Industry/Manufacturing	Games with themes related to industry, where players build and manage tools for manufacturing goods in their factories.
31	Mafia	Games themed around the Mafia, involving criminal activities.
32	Maze	Labyrinth-themed games where players explore paths in a maze on the game board.
33	Medical	Games themed around medicine, involving treatment or prescribing medication to patients.
34	Medieval	Games with themes and plots related to medieval history in Europe or Asia during the 5th century.
35	Modern Warfare	Games with themes and plots related to World War II or the Korean War, involving conflicts over weaponry.

Order	Category	Description
36	Movies/TV/Radio theme	Games themed around famous movies, TV shows, or video games.
37	Murder/Mystery	Murder mystery games with depth, where players investigate and search for the culprit.
38	Mythology	Games themed around gods or goddesses in famous mythology stories.
39	Napoleonic	Games themed around Napoleon during the French Revolution and Napoleonic Wars.
40	Nautical	Games themed around sailing with ships.
41	Negotiation	Negotiation games where players may form alliances or betray others as appropriate.
42	Novel-based	Games themed around famous novels or literary works.
43	Pirates	Games themed around pirates, often involving treasure hunting or plundering opponents' weapons.
44	Political	Political games where players use characters' power to create or change societal policies.
45	Post-Napoleonic	Games themed around the Napoleonic Wars and the beginning of World War I.
46	Prehistoric	Games themed around prehistoric history or cavemen.
47	Print & Play	Games where rules or main components are in digital format, requiring internet access to read rules and play.
48	Puzzle	Puzzle games where players must solve various puzzles to win.
49	Racing	Games where players must travel to a destination before their opponents, overcoming various obstacles.
50	Real-time	Games where players must act within a set time frame, facing penalties if they fail to keep up.
51	Religious	Games themed around beliefs in religion.
52	Renaissance	Games themed around history from the late 14th century (beginning of the Renaissance in Italy).
53	Science Fiction	Games themed around science, space, or aliens.
54	Space Exploration	Games themed around exploring and adventuring in space.
55	Spies/Secret Agents	Games themed around espionage, where players investigate mysteries and solve puzzles.
56	Sports	Sports or exercise games, often football or racing.
57	Territory Building	Games where players must build territories from the start and control specific areas they've built.

Order	Category	Description
58	Trains	Games themed around trains.
59	Travel	Games involving traveling to various locations on a map, often using the game board as the map.
60	Trivia	Games that test players' knowledge, general interests, and popular culture.
61	Video Game Theme	Games themed around video games or inspired by various famous video game franchises.
62	Wargame	Games themed around various military conflicts, often referencing real historical wars.
63	Word Game	Word-based games where players use language skills to compete against each other, often spelling games.
64	World War II	Games themed around World War II.

Table 2 provides a comprehensive list of categories for organizing board games based on various themes and gameplay styles, offering details about different categories of board games along with their descriptions. Each row represents a specific category, such as 'Abstract Strategy', 'Adventure', 'Fantasy', 'Word Game', and many more, with a brief description of the theme or gameplay style associated with each category. With 64 categories listed, it offers a diverse range of options for categorizing board games according to their characteristics. This level of categorization is immensely useful for the website as it helps users easily navigate through the extensive collection of board games. By sorting games into specific categories, users can quickly find games that match their interests or preferences. For example, someone interested in strategy games can directly navigate to the 'Strategy' category, while those looking for games based on historical events can explore categories like 'World War II' or 'Ancient'. The categorization enhances the user experience by streamlining the process of discovering relevant board games on the website.

Table 3 Board Game Specifications

Aspect	Details
Number of Players	1 to 99 players
Playing Time	5 to 1000 minutes
Age Suitability	Games for ages 3 and up to adults
Complexity Rating	Scores from 1.00 to 5.00
Number of Players	1 to 99 players

The board game data includes details on the number of players, ranging from 1 to 99, the playing time, which spans from 5 to 1000 minutes, and age suitability, catering to players aged

3 and above, including adults. Additionally, the complexity rating of the games varies on a scale from 1.00 to 5.00. These comprehensive aspects provide a diverse range of options suitable for various preferences and gaming experiences, ensuring there is something for everyone, regardless of age or complexity preference.

Table 4 Age Distribution of Games

Age (Years)	Number of Games	Age (Years)	Number of Games
0	1	9	2
3	2	10	43
4	3	11	1
5	7	12	34
6	18	13	10
7	9	14	35
8	60	18	2
total 227 Games			

The distribution of board games according to age groups reveals a varied selection catering to different age ranges. Games suitable for children as young as 3 years old are available, with two games identified for this age group. The number of games gradually increases as the age range broadens. The highest number of games, totaling 60, is targeted towards individuals aged 8 and above, indicating a significant focus on this age group. Additionally, there is a notable presence of games for older children and teenagers, with considerable offerings for ages 10, 12, 13, and 14. There are also options available for adults aged 18 and above, although to a lesser extent.

Table 5 Complexity Rating Distribution

Complexity Rating	Number of Games	Complexity Rating	Number of Games
0.00	7	3.00-3.49	17
1.00-1.49	92	3.50-3.99	12
1.50-1.99	47	4.00-4.49	3
2.00-2.49	33	4.50-4.99	1
2.50-2.99	15	5.00	0
total 227 Games			

The complexity of each game is specified on the side of the box. The study revealed that the board games with the lowest complexity ratings, all rated at 1.00/5.00, are 'Gone Fishing' (2019), 'On a Scale of One to T-Rex' (2019), 'Ouch!' (2022), 'Dream On!' (2017), 'Five Little Fish' (2017), 'Tinderblox' (2020), 'Yogi' (2017), 'Yummy Yummy Pancake' (2017), and 'Maxi Zicke Zacke

Hühnerkacke' (2005). Conversely, the game with the highest complexity rating is 'Hegemony: Lead Your Class to Victory – Crisis & Control' (2023), scoring 4.73/5.00.

The database created contains metadata describing game data with 13 elements derived from the established standard, schema.org. The details are outlined in the table below.
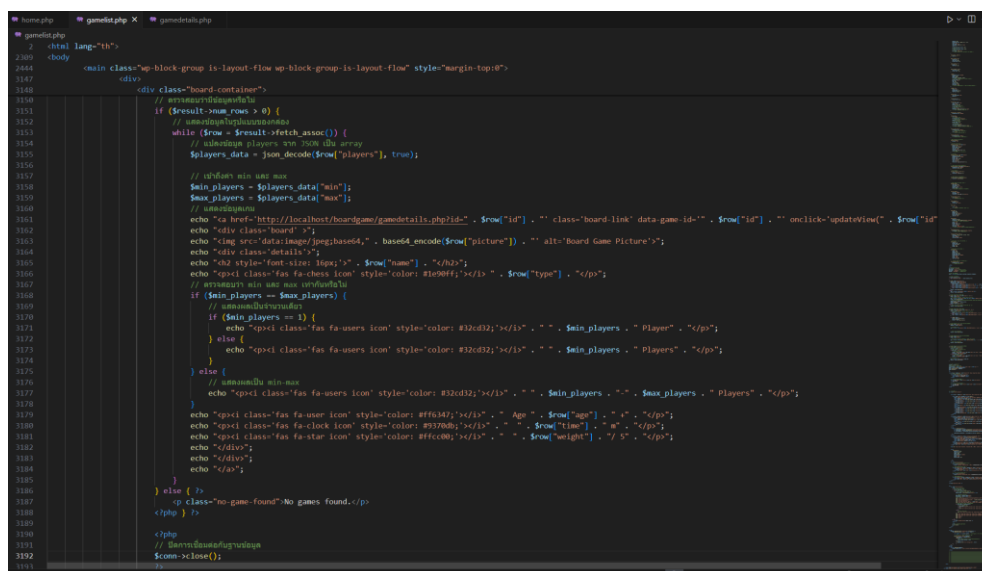
Table 6 Board Game Metadata

Property	Type	Description
id	Number	Used to sort the game list and serve as the primary key.
name	Text	The name of the board game.
type (additionalType)	Text	An additional type for the item, typically used for adding more specific types.
keyword	Text	Keywords or tags used to describe the board game.
players	QuantitativeValue	Indicates the number of players allowed to play the game.
time (timeRequired)	Duration	Approximate or typical time it takes to play the game.
age (typicalAgeRange)	Number	The typical expected age range for players of the game.
weight (aggregateRating)	Decimal Number	The overall rating of the game, based on a collection of reviews or ratings.
description	Text or TextObject	A description of the board game.
howtoplay (teaches)	DefinedTerm or Text	Indicates if the game is intended to help players learn a specific competency.
expansions (hasPart)	Text	Indicates if the game has any expansions or additional parts.
picture (image)	ImageObject or URL	An image representing the board game.
link (url)	URL	The URL of the board game for further information or purchase.

The board game list on the website is connected to the phpMyAdmin/MySQL database, facilitating the integration of data into the website. Coding is employed to execute data display commands, primarily utilizing PHP, HTML, CSS, and JavaScript. WordPress is utilized for designing the main page (Home). Whenever there is an update in the database, the website automatically reflects these changes, ensuring that the web page stays synchronized with the evolving data in the database.

Figure 1 the phpMyAdmin/MySQL database

id	name	type	category	player	time	age	weight	description	howtoplay	expansions	picture	link	view	players	keyword
10	The Quest for El Dorado (2017)	Family	Adventure, Exploration	2-4	30-60	10	1.93	แข่งผ่านป่าที่ปนใน อเมริกาใต้เพื่อตาม หาเมืองแห่ง ทองคำ...	รูปแบบการเล่น: เกมนี้เล่นเป็นชุด ของรอบ แต่ละรอบจะ ปร...	Quest for El dorado: Heroes & Hexes ผู้กล้าและ มอสเ...	[BLOB - 21.6 KiB]	https://www.youtube.com/embed/Z3INbs4P7sU	6	{"max": 4, "min": 2}	มีภาคเสริม
76	Mansions of Madness: Second Edition (2016)	Thematic	Adventure, Exploration, Fighting, Horror, Miniatur...	1-5	120-180	14	2.69	Mansions of Madness: Second Editionเป็นเกมกระดานแบบ...	รูปแบบการเล่น: ผู้เล่น เลือกผู้สำรวจ สอบที่มีความ...	Mansions of Madness: Second Edition - Beyond the T...	[BLOB - 17.5 KiB]	https://www.youtube.com/embed/UzD0Ox1VTuA	34	{"max": 5, "min": 1}	มีภาคเสริม, ผจญภัย, การ สำรวจ, การ ต่อสู้, สยอง ขวัญ,...
23	Lost Ruins of Arnak (2020)	Strategy	Adventure, Ancient, Exploration, Fantasy, Travel	1-4	30-120	12	2.92	Lost Ruins of Arnak เป็นการผสม ผสานระหว่างการ ร่วงส...	รูปแบบการเล่น: เกมนี้เล่นมากกว่า ทำรอบ โดยแต่ละ รอ...	Lost Ruins of Arnak: Expedition Leaders (2021)	[BLOB - 16.1 KiB]	https://www.youtube.com/embed/dumi1CzUH_U	7	{"max": 4, "min": 1}	มีภาคเสริม
62	Hegemony: Lead Your Class to Victory (2023)	Strategy	Economic, Educational, Political	2-4	90-180	14	4.19	ประเทศนี้อยู่ใน สภาพย่ำแย่ สงครามระหว่าง ชนชั้นปะทุ...	รูปแบบการเล่น: Hegemony: Lead Your Class to Victory เป็นเกม ปร...	Hegemony: Lead Your Class to Victory – Crisis & Co...	[BLOB - 12.9 KiB]	https://www.youtube.com/embed/0enBk8TI-yM	16	{"max": 4, "min": 2}	ชนชั้น, เศรษฐกิจ, การ ศึกษา, การเมือง, มีภาค เสริม
1	13 Clues (2016)	Family	Deduction, Memory, Murder/Mystery	2-6	30	8	1.89	เมืองลอนดอนสุก เขย่าโดย อาชญากรรมที่ชั่ว ร้าย และตาม...	เตรียมเกม: วาง กระดานเกมลงตรง กลาง วางตัวละคร 6 ตัวไว...		[BLOB - 13.4 KiB]	https://www.youtube.com/embed/I6ZT_QQ8kwM	26	{"max": 6, "min": 2}	ฆาตกรรม, สืบค้น, ปริศนา
2	6 nimmt! (Take 5) (1994)	Family	Card Game, Number	2-10	45	8	1.19	ใน 6 nimmt! หรือที่ รู้จักกันในชื่อ หมายเลข 5 และชื่อล...	"ในการเล่นเกม คุณจะต้องลับไพ่ ตัวเลข 104 ใบ วางไว้ตั...		[BLOB - 8.6 KiB]	https://www.youtube.com/embed/1Ry2XBLaizU	38	{"max": 10, "min": 2}	การ์ด, ตัวเลข
3	7 Wonders (2010)	Family, Strategy	Ancient, Card Game, City Building, Civilization, E...	2-7	30	10	2.32	คุณเป็นผู้นำของ หนึ่งใน 7 เมืองที่ยิ่ง ใหญ่ของโลกโบรา...	"7 Wonders มีสาม ยุค ในแต่ละยุค ผู้ เล่นจะได้รับไพ่...		[BLOB - 17.1 KiB]	https://www.youtube.com/embed/jRaV9HDvjFs	25	{"max": 7, "min": 2}	โบราณ, สร้าง เมือง, อารยธรรม, เศรษฐกิจ, การ์ด
4	Power Grid (2004)	Strategy	City Building, Economic	2-6	120	12	3.26	เป้าหมายของ Power Grid คือการ จัดการพลังงานให้กับ เมื...	เตรียมเกม: วาง กระดานเกมลงตรง กลาง วางแผนผู้ เล่น 6 แ...		[BLOB - 12 KiB]	https://www.youtube.com/embed/PRCZpZUeOCU	7	{"max": 6, "min": 2}	สร้างเมือง, เศรษฐกิจ
5	7 Wonders Duel (2015)	Strategy	Ancient, Card Game, City Building, Civilization. E...	2	30	10	2.23	7 Wonders Duel มี ลักษณะคล้ายกับ เกมหลัก 7 Wonders ผ...	วิธีเล่น 7 Wonders Duel จำนวนผู้เล่น: 2 คน เวลาเล่...		[BLOB - 13.8 KiB]	https://www.youtube.com/embed/uUu1qwqTmQo	6	{"max": 2, "min": 2}	โบราณ, การ์ด, สร้างเมือง, อารยธรรม, เศรษฐกิจ

Figure 2 Example code image for the website

5.2   Results of website development in organizing information systems about board games

The website comprises five main components:

1) Home page (Home)

2) Board game collection page (All Board Game)

- Filter By Type
- Filter By Player
- Search Bar
  - Name (English/Thai)
  - Category (English)

- Keyword (Thai)
- Search by number of players

3) Detail page, providing various information for each game

4) Login and Insert page for operators

The website consists of several key components to facilitate users' exploration and interaction with board game data. The home page serves as the main entry point, offering an overview of the website's features. The board game collection page allows users to browse through a curated selection of games, with filters available to narrow down options by type, player count, and keyword. A search bar enables users to find specific games by name, category, or keyword, with the added functionality of searching by the number of players. Each game has its own detail page, providing comprehensive information and details. Additionally, there's a login and insert page for operators, allowing authorized users to manage and update the database of board games. These components collectively enhance user experience and accessibility, catering to both casual browsers and operators maintaining the platform.

Figure 3 Example of applying categories to the data search function.

Example of a report display illustrating the position of divisions.

[D] Search by name [E] Search by category [F] Search by keyword.

The image illustrates how categories are implemented within the data search function of the website. Users can select from a range of categories, such as game genre, theme, or mechanics, to refine their search results. This categorization system enhances the search experience by allowing users to quickly narrow down their options based on specific criteria of interest. By selecting a category, users can streamline their search process and easily find board games that align with their preferences or requirements. This feature adds versatility and efficiency to the search functionality, ultimately improving the overall user experience on the website.

6. Conclusion

In conclusion, this study has provided a comprehensive overview of board games sourced from the "Board Game Everyday Cafe" website, offering valuable insights into various aspects of these games. Through meticulous data collection and organization, we were able to categorize 227 board games based on their mechanics, themes, and other characteristics. The identification and incorporation of 13 metadata elements, adhering to the schema.org standard, facilitated a thorough description of each game, enhancing their accessibility and understanding. Moreover, the delineation of website components, including filtering and search functionalities, detail pages, and operator access, lays the groundwork for the development of an informative and user-friendly board game platform. Overall, this study serves as a foundation for future research endeavors aimed at further understanding and promoting the world of board games.

7. Discussion

Based on the findings of this study, several recommendations can be made for applying similar approaches to other board game businesses. Previous research highlights the importance of systematic data collection and organization in various domains. For instance, studies on library science and information management emphasize categorization and classification to improve information retrieval and usability (Broughton, 2015; Hjørland, 2013). Similarly, board game businesses can benefit from replicating the methodology used in this study to collect and organize data about their game offerings. By systematically categorizing games based on mechanics, themes, and other characteristics, businesses can gain insights into their product portfolio and better

understand customer preferences. This method aligns with practices in digital libraries and content management systems, where structured data collection enhances content accessibility and user satisfaction (Greenberg, 2010).

Implementing metadata elements, as outlined in the schema.org standard, can significantly enhance the description and accessibility of board games on business websites. Metadata integration is a well-established practice in web development and digital archiving. Studies have shown that metadata improves search engine optimization (SEO), facilitates resource discovery, and enhances user experience by providing structured information consistent with the idea of Iliadis, Acker, Stevens, & Kavakli (2023). In the context of board game businesses, including metadata such as game ID, name, category, number of players, and complexity rating can provide comprehensive information to customers, facilitating informed decision-making. This practice is analogous to how digital libraries use metadata to enhance the discoverability and accessibility of resources (Beyene & Godwin, 2018), as demonstrated in their study focusing on library metadata from usability and accessibility perspectives.

Utilizing the outlined website components, businesses can develop or enhance their online platforms to provide a user-friendly experience for customers (Bilgihan, Kandampully, & Zhang, 2016). According to the study by Moczarny, Villiers, & Biljon (2012), which investigated how usability can contribute to user experience in the domain of e-commerce, prior research in e-commerce and user experience design stresses the importance of features such as filtering options, search functionality, and detailed product pages for improving navigation and engagement. By implementing these features, board game businesses can enhance customer satisfaction and retention. The success of online marketplaces like Amazon and eBay, which heavily rely on effective website components and user-friendly interfaces, supports the argument for such an approach (Huang & Benyoucef, 2013). The study's recommendations are consistent with best practices in web design, which emphasize ease of use, clear navigation, and detailed information presentation to foster positive user experiences.

In conclusion, this study's approach to data collection, metadata integration, and website development can serve as a valuable model for other board game businesses. By adopting similar strategies, these businesses can enhance their operational efficiency, improve customer engagement, and ultimately achieve greater market success.

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