

The Concepts of Gamification Profiling to Generate Smart City Maturity Level Mapping & Social Profiling (Smart Society)

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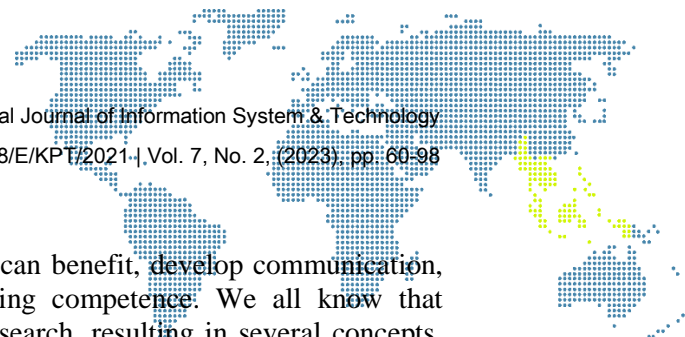
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Abstract

Gamification is an extraordinary phenomenon of how we can engage users to understand our Business. Users can get many interesting things from gamification offered by business owners, ranging from games, bonuses, discounts, and many other things that can make users or consumers more loyal and have a close relationship with the Business. This research is developing the concept of innovation profiling, which describes seven types of innovation. Here, gamification is one of the innovations we will discuss. This study divides gamification into three important parts, units that should not be separated. The first part concerns the big picture of gamification profiling and the Formula $GMF = P. B2. E2. Ps2.F2$. In the second stage, there are four types of gamification- open Gamification (OP), specific Gamification (SG), innovative Gamification (IG), and undeveloped Gamification (UG). The third stage, the final stage, is Business Gamification profiling (BG), Education gamification profiling (EG), Psychology gamification profiling (PG), and Future gamification profiling (FG). This research results in the gamification profiling framework and its application in education as the main case study in implementing this. Furthermore, Smart city and social profiling are two things that cannot separate from each other. Therefore, in building a smart city & social profiling, several important things must be considered, including investors, people, culture, supervision, customers, data, mapping, mentors, capabilities, commercials and leadership. This article will develop Business Model Mapping 101 (Smart City Maturity Level Mapping), an innovation in shaping and producing social profiling. Problems such as implementing smart cities in human resources, technology, and other factors are the main concerns. Therefore, Smart City Maturity Level Mapping is a social profiling development concept that focuses on building something from what the area already has. It is to increase the level of a more stable economy but remain flexible in dealing with certain situations. Furthermore, this article complements the previous article, namely smart city 5.0 (Human resource, Technology, marketing). These three things then developed into Smart City Maturity Level Mapping, which later became social profiling, which is useful for measuring smart cities' performance and implementation in a more structured, systematic and detailed manner in terms of profiles. The final result is the maturity level to measure a smart city's performance, which also connected to the defender, extender, dodger, contender.

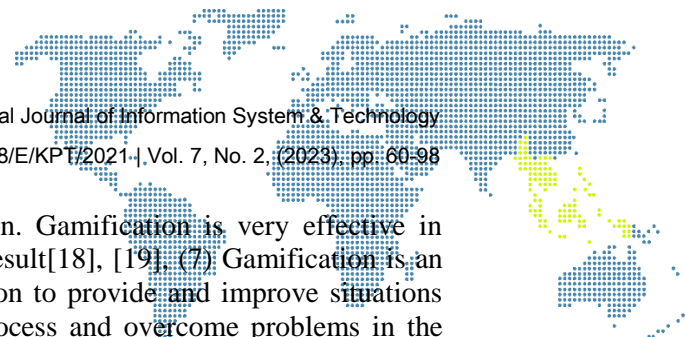
Keywords: Gamification profiling, Business, Education, Psychology, Future, Implementation, smart city, Smart City Maturity Level Mapping, social profiling, framework, innovation



1. Introduction

Gamification has several benefits for users: one can benefit, develop communication, change attitudes, and feel pleasure while increasing competence. We all know that gamification has gone through much debate and research, resulting in several concepts, applications, and implementations in several fields. This research complements previous research that has been published: Design of the Seven Stages of Educational Game to Generate Gamification, IEEE, International Conference[1]. Previous research discussed the stages of implementing the seven steps in developing gamification, especially in the field of education; this research will provide more specifics, especially in applying gamification. It is needed so gamification can be more targeted and created according to innovation needs with more detailed categories. What is a game? It becomes a real question because many define it. We define a game as something formed from experiences, situations, and conditions that affect something, where it will produce a form that is the result of these three things, which is then played by many people and affects its users. Games can be positive and negative, not only for the players but for the game's creators. Various games are made for fun, but behind the fun, a specific motive underlies the game's creation. Therefore, games can influence users and produce a particular pattern of thought, nature, and character, indirectly created in the person.

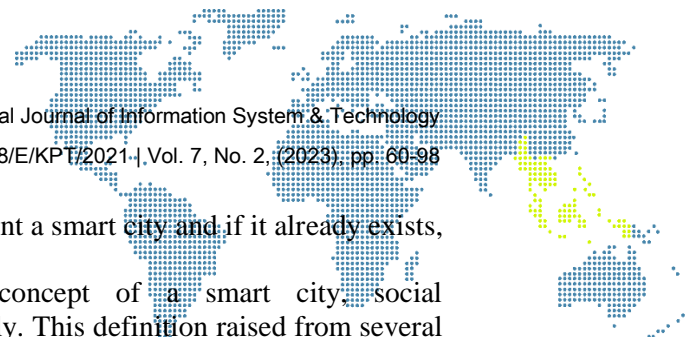
Before we go further into this research, there are several understandings of gamification from the research: (1) Game can provide three psychological benefits: cognitive, emotional, and social, while gamification refers to the method of designing a system, service, organization and some activities to be able to create experiences and motivations to influence user behavior. Therefore, gamification requires a clear framework to be implemented properly[2], [3], [4], (2) in the health sector, gamification is a new term that is getting much attention. quite large in some areas. Recent research has shown that playing games can increase brain activity, thus allowing people to delay dementia. Therefore, gamification is a good strategy because it considers the environment and technology[5], [6], (3) Gamification is a game design feature in a non-game context. In gamification, this consists of several things, including quests, levels, badges, points, leaderboards, virtual items, avatars, narration, and progress bars, and these can be used separately or in combination. Therefore, games will be beneficial in learning because they will make it better, which combines learning and having fun[7], [8], (4) Gamification is a game thought process that engages users and solves problems. Furthermore, gamification is the application of thought strategies and mechanisms in a non-gaming context so that a person can adopt a certain behavior. A game can also be associated with a mental state in which a person performs an activity fully, is immersed in feeling, and fully engages in the activity. Therefore, many companies use leaderboards for sales and customer loyalty programs. Here, gamification plays a critical role to be able to attract attention and achieving loyalty while creating an identity for certain brands and products[9], [10], [11], [12], [13], [14], (5) Gamification is the process of using game elements that can be adjusted in certain fields where the goal is to make it more interesting, easy to understand and create. On the other hand, gamification is an alternative that can be used to motivate and achieve needs and learning experiences to form certain characteristics to match the results. Furthermore, gamification is the ability to think critically, laterally, and systematically, especially to solve problems; the ability to communicate and work together, the ability to be creative and innovate, as well as information and communication technology literacy skills are basic skills that must be mastered to face the era of the industrial revolution 4.0. For example, Shopee has done many things to compete in Indonesia to increase customer engagement, one of which is through a gamification strategy[15], [16], [2], [17], (6) In the world of education, the term gamification is used to indicate an application of game mechanics in a non-gaming environment that has the aim of improving a process. Gamification relates to serious games, fun interactions, and game-based technology. Furthermore, gamification in



education can be applied at all levels of education. Gamification is very effective in increasing the involvement of others to achieve a result[18], [19], (7) Gamification is an innovation. In education, gamification has a function to provide and improve situations that are effective and enjoyable in the learning process and overcome problems in the teaching and learning process, where gamification can be considered to promote certain desired behaviors. Learning in gamification includes research, concepts, and game development in learning. This combination of learning and technology produces a learning process that can increase intelligence. Therefore, gamification can be seen to make goals SMART; that is, more specific, measurable, achievable, realistic, and time-bound. This is because gamification can encourage students to think creatively, thus requiring them to brainstorm their ideas[20], [21], [22], [23], [24], [25], (8) Gamification as an approach to increasing motivation and process involvement is still evolving. Furthermore, gamification develops knowledge and improves problem-solving, collaboration, and communication skills. The most common elements used in gamification in all areas are points, badges, and levels. Businesses have used gamification in marketing strategies to create good relationships with customers[26], [27], [28], [29], (9) The concept of gamification is different from educational games and serious games, where gamification uses in-game elements. Gamification elements are widely used in any field; this will be very helpful in the long-term process. In gamification, engagement is the focus of the business owner. It will build good relationships with consumers more effectively and efficiently. Gamification can be used in the fields of marketing, health, environment, sports, biology, communication, and psychology, and many fields can apply it[30], [31], [32], [33], (10) Gamification is an informal general term in the use of game elements in non-game systems to improve user experience and engagement in deeper contexts and content. Gamification is multidisciplinary, including theoretical, empirical, technological, and practical motivations. Gamification is effective in many disciplines to engage users[16], [34], [30], (11) The use of the word "gamify" is a strategy, while the use of the word "gamified," "gamify," "gamifying" and "gamifiable" are valid alternatives, and gamification is a verb. Gamification refers to an activity and a system to provide a pleasant experience. Gamification can be defined as the use of game mechanisms and strategies to gain consumers[35], [36], (12) Gamification is a term for a social phenomenon that has emerged for the digital generation. Furthermore, gamification refers to designing systems, services, and activities to create experiences and motivate and influence users. Therefore, gamification can be defined as an experience that supports the creation of value for users[37], [38], [39]

After we understand the concept of gamification and its application in several fields, we can see that gamification has high flexibility and can be applied in almost all areas. Therefore, a more complete, practical, and high flexibility profiling is needed. The result of this research is a gamification profiling framework, which will explain, one by one, the functions and benefits of each existing category so that when someone wants to create, innovate and implement gamification into several sectors, they can easily understand this gamification is at which position, so that if there are questions for gamification makers, they can explain them appropriately.

At this time, smart cities are very important to be able to change people's lives. Things like defining a smart city and its relationship with social entrepreneurship are very important and need to be applied appropriately. Therefore, this article emphasizes how to implement social profiling, which is part of a smart city, so that social entrepreneurship can properly integrate with the implementation of a smart city. Furthermore, how the quality of the performance of a smart city is improved is also very important. So, three things will discuss in this article: a business model that will provide a clearer mapping of the strengths and weaknesses of a city/region, social profiling associated with the characteristics of the city/area, and the people, which has influence, and finally the level

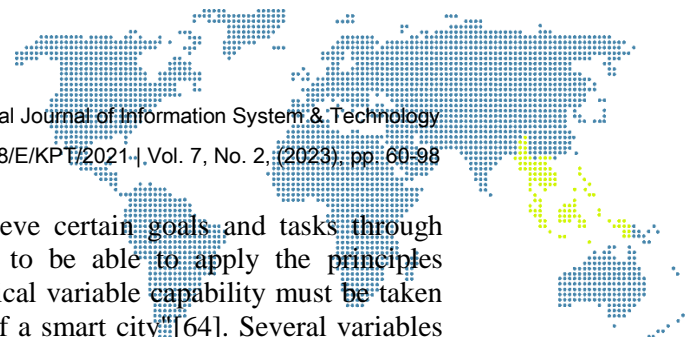


of maturity of a city/region, is it possible to implement a smart city and if it already exists, then how to improve that performance.

Therefore, we must first understand the concept of a smart city, social entrepreneurship, and the maturity level appropriately. This definition raised from several articles that can create Smart City Maturity Level Mapping, social profiling, and maturity level. Smart cities can be defined, among others: (1) "Smart cities have three categories: smart technology, smart people, smart integrated and the focus of a smart city is building infrastructure"[40], [41]; (2)"In building a smart city, companies need this technology so that the technology can implement in cities. It is because the concept of a smart city can use to identify different types of technology and achieve a series of different and undefined goals "[42], [43]; (3) "Smart cities utilize data and technology to make better decisions. Furthermore, Smart cities utilize the social infrastructure and the environment to increase partners and have innovative governance"[44],[45]; (4) "Smart city is the result of innovation that involves extensive social interaction and produces positive value and refers to innovative and sustainable smart solutions"[46], [47]; (5)"Smart city is a global trend that aims to improve the quality of the population and implement investments that can use to solve problems and ideologies"[48], [49]. From this definition, we understand that a smart city is related to social, innovation and other things that involve smart solutions and how we make the right decisions to improve performance.

The second thing is about social entrepreneurship. This concept is, of course, inseparable from a smart city, so we must be able to understand several definitions regarding it, including (1) "Smart economy measured by adaptation. Against change and international cooperation. Therefore, it is necessary to establish social entrepreneurship related to social responsibility and management. It will have a phenomenal social impact."[50], [51]; (2) "A social entrepreneur is someone who understands innovative ideas and moves towards and maintains a business. It must support by social entrepreneurship that emerges from various domains: business strategy, entrepreneurship, public sector management, education and having social goals. "[52], [53],[54] ; (3) "Social innovation is a thing for the common good. Therefore, social entrepreneurs can work with the community to spread social impacts. They are carriers of positive change to produce a new strategic environment which can link to innovation, proactivity and social entrepreneurship."[55],[56],[57],[58]. From this definition, we can make a new definition of social entrepreneurship. According to our definition, social entrepreneurship is a business built to absorb labour, improve people's standard of living, increase innovation, and produce things that can be called social contributions to society. The definition will be able to evolve again with time and global changes.

Finally, regarding the issue of performance and maturity level of a smart city, we must also understand several definitions, including (1) "The level of maturity of a smart city determines the development of a city layout; therefore, it is necessary to make policies and directions. Right in determining what technology will implement in the city "[59]. Technology is a determining factor in developing a smart city; therefore, it is very necessary to determine which technology is suitable for implementation and what kind of innovation is right for the city; (2) "Competitive development, according to significant changes concerning mindsets, products/services, processes, technology and business models. This competitive thinking will encourage innovation in technology, production, marketing and innovation in business models". Innovation is needed, especially in business models, to compete globally; this is the essence of the statement[60]; (3)"Globalization makes a shift in business models"[61]. The same thing also expressed, that global competition demands changes in business models and the way we live our lives[60]; (4) "A region must have important facilities, including: (1) data connectivity, (2) logistics, (3) financial flow connectivity, (4) virtual world network.[62]" An area must have these four important things before applying the smart city concept[62]; (5) "Artificial intelligence is a system that is useful for interpreting external data and for



studying that data and using this learning to achieve certain goals and tasks through flexible adaptation. AI implementation is needed to be able to apply the principles contained in a smart city[63]; (6) "The level of critical variable capability must be taken into account when determining the maturity level of a smart city"[64]. Several variables need to be taken into account to determine the level of a smart city; (7) "Comparison of the future between user perceptions and attitudes based on different personality characteristics and demographics needs to be taken into account properly". Furthermore, (8) "People can have different perceptions about the types of services contained in a smart city, which can use as a means of promoting, learning, training and developing entrepreneurship on a global scale "[65]; (9) "The maturity level of a smart city reflects that each city has a different maturity level. It is a benchmark for identifying smart city developments based on the scale of development. It is necessary to optimize the system in the city. Meanwhile, smart city references designed to identify policies and innovation processes needed to support sustainable smart city planning. It results in an in-depth concept of the work required for smart city development, including technology, integrated infrastructure to support our capabilities and innovation services "[55]. Therefore, (10) "The term smart city refers to more to certain skills and characteristics as well as advances in technology can facilitate the development of strategies and programs that are useful for improving quality of life of society "[66].

From this definition, we can already understand that many complex factors influence a smart city's maturity level. Other things, such as the culture in the area that requires time to change and the availability of highly competent human resources, is another problem that must give an immediate solution. Finally, profiling is often not on target because it only focuses on how to build. as soon as possible but do not pay attention to social and cultural factors that have a significant influence

This article completes the smart city 5.0 article, which discusses three important things: human resources, technology, and marketing. Of course, these three things must develop into a framework called Smart City Maturity Level Mapping (Business model mapping) and then further developed into social profiling, which is useful for knowing the strengths and weaknesses of a city/region. Finally, smart city profiling's maturity level is to know the performance of a smart city that built or that is newly built.

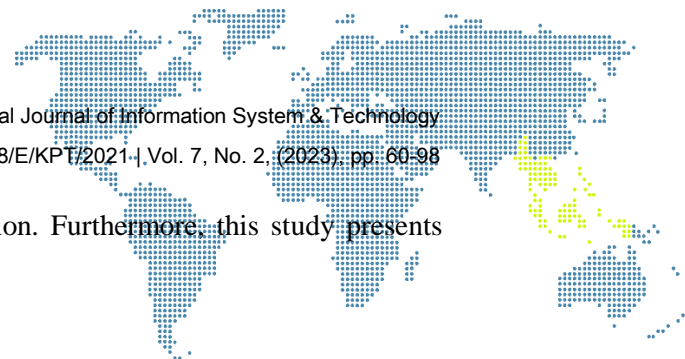
The final result of this article is a social framework and smart city profiling which produces a concept of Business Model Mapping 101 (Smart City Maturity Level Mapping), which is a business model concept and mapping framework that is more detailed in developing a smart city, which includes seven important categories, including Culture Profiling (CP), People profiling (PP), Market Profiling (MP), Customer profiling (C), Investor profiling (IP), National profiling (NP), International profiling (I). Furthermore, this article will also produce the maturity level of smart city profiling, which is useful for measuring performance and improving a smart city's quality.

2. Research Methodology

2.1. The Research of Gamification Profiling- The Roadmap of Research

Figure 1 describes the research process to reach the gamification profiling framework. In previous research that readers can see and read, we make concepts, game applications, and gamification applied to several fields. We see that gamification is still enormous in the market, so a complete profile is needed. In this research, we will discuss four categories in gamification profiling: open Gamification (OP), specific Gamification (SG), innovative gamification (IG), and undeveloped Gamification (UG). These are then further categorized into more details: Business gamification profiling (BG), Education gamification profiling (EG), Psychology gamification profiling (PG), and Future gamification profiling (FG).

This research will also survey 200 participants, including lecturers, students, the general public, and some gamers, to produce objectivity. These questions are not



subjective but have gone through in-depth discussion. Furthermore, this study presents some data obtained from several studies.



Figure 1. The process of research: From a collection of a study published to the gamification profiling framework & fundamental to developing game theory

2.1.1. Survey

The survey was conducted on 200 participants. Questions Asked:

Question 1: Do you understand what is meant by gamification?

- 1: Not at all.
- 2: Gamification is games.
- 3: Gamification is a game that is applied to get consumers.
- 4: Gamification is game development that is systematic and focuses on how to provide benefits to specific companies or organizations.
- 5: Gamification is an activity and process for solving problems by applying and using the characteristics of the elements contained in the game.

Question 2: Gamification is widely used in various fields; if you see gamification, can you understand what category this gamification refers to?

- 1: I did not understand at all and only finished the game because it was interesting to me.
- 2: I enjoy the games that are presented, but that does not motivate me to find out more about what the company/organization has to offer.
- 3: For me, games are just fun getting things done and providing a unique challenge, so that is about it.
- 4: I do not mind the games presented as long as it gives me an advantage in getting points, prizes, discounts, and other things that can give me an advantage. I entirely understand the gamification and am quite able to guess in what category.
- 5: I can understand the gamification presented and can understand what category gamification refers to.

Question 3: Can the Gamification presented to specific companies/organizations provide positive benefits or vice versa?

- 1: Gamification does no good to me, and it is just a joy to beat the game.
- 2: Gamification gives me an advantage in terms of getting certain attractive prizes, and I like that.
- 3: Gamification can have adverse effects, such as being addicted to playing games or getting things, so it requires clear boundaries.
- 4: Gamification provides many benefits to users because it can have fun, and provide benefits to users.
- 5: Gamification as a means to build a positive relationship and can have a good psychological impact.



2.1.2. Data collections

In addition to the survey we conducted in completing this research, these data are our support in completing this research. These data include:

Data 1, Examples of the application of games and gamification - employee recruitment

Gamification can be used in recruiting employees. This e-recruitment consists of four levels, which can be explained in the following table:

Table 1. Use of games and gamification at four levels of Internet recruitment[67]

Tools	Descriptions	Tasks	Advantages
Entertainment t games in Web 1.0	The company places entertainment on its website	Increase traffic and interest and enhance elements of group culture	Relatively cheap and has a pretty good risk, and can be overcome
Gamification systems in Web 1.0	The company manages the gamification category and is supported by the information needed to develop it	Making the process easier to run and being able to win quite difficult competitions	Socialization and activity
Games and gamification as a tool in Web 2.0	Observe results obtained in games and competition organized by another	Preselection and people selection with potential in particular area (source Name)	Various kinds of which activities can indication of that skill potency candidate
Games as a tool in Web 3.0	Observing the results and behavior of players to determine the required competence	Situation under the purpose of selection and more comprehensive	Organizational success can be tested, and hypotheses can be verified by repeating the situation try many times
Gamified contests and communication n activities as a tool in Web 3.0	Employers use gamification to drive performance	Increase readiness in participation	Increase activity through customized and flexible ways
Games as a tool in Web 4.0	Entertainment type game in which edition resource is obtained when correct order given	If the task is relative simple for players, candidate group increase	Upgraded amount reference in selected segment of job market



Gamified forms of activities as a tool in Web 4.0	The point is collected for a task leads to precious gift	Recommendation possible be interested cooperation on permanent basis	Increase attractiveness from recommend, at a cost from individuals reference is maintained at a low level
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Data 2, Hexad Player Type Framework, Survey, Mobile Survey User Experience.

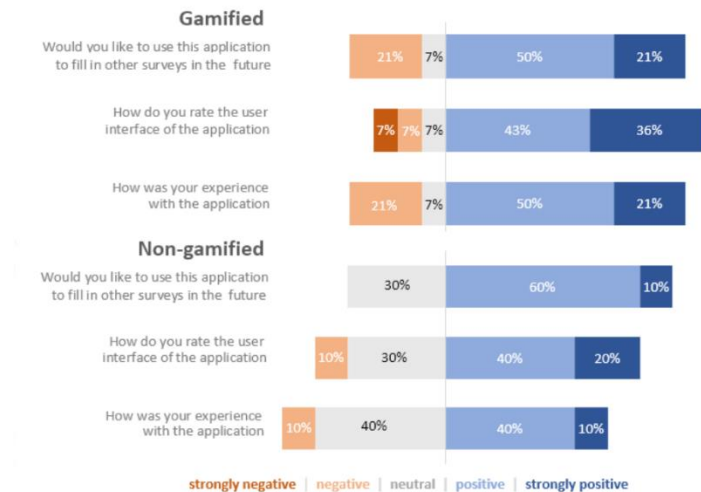


Figure 2. The Result of The Likert Scale Question Feedback

Figure 2 describes the results of the Likert scale question feedback, which shows that a higher percentage of users respond positively to the application. However, it is divided as more negative ratings are present. The results of the analysis from the gamified group show that all negative responses come from users with a philanthropic type, where they express their frustration at the lack of gamification for their type of player[68].

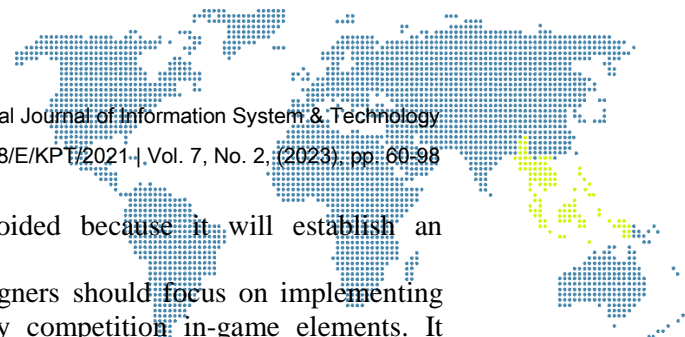
Data 3, The relationship between user orientations (Achiever, Disruptor, Free Spirit, Philanthropist, Player, and Socializer) and gamification designs (Fictional, Personal, Performance, Ecological, and Social).

	Preference	Sense of accomplishment
Philanthropist	∅	∅
Achiever	∅	+ SPF and + SS
Player	- SS and + SP	+ SE and + SS
Free Spirit	- SS	∅
Socializer	- SPF and + SS	+ SF, + SP and + SS
Disruptor	+ SS	∅

∅: Without significant association; +: Significant positive association; -: Significant negative association; SF: Storyboard Fictional; SP: Storyboard Personal; SPF: Storyboard Performance; SE: Storyboard Ecological; SS: Storyboard Social

Figure 3. Recommendations to personalize Gamification[69]

Furthermore, especially for high achievers, designers should focus on applying games from performance and social design because the results show a significant relationship between achievement and perception. On the other hand, the game element of ecological



and personal gamification design should be avoided because it will establish an insignificant negative relationship.

For people with high disruptor tendencies, designers should focus on implementing elements of social gamification design, especially competition in-game elements. It considers an insignificant association, which is represented by user orientation. If gamified is based on a preference for game elements, it is crucial to avoid or use game elements with care from Gamification ecological, personal, and fictional designs. Especially for people with higher player tendencies, designers can focus on the game elements of environmental and unique gamification design.

Especially for people with higher socializer tendencies, designers should focus on implementing game elements from social gamification designs. This type of user shows a significant relationship with gamification designs in two approaches, namely preference, and achievement. Game elements from personal and fictional gamification designs can also be implemented to enhance the experience for this type of user. Meanwhile, free spirits only show a significant negative relationship with social gamification design. Therefore, we indicated that the game elements of this gamification design should be avoided or used with caution. It is to consider the negative and insignificant associations these user types share with other gamification designs.

The philanthropists do not show significant associations. Therefore, designers can use the non-significant associations presented in the results. We pointed out that the system should provide for interaction with other users, or at least with the system itself, through assistants. In the figure shown, we summarize these recommendations about gamification designs that can be used to personalize a gamification system based on significant associations.

The data collection is used as a basic explanation that gamification can be applied and can impact its users. From these data, we can get a big picture to design gamification profiling and formulas that can be made to create more detailed gamification categories. However, before we move on to the results, let us pay attention and understand again the application of gamification to several things, including:

Gamification uses game elements, such as badges or leaderboards, in non-game contexts. Gamification is increasingly used in domains such as healthcare, which is motivated mainly by the lack of medication adherence and the cost of medication and education. Gamification can inspire students to learn and has been shown to have a positive effect. In education, when applied to advancements and traditional classroom settings, it can lead to a more attractive environment for students to learn. For example, applying gamification in a virtual lab requires adaptive learning to produce the competencies to be achieved. In health care, gamification has been used to motivate patients to increase medication adherence by creating a therapeutic or enjoyable environment, which can lighten the disease burden. Physical and cognitive training will be achieved to motivate health behavior change for all ages. In addition, gamified applications can be used to combat anxiety disorders and reduce stress, often to increase engagement and the effect of interventions.

2.2. The Research of Smart City Profiling- The maturity level- The Roadmap of research

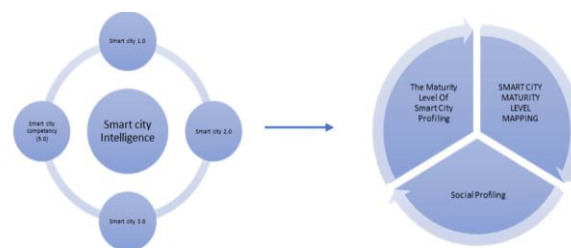
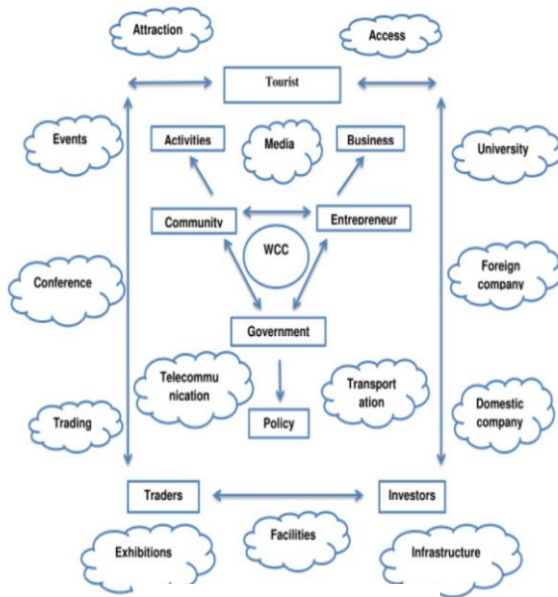
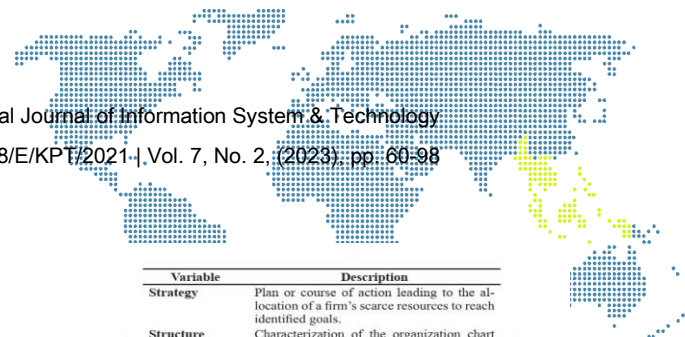


Figure 4. The process of research

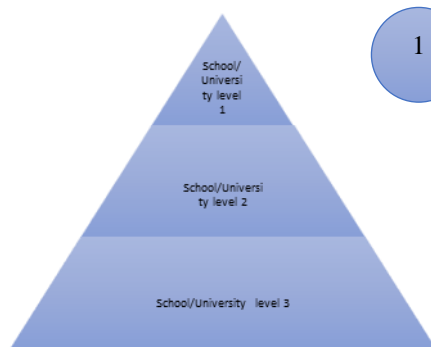


Variable	Description
Strategy	Plan or course of action leading to the allocation of a firm's scarce resources to reach identified goals.
Structure	Characterization of the organization chart (i.e., functional, decentralized)
Systems	Procedural reports and routine processes such as meeting formats
Staff	Demographic description of important personnel categories within the firm (i.e., engineers, entrepreneurs, MBAs). The staff does not mean in line-staff terms.
Costs	Characterization of how the process is

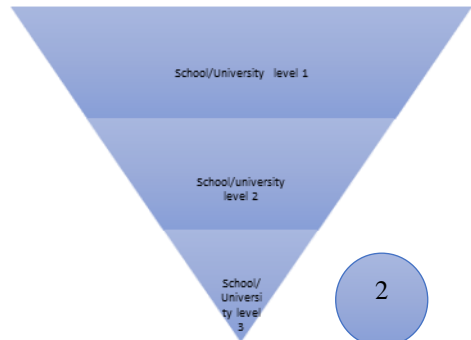
Stage Number	Description
1	Ad Hocacy: Uncontrolled ad hoc approach to the use of I.T.
2	Starting the Foundations: Beginning of ascendancy of IT in the organization.
3	Centralised Dictatorship: The beginning of strong management control.
4	Democratic Dialectics and Dooperation: State of disarray with little coordination between IS department and user departments.
5	Entrepreneurial Opportunity: Strategic benefits beginning to emerge
6	Integrated Harmonious Relationships: Sophisticated use of IT and harmonious working relationship between IT personnel and other staff in the organization.

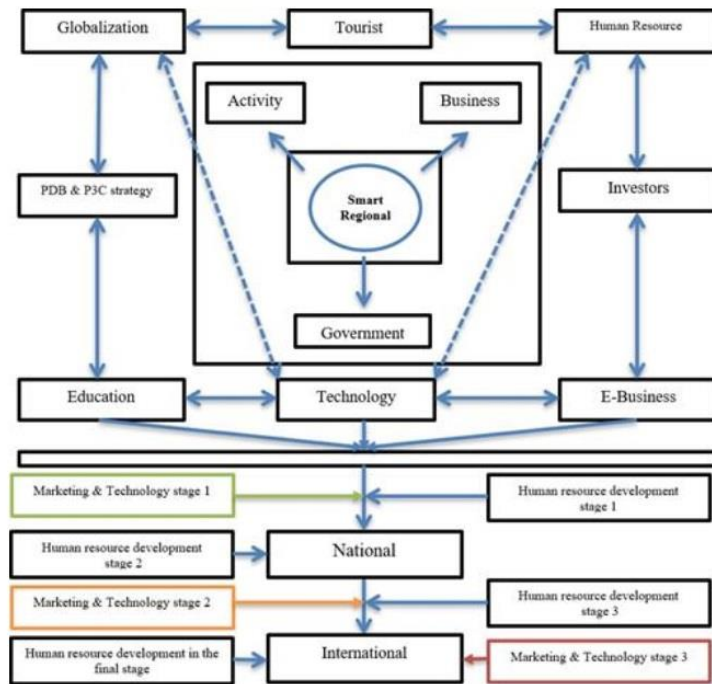
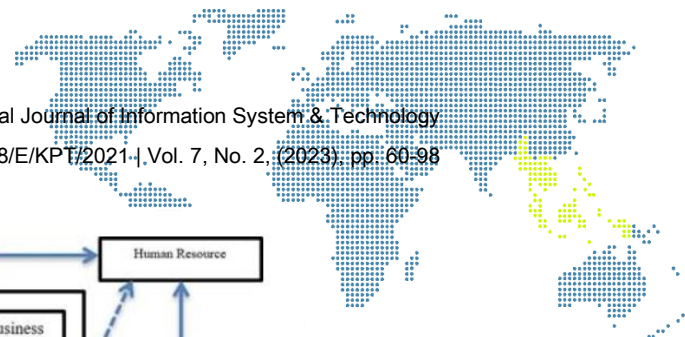
Smart city 1.0

Smart city 2.0

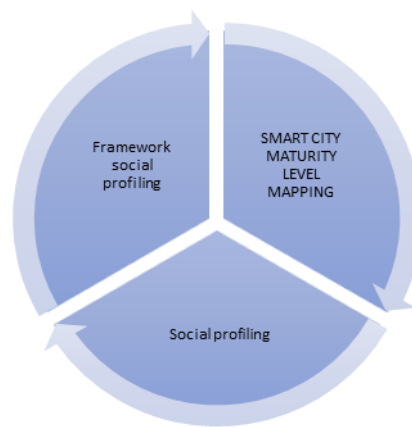


Smart city 3.0

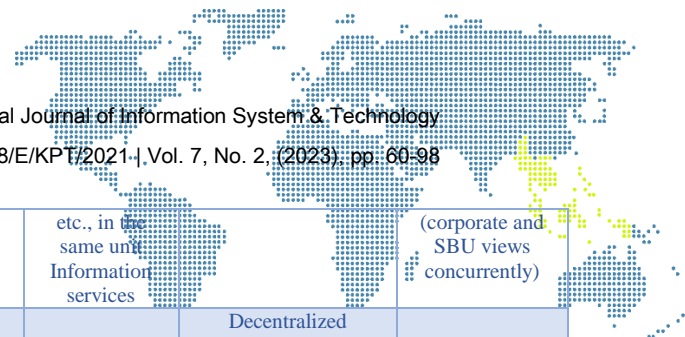




Smart city 4.0



Stage Element	Stage 1 Ad Horarcy	Stage 2 Foundations	Stage 3 Centralized	Stage 4 Cooperation	Stage 5 Entrepreneurial	Stage 6 Harmonious
Strategy	Acquisition of hardware, software, etc	IT audit Find out and meet user needs (reactive)	Top-down IS planning	Integration, coordination and control	Environmental scanning and opportunity-seeking	Maintain a comparative strategic advantage Monitor futures Interactive planning
Structure	None	IS often subordinate to	Data processing department Centralized DP shop	Information centres, library records	SBU coalitioan (many but separate)	Centrally coordinated coalitions



		accounting or finance	End-users running free at stage 1	etc., in the same unit Information services	(corporate and SBU views concurrently)	
Systems	Ad hoc Unconnected Operational manual and computerized IS Uncoordinated Concentration in financial systems Little maintenance	Many applications Many gaps Overlapping systems Centralized Operational Mainly financial systems Many areas unsatisfied Large backlog Heavy maintenance load	Still mostly centralized Uncontrolled end-user computing Most major business activities covered. Database systems	Decentralized approach with some controls, but mostly lack of coordination Some DSS ad hoc Integrated office technology systems	Decentralized systems but central control and coordination Added more value systems (more marketing-oriented) More DSS internal, less ad hoc Some strategic systems (using external data) Lack of external and internal data integration of communications technologies with computing	Inter-organizational systems (supplier, customer, government links) News IS based products. External-internal data integration
Staff	Programmers/contractors	Systems analysts, DP manager	IS planners IS manager Database Administrator Data administrator Data analysts	Business analysts Information Resources manager (Chief information officer)	Corporate/business/IS planners (one role)	IS director/member of the board of directors
Style	Unaware	Don't bother me (I'm too busy)	Abrogation/delegation	Democratic-dialectic	Individualistic (product champion)	Business team
Skills	Technical (very low level), individual expertise	Systems development methodology	IS believes it knows what the business needs. Project management	Organizational Integration IS knows how the business works. Users know how IS works (for their area) Business management (for IS staff)	IS manager – a member of a senior executive team Knowledgeable users in some areas Entrepreneurial marketing skills	All senior management understand IS and its potentialities.
Superordinate goals	Obfuscation	Confusion	Senior management concerned DP defensive	Cooperation	Opportunistic Entrepreneurial Intrapreneurial	Interactive planning



Stage Parameter	Stage 1 None	Stage 2 Unstructured	Stage 3 Initial	Stage 4 General development	Stage 5 Fairly good development	Stage 6 Good development	Stage 7 Highest standard of development
Culture	It can't change	Habits that are still difficult to be flexible	Pretty flexible	Pretty flexible It is enough to be able to change old habits to new ones or a combination of both.	Flexible and some old habits transformed into new habits.	Flexible Changing the environment New combined culture	Flexible New environment New Culture International minded
Social	Old habits that have become a culture	It is quite closed to new things.	Quite open to new things	Enough to be open with the latest things with agreed limits.	Be open to new things and ready to accept what has to be changed.	Open Global minded Accept new things	Flexible New environment New Culture International minded
Education	Far from standard and	It is still lacking and	Education is quite good.	Education is quite good.	Education is already going	Education is well built.	Excellent education

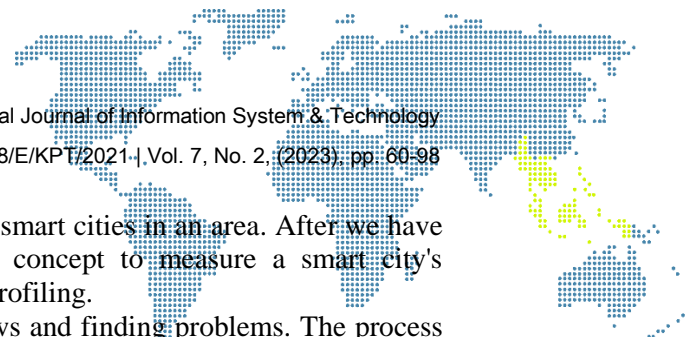


	in dire need of infrastructure and human resources	requires infrastructure and human resources. Education is not well developed.	Sufficient human resources are available. The infrastructure is quite good.	Sufficient human resources are available. Good infrastructure Not well integrated	well. Human resources have sufficient competence and are available. Infrastructure needs more solid integration.	Integration of education Human resources, availability Good infrastructure and easy-to-reach transportation	Human resources, availability and competence have improved very well. Infrastructure very well integrated.
Technology	Little application of technology	They are still following the old technology for quite a long time.	Technology implementation is quite good. Human resources are still lacking.	Technology implementation is quite good. Human resources still need increased competence.	Technology implementation can run well but still requires competent human resources to carry it out.	The latest technology implemented. Human resources are available to do this. Good technology integration	Application of Technology that is right on target Human resources that are very available and ready Excellent information technology integration
Business Model	Do not have	Has a little business model	Has several business models in marketing the area	Having a business model in marketing the regions but integration still takes time.	It has a good business model but still requires integrated infrastructure development.	Have a good business model Good infrastructure Well-integrated	Has a very good business model Standard operating procedures that run steadily Well-integrated
Market	There is no clear mapping.	Mapping is uneven	The mapping is clear enough, but there are still many shortcomings.	The mapping is quite clear, and several regions already have it.	Mapping is clear, but it still requires proper integration.	Clear market mapping Market integration is going well	Very clear market mapping Market integration with international
Implementation	It doesn't exist	Little implementation and not well managed	Implementation is still unstable, and there are still many shortcomings.	Implementation requires supervision so that it can run according to the process.	Implementation requires good management and good supervision.	Implementation is good but needs more significant improvements to keep it running well	Implementation is very good and requires good development and supervision to keep it running well.

Figure 5. Details process of research

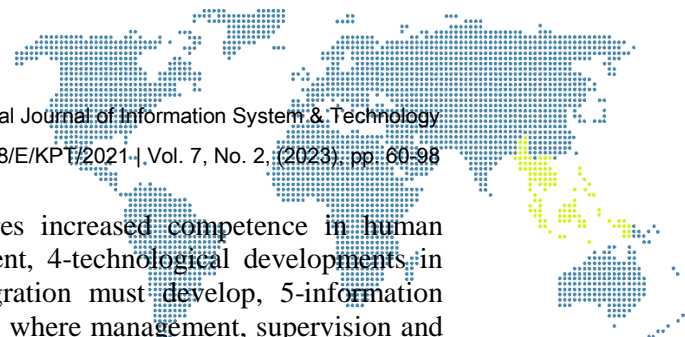
Figure 5 explains the research starting from smart city 1.0, which explains the big picture and what components contained in a smart city. This concept explains how these components will be able to influence the development of a smart city. The next concept is smart city 2.0, which uses the seven stages of galliers & Sutherland, the maturity level. This concept is explained by using case studies and implementing smart cities by measuring the maturity level. It is still the big picture that has not reached the level of detail of profiling. The concept then began to focus on smart city 3.0. smart city 3.0 creates innovation in education, namely smart education, where there are integration and mutual support in education to reach the maximum competence level.

Furthermore, in smart city 5.0, it is explained that to be able to support education. It is necessary to increase human resources, technology and marketing power. Human resources are about improving capabilities, technology on how this can implement appropriately, and marketing about how a region is. Those who already have the strength of human resources and technological development can become a brand or can be said to have unique things that are known globally (smart city 5). Furthermore, these things still do not include cultural elements, mapping data on regional strength and data on people who influence the area. These things are important to make a more detailed mapping or



profiling because it will impact when implementing smart cities in an area. After we have the proper mapping and profiling, we develop a concept to measure a smart city's performance called the maturity level of smart city profiling.

The first process is conducting surveys, interviews and finding problems. The process is to make survey questions in two parts, with the following questions: Part 1-Question 1: Do you know or understand what is called social profiling or social business? (1- No; 2- Never heard a little; 3 - Heard but not understand; 4- Knowing but not acting on the information; 5- Knowing, understanding and having done it). Question 2: Do you have facilities in your area to support business development and a smart city? (1- No; 2- Doubtful in answering; 3- Inactive facilities; 4-There are facilities but not integrated; 5 - Supporting facilities in developing business). Question 3: Do the human resources in your area have sufficient competence in developing wider profiling? (1 - No; 2- Are hesitant in answering; 3- Human resources are still not qualified; 4-Need a training center to increase competence; 5- Need mentoring in developing business). This survey was taken from 100 participants, including 30 lecturers (30-45 years old), 30 students (19-21 years) and 20 private employees (35-40 years) and 20 traders (37-40 years). This data was taken within 10 months, starting from November 2019 to August 2020, using a google forms survey; some people meet face-to-face and make the interview. Interviews conducted to determine why you chose the answer when filling out the survey; the period for talks was 10-15 minutes, conducted between April - June 2020, via WhatsApp call and google meet. The process is to send a survey link, and then they fill it in. After filling in, they tell them that they have filled the survey, then the researcher asks permission to interview with the time and day specified by the participants. In the interview session, the researcher asked details, in which area did the participant live, and why they choose answer during the survey and are there a solution to overcome the problem? The average answer was that they still did not understand the context and content of social profiling or social business. in their regions, they still need development and mentoring in implementing social profiling or social business and require facilities to support this. Part 2- (1) What are the main cultural characteristics of your area? (1- there is no change and activities are carried out, as usual, 2- there is a slight change and begin to accept new things, 3- are flexible enough in accepting new things, but have limitations in applying them to society, 4- flexible in accepting new things but there must be a combination of an old and new culture, and here there has been a positive transformation to form a global-minded, 5- flexible and very open to new things and is international-minded; (2) What about the social level in your area? (1- are close to everything and choose only to do old things by maintaining old habits, 2- are close enough to new things but still willing to open a little discussion and listen to what changes they want to implement in their area, 3- being quite open to new things and starting to be open to new things, 4-being open to new things but having boundaries that must not be violated, especially in the habits of the local community that trusted to pass down, 5 -very open to new things and willing to develop what is new so that the people's standard of living can improve, have international thinking or global mindedness towards something; (3) What is the condition of education in your area? (1- not good, there is still a lot of infrastructures that not achieved, and human resources are inadequate, 2- a little good because the infrastructure is already there, but human resources and transportation are still very difficult to reach education, 3-good enough, infrastructure is there, resources human resources are still lacking, transportation is still quite accessible but not well integrated, 4-education in our area is good, but there are still problems of system integration and a lack of effective and efficient management, 5-education in our area is very good and integrated, management and systems are running well; (4) What about the development of information technology in your area? (1- there is no development in our area, it is difficult for the location of our area to implement information technology, 2-technology in our area is a little developed, but only in communication and no other technological developments, 3-technology in our

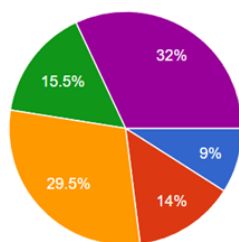


area is quite good in developing but still requires increased competence in human resources and technology infrastructure development, 4-technological developments in our area are good enough, but technology integration must develop, 5-information technology developments in our area are very good, where management, supervision and implementation of new technology already developed; (5) Does your area have a good business model or planning? (1-our regions do not have a business model, and many activities still carry out traditionally, 2-our regions have only a few business models, where there are no significant changes to activities, 3-our regions have a business model, but it is still not well integrated 4- the business model in our area is already running well but still needs further development, 5- the business model in our area is very good, but requires more effective management and supervision so that the implementation of the business model can run on a target; (6) Does your area have a regional marketing plan? (1-our region does not have any marketing, many activities are running traditionally, 2- our region has regional marketing, but it is still not functioning optimally, where there are still marketing activities. the traditional way, 3- our regions have regional marketing. Some have used technology to market their regions as well as the characteristics of products/services, 4-we have regional marketing and have been able to reach the national level, 5-we have regional marketing and already reach the international level; (7) Does your area have a sustainable implementation and development system? (1-our region does not have a good implementation system, there are still many problems in many ways, 2- our area has an implementation system, but not developed, the existing system is still an old system in use, 3- our area has an implementation system but does not exist maintenance is good, 4- our regions have an implementation system, but integration still needs to be developed, 5- our regions have a good implementation system, management and supervision are very good and integrated. The method used is competing with giants adapted from Niraj Dawar & Tony Frost, Harvard Business Review, Apr-March, 1999[70]. The "competing with the giants" method consists of four parts: Dodger, Contender, Defender and Extender. Being a defender means focusing on increasing local competitive assets in market segments where multinational companies are not that strong. Defender focuses on the advantages that are owned in the country and often requires adjustments in products and services to customer needs and are unique. Furthermore, defenders are more focused on local products. Extender means to focus on developing markets to neighboring countries. This type uses the platform to expand profiling to countries close to their own. Dodger, the company, cooperates or sells all of its assets to multinational companies and the type that must be very careful in its implementation. Contender, developing profiling by competing head-to-head with other companies and with an international capacity. The second process in this article is to analyze and produce several formulas, producing a social profiling framework. The third stage is the final stage, producing the Smart City Maturity Level Mapping framework (Business model mapping 101).

3. Results & Discussions

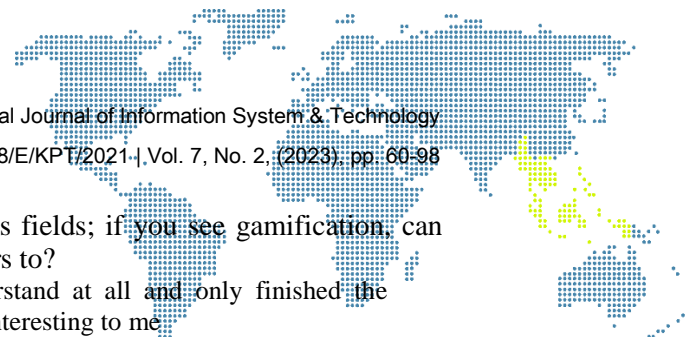
3.1. Gamification Profiling- Survey

Questions 1: Do you understand what is meant by gamification?

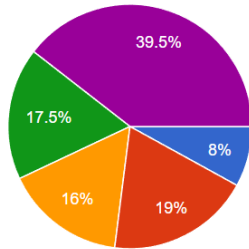


Blue: Not at all
 Red: Gamification is games
 Yellow: Gamification is a game that is applied to get consumers
 Green: Gamification is game development that is systematic and focuses on how to provide benefits to specific companies or organizations
 Purple: Gamification is an activity and process for solving problems by applying and using the characteristics of the elements contained in the game

Figure 6. Survey-Results Questions 1



Questions 2: Gamification is widely used in various fields; if you see gamification, can you understand what category this gamification refers to?



Blue: I did not understand at all and only finished the game because it was interesting to me

Red: I enjoy the games that are presented, but that does not motivate me to find out more about what the company/organization has to offer

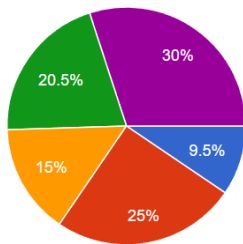
Yellow: For me, games are just fun getting things done and providing a unique challenge, so that is about it

Green: I do not mind the games presented as long as it gives me an advantage in getting points, prizes, discounts, and other things that can give me an advantage. I entirely understand the gamification and am quite able to guess in what category

Purple: I can understand the gamification presented and can understand what category gamification refers to

Figure 7. Survey-Results Questions 2

Questions 3: Can the Gamification presented to specific companies/organizations provide positive benefits or vice versa?



Blue: Gamification does no good to me, and it is just a joy to beat the game

Red: Gamification gives me an advantage in terms of getting certain attractive prizes, and I like that

Yellow: Gamification can have adverse effects, such as being addicted to playing games or getting things, so it requires clear boundaries

Green: Gamification provides many benefits to users because it can have fun, and provide benefits to users

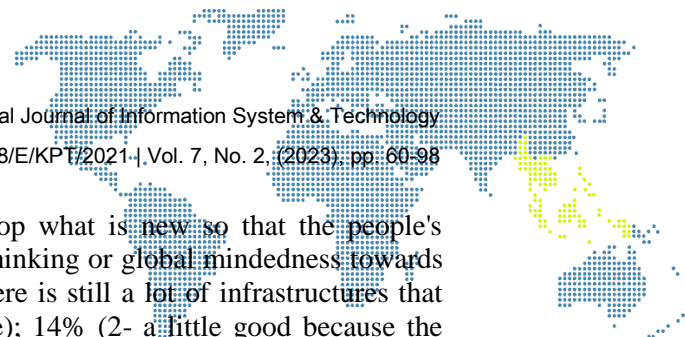
Purple: Gamification as a means to build a positive relationship and can have a good psychological impact

Figure 8. Survey-Results Questions 3

3.2. Smart City – Survey

The survey results in part 1: 1) Question no.1: 36% have heard but do not understand, 24% know but do not seek further information, 7% know, understand and have done it, 18% have not, 15% have heard; 2) Question no 2: 36% there are facilities but not integrated, 16% facilities support to develop a business, 14% don't, 22% are hesitant in answering, 12% of facilities are inactive; 3) Question no.3: 50% need a training center to improve competence, 18% need mentoring in developing a business, 11% are hesitant in answering, 21% of human resources still do not meet competencies.

The survey results part 2: 1) Question no 1: 2% (1- there is no change and activities are carried out, as usual); 10% (2- there is a slight change and begin to accept new things); 12.5% (3- are flexible enough in accepting new things, but have limitations in applying them to society); 40.5% (4- flexible in accepting new things but there must be a combination of an old and new culture, and here there has been a positive transformation to form a global-minded), 35% (5- flexible and very open to new things and is international-minded); 2) Question no 2: 15% (1- are close to everything and choose only to do old things by maintaining old habits); 16.5% (2- are close enough to new things but still willing to open a little discussion and listen to what changes they want to implement in their area); 20% (3-being quite open to new things and starting to be open to new things); 30.5% (4-being open to new things but having boundaries that must not be violated, especially in the habits of the local community that trusted to pass down); 18%



(5 -very open to new things and willing to develop what is new so that the people's standard of living can improve, have international thinking or global mindedness towards something); 3) Question no 3: 5% (1- not good, there is still a lot of infrastructures that not achieved, and human resources are inadequate); 14% (2- a little good because the infrastructure is already there, but human resources and transportation are still very difficult to reach education); 10% (3- good enough, infrastructure is there, resources human resources are still lacking, transportation is still quite accessible but not well integrated); 32% (4-education in our area is good, but there are still problems of system integration and a lack of effective and efficient management); 39% (5-education in our area is very good and integrated, management and systems are running well) ; 4) Question no 4: 12.5% (1- there is no development in our area, it is difficult for the location of our area to implement information technology); 10% (2-technology in our area is a little developed, but only in communication and not other technological developments); 11% (3-technology in our area is quite good in developing but still requires increased competence in human resources and technology infrastructure development); 34.5% (4- technological developments in our area are good enough, but technology integration must develop); 32% (5-information technology developments in our area are very good, where management, supervision and implementation of new technology already developed); 5) Question no 5: 22% (1-our regions do not have a business model, and many activities still carry out traditionally); 10% (2-our regions have only a few business models, where there are no significant changes to activities); 18% (3-our regions have a business model, but it is still not well integrated); 29% (4- the business model in our area is already running well but still needs further development); 21% (5- the business model in our area is very good, but requires more effective management and supervision so that the implementation of the business model can run on a target); 6) Question no 6: 20% (1-our region does not have any marketing, many activities are running traditionally); 11% (2-our region has regional marketing, but it is still not functioning optimally, where there are still marketing activities. the traditional way); 14% (3- our regions have regional marketing, and some have used technology to market their regions as well as the characteristics of products/services); 30% (4-we have regional marketing and have been able to reach the national level); 25% (5-we have regional marketing and already reach the international level); 7) Question no 7: 18% (1-our region does not have a good implementation system, there are still many problems in many ways); 12% (2-our area has an implementation system, but not developed, the existing system is still an old system in use); 10% (3- our area has an implementation system but does not exist maintenance is good); 32% (4- our regions have an implementation system, but integration still needs to be developed); 28% (5- our regions have a good implementation system, management and supervision are very good and integrated)

3.3. The big picture of gamification profiling

The survey results show that many people still have different understandings about gamification, even though people may already know what gamification is but still need to understand the concept fully. Many of us realize that gamification is only in the context and content of the Business and can only benefit from the gamification that has been made. The answer is that gamification is not only that; gamification is broad, can blend with all elements, and does not change its fundamental nature. Gamification provides innovation and other colors to make something more interesting to learn and understand; that is the essence of gamification. Gamification polishes and adds and includes creation in which parts can be made more attractive to increase one's interest and achieve it in the desired context and content.

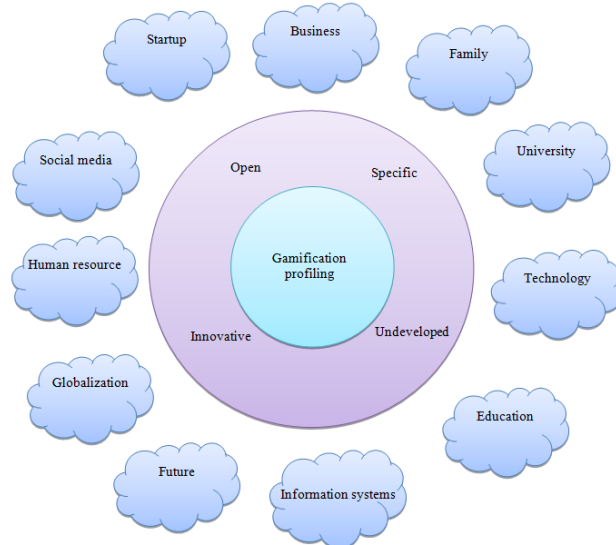
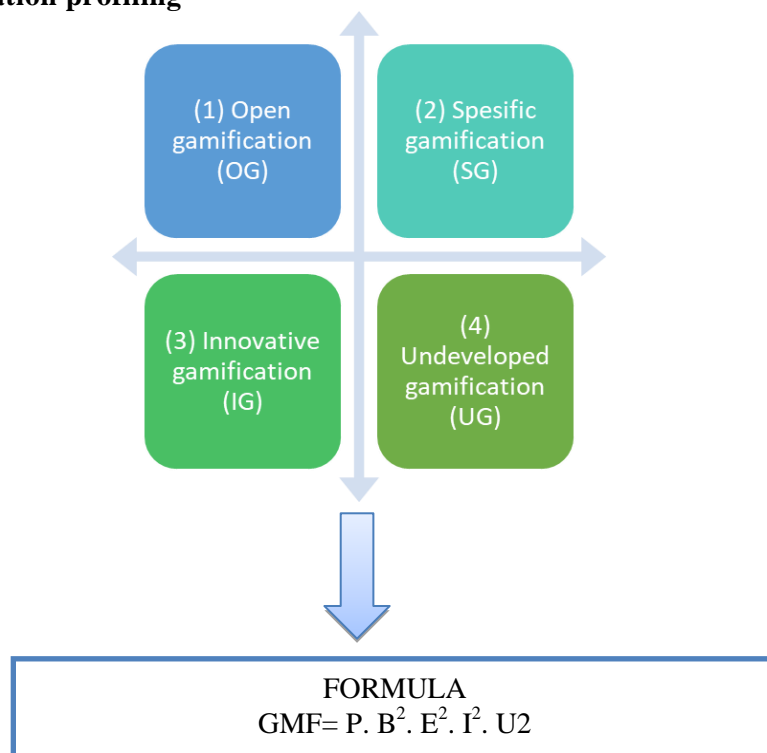


Figure 9. Gamification Profiling – The big picture

Figure 9 explains the big picture of gamification profiling; in this picture, there are four types of gamification profiling, namely open gamification, specific gamification, innovative gamification, and undeveloped gamification. These four types are familiar types in gamification, where we usually know these four types. For example: on e-commerce sites, there is a game that players can play to get coins or a game where if the player wins, they will get a discount on certain products, and many other things that we can see. In the world of education, there is also a game that can help students be motivated to complete their assignments, and learning outcomes can be achieved according to the standards to be achieved. These are common types and occur in society. The outer circle of gamification profiling is the things that help create gamification and also the things we can develop gamification.

3.4. Gamification profiling



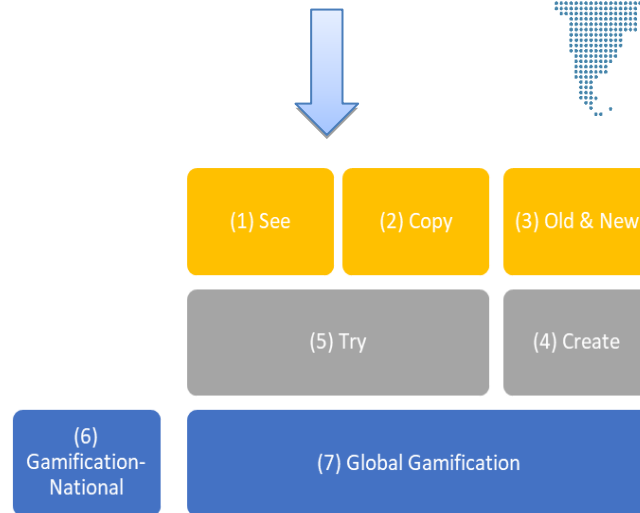
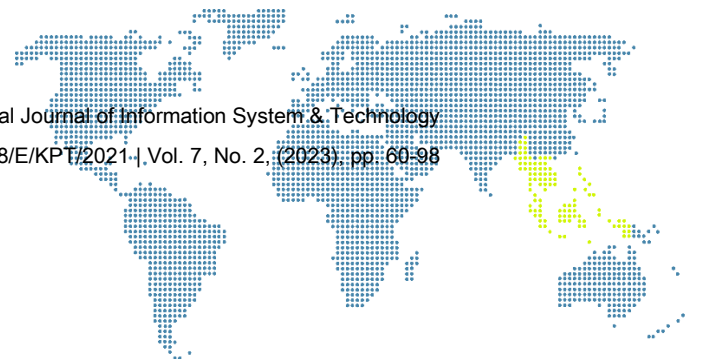


Figure 10. Gamification profiling & Formula

Figure 10 describes the framework for gamification profiling, which is divided into four types of gamification, producing a gamification formula and seven more specific categories.

Step 1- four types of gamification

(1) Open Gamification (OG): Gamification that is created new and has the advantage of engaging consumers effectively so that consumers become loyal. This type can have two permanent properties, meaning that the gamification created will only have a few changes to make it look new. Nevertheless, on the other hand, it is temporary, indicating that this gamification is made only to be able to engage consumers; after that, this type of gamification will disappear.

(2) Specific Gamification (SG): this type of gamification is particular, for example, special gamification in education, for certain foods, and others. It serves to make consumers focus on the product/service.

(3) Innovative Gamification (IG): this type of gamification is a combination of several things: new gamification, where this gamification is specially created to meet specific needs. The second is combined gamification, old and new. Finally, this gamification is integrated but simple; it is pretty simple, meaning it is between complexity and ease of use.

(4) Undeveloped Gamification (UG): a type of gamification that has not yet been developed and is still in the form of a concept, gamification that is still in the form of a prototype but is still at level 1 - meaning that it has not yet been launched on the market and is widely circulated. Lastly, this type is also a gamification that spreads in a unique form and is only temporary; after a while, it will disappear from circulation. The difference with open gamification is that in this type, gamification is not complex but is very simple and easy for consumers to use, whereas open gamification is more complex.

Step 2- formula $GMF = P.B2. E2. I2. U2$

Where:

GMF: Gamification

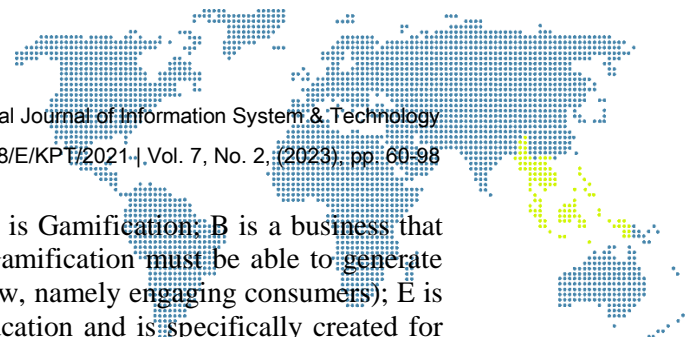
Q: people

B: Business (B1: profits; B2: CRM)

E: Education (E1: general; E2: specific)

I: Innovative (I1: Old & New; I2: New)

U: Unspecified (U1: Prototype; U2: Random)



This Formula can be explained as follows: GMF is Gamification. B is a business that consists of two components, namely B1- profits (Gamification must be able to generate profits) and B2 (Gamification that we generally know, namely engaging consumers); E is education, this type of gamification focuses on education and is specifically created for the teaching and learning process. This type of gamification is class specific. This type is divided into two components, namely E1: general (Gamification of this type was created to increase learning motivation, but it is not clear to what learning material, but in general, it can be played by students, teachers, lecturers, and students or education practitioners); E2: unique (this gamification was created with a specific subject in mind, and it is used not only to increase learning motivation but to increase competency in particular issues). I am innovative. This type of gamification can be old or new, widely used by the community, or new gamification is currently being used by the community.

Step 3- seven categories of gamification

- (1) Seeing: Gamification that is created from seeing, meaning that this gamification is formed spontaneously after seeing particular needs and is completed quickly, either practically or directly fulfilling those needs
- (2) Imitation: this gamification is created by imitating what already exists, but modifications are made in several parts so that it looks like new
- (3) Old & New: A combination of old and new, where the difference is that there are not many modifications made here, but only slightly changing what is already there
- (4) Create: This Gamification creates something new, and is more innovative than before, of course here, it can be permanent or make some changes so that this gamification can continue to be used
- (5) Trying: This Gamification is launching things that might be new or experimenting with many things, to be able to see the response from consumers, and then improvements will be made
- (6) Gamification-National: This type of gamification has the national capacity, meaning that this gamification is known nationally and the public already knows about it
- (7) Global Gamification: This type of gamification has the international capacity, meaning that this gamification is global and well known

3.5. Case study & implementation of gamification profiling

3.5.1. case study A- Open gamification

The application of gamification in electronic commerce (e-commerce) is generally carried out to improve customer relations - the application itself, this method has a positive impact on users [71] in this case as a way of marketing and business strategy to increase customer loyalty and customer engagement. This study [71] also revealed the results of a gamification analysis of 51.2% of respondents' profiles and the buying behavior of the Tokopedia scale-up loyalty program, consisting of 124 male respondents, 48.8% female respondents with an age range from 18 to 37 years and over have a purchase behavior value of goods ranging from \$ 32.89 to \$ 65.79 once to three times per month.

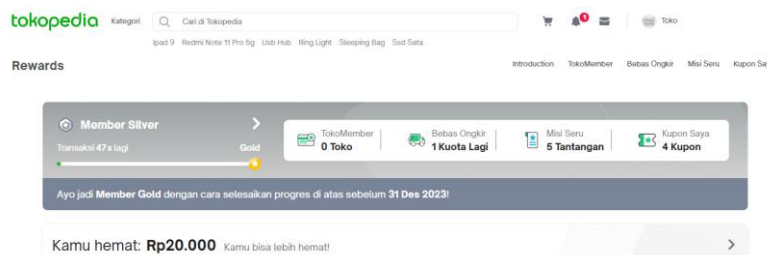
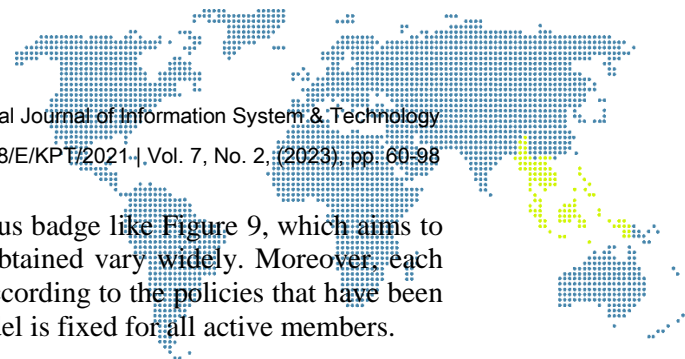


Figure 11. Milestones of Tokopedia member status



Each registered user will have a membership status badge like Figure 9, which aims to motivate users to make transactions; the benefits obtained vary widely. Moreover, each category of membership has terms and conditions according to the policies that have been set. So, in this case, the Tokopedia gamification model is fixed for all active members.

3.5.2. Case study B – Specific gamification

Every year the National Coffee Association USA (NCA) conducts an annual survey highlighting coffee consumption patterns; in the survey, they find out about the latest consumption trends, as well as consumption patterns among different populations and the coffee brands connoisseurs are most interested in. Based on the amount of coffee consumption [72], ten countries are in the top rankings worldwide, including Finland, Sweden, Switzerland, Germany, France, Italy, Brazil, the United States (US), Japan, and the United Kingdom (UK). Strong coffee culture and coffee-loving population may be some of the factors that have made these countries the leaders in coffee consumption. However, this condition creates fierce competition in the coffee market. Therefore, coffee business people must fight for market share and improve the quality of their products to remain relevant and competitive.



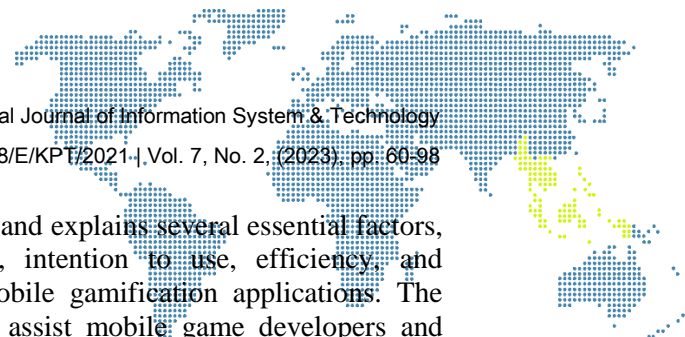
Figure 12. The Starbucks application points loyalty program

Therefore, business success is highly dependent on customer loyalty. Loyal customers tend to shop more and recommend products or services to others, thus strengthening the company's position in the market. Meanwhile, customer engagement can be increased when companies give appreciation to them. When customers feel valued, they tend to feel more attached to the brand and become more loyal. According to statistical data [73], Starbucks' revenue increased by 11%, and earnings per share increased by 22% when it introduced the My Starbucks Rewards program. Research [74] discusses the advantages of loyalty programs in Business with the Starbucks case study, as shown in Figure 7. especially on the point system with a gamification effect. Starbucks uses point and level systems in its loyalty program to attract and retain customers. So as explained in the case study, user involvement in the food and beverages industry plays a vital role in implementing the gamification effect, which can increase customer loyalty.

3.5.3. case study C- Innovative Gamification

The gamification method in education is an innovative and exciting way to increase student involvement in learning. Incorporating elements usually found in games into learning [75] can help students feel more motivated and involved in the learning process.

Mobile game applications can be the right solution to increase students' learning continuity because they have unique and valuable characteristics. Therefore, using mobile educational games is the right way to enhance learning. However, research on mobile gamification still needs improvement, and one obstacle is sustainability. Research [76] proposes a new model to increase the continuity of learning by using mobile game



applications. The study provides empirical evidence and explains several essential factors, such as fun, ease of use, perceived usefulness, intention to use, efficiency, and effectiveness, to facilitate the effective use of mobile gamification applications. The results provide several recommendations that can assist mobile game developers and designers in increasing the use of mobile game applications by students to improve the sustainability of learning using mobile game applications more effectively. In implementing these recommendations, mobile game developers and designers must consider important factors such as perceived fun, effectiveness, and efficiency of mobile game applications. Thus, it is hoped that students will be more interested and enthusiastic about using mobile game applications as fun and effective learning aids.

There are several vital elements that a compelling game must possess in an educational context. First, the game must have a clear set of goals or stages. It helps students understand and focus on what needs to be completed. Second, the rules in the game must be clear and transparent. In an educational setting, it is imperative to help students understand what is expected of them. Third, story elements must be incorporated into the game. It engages students emotionally and provides precise context about the learned concept or skill. Fourth, high interaction is an essential element of practical play. It allows students to participate actively in the learning process and promotes engagement. Fifth, constant feedback, including certain rewards, is crucial in effective play. It helps students understand their progress and provides additional motivation to achieve their goals. Finally, games can incorporate social features such as teamwork and communication. It can help students learn together and build social skills useful in everyday life.

The gamification method in education can help increase the effectiveness and involvement of students in the learning process. Furthermore, in an increasingly competitive educational environment, this method can give students the added advantage of achieving academic success and help them become more active and engaged lifelong learners.

3.5.4. case study D- Undeveloped Gamification

In the business world, customer experience (CX) is essential to a company's success. Today, gamification is increasingly recognized by academics and practitioners as an effective way to improve customer experience. However, the role of gamification in the customer journey still needs to be well explored. Therefore, we examine the article's results [77] which aim to identify how gamification can leverage each stage of the customer journey, integrate these findings into a conceptual model, and offer future research opportunities.

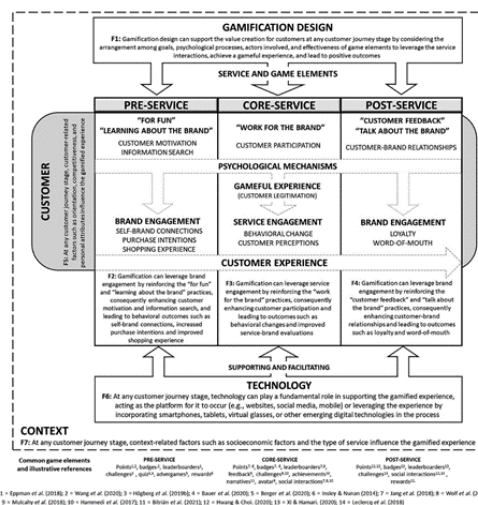
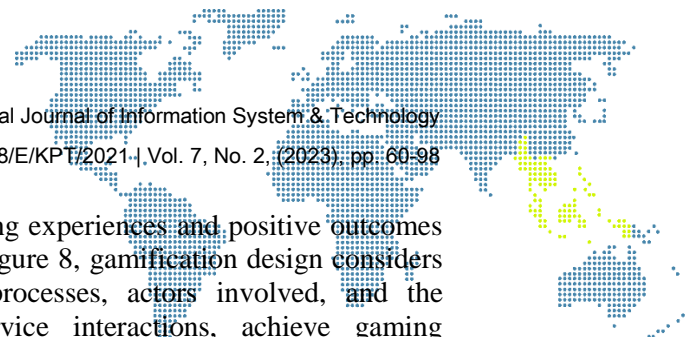


Figure 13. Conceptual model of gamification in the customer journey (J. H. O. Silva et al., 2023)



Gamification design can create motivating gaming experiences and positive outcomes at every customer journey stage. As explained in Figure 8, gamification design considers the arrangement between goals, psychological processes, actors involved, and the effectiveness of game elements to utilize service interactions, achieve gaming experiences, and lead to positive outcomes. In addition, technology can play a critical role in supporting gamification experiences at every stage of the customer journey by serving as a platform for those experiences or leveraging experiences by incorporating new digital technologies.

For brands and companies, integrating gamification into their marketing strategies can increase customer engagement, strengthen brands and achieve the desired positive results. However, gamification must be precise and measurable and consider customer values and needs to create a satisfying and practical customer experience. In this regard, technology can also play an essential role in supporting gamification experiences, both as a platform for brand interaction and by leveraging new technological tools to enhance customer engagement with services.

Considering the effectiveness of the game elements, psychological processes, actors involved, and the technology used, gamification can be a powerful tool in creating a motivating gaming experience and positive outcomes at every stage of the customer journey. Therefore, companies must consider using gamification appropriately and measurably to create a compelling customer experience. Thus, gamification can be an effective strategy for increasing customer engagement and achieving the desired results.

3.6. Gamification profiling & Board Game- Introduction

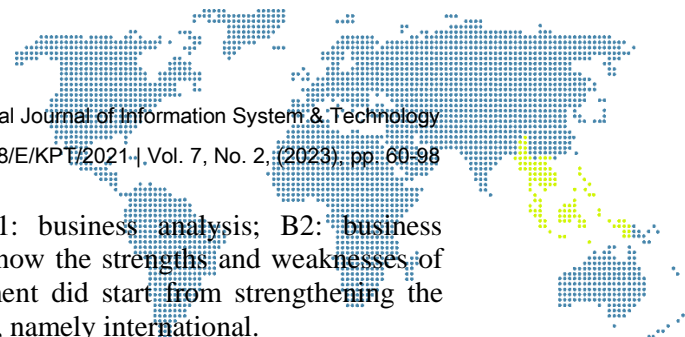


Figure 14. Gamification, Board games, and metaverse

Figure 14 explains the big picture of the research we will do next. First, there is an innovation profiling framework, and gamification profiling, where the two frameworks will be connected with the board game concept, eventually producing a board game profiling. First, board game profiling will discuss the types of board games in detail and how this can benefit the general public and can also be applied more specifically. Next, this will be linked to a management system and metaverse concept, eventually resulting in a combined metaverse-gamification and board game concept. Next, this concept will be explained, combining gamification, board game, and the metaverse.

3.7. Framework Smart City Maturity Level Mapping

Figure 15, explains the stages in social profiling, where the first stage is the formula $SC = HR.M.T2$, where: SC (smart city); HR (human resource); M (profiling); T (technology- T1-technology level 1; T2- technology premium), $HR = MT.K.C2$, where: HR (human resource); MT (mentoring); K (knowledge); C2 (Competency- C1-competency with high quality; C2- competency with low quality), $M = D.P.B2$, where: M (profiling); D (differentiation); P (positioning); B2 (Brand- B1- brand national level; B2- brand international level), $T = I.D.M2$, where: T (technology); I (integrated); D (data); M2 (maintenance - M1- maintenance with high quality; M2- maintenance with low quality). When combined, these formulas will form one formula: $SP = P.B2$, where SM: social



profiling and P: profiling and B: Business (B1: business analysis; B2: business development). In this SM formula, we must first know the strengths and weaknesses of profiling in a city and whether business management did start from strengthening the business with local products and up to a higher level, namely international.

The second stage is social profiling which includes more detailed matters, including culture, customer, investor, supervision, data, mapping, mentor. These seven things are the Centre of strength that considered and developed so that a city so that the application of a smart city can be right on the target it should be.

The third stage: smart city profiling includes three important things, namely competency of human resources (availability of human resources), commercial, which is the strength of profiling (which includes the number of consumers) in the city and capital (investors or business owners who have potential in cooperation with the city). These three things are the core strengths of implementing smart city, combined with the dodger, contender, defender and extender concept. This third stage is very important because we will find out the strengths and weaknesses of each city, products/services, and the availability of resources that are the core in implementing the smart city implementation process.

The fourth stage is to combine social and smart city profiling with these four things to produce a business model mapping 101, which is the most important stage.



Figure 15. Framework Smart City Maturity Level Mapping

3.8. Framework Business model mapping 101 (Smart City Maturity Level Mapping)

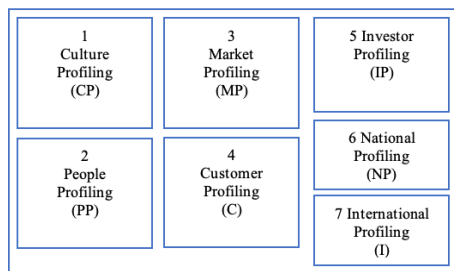


Figure 16. Smart City Maturity Level Mapping (Business model mapping 101)

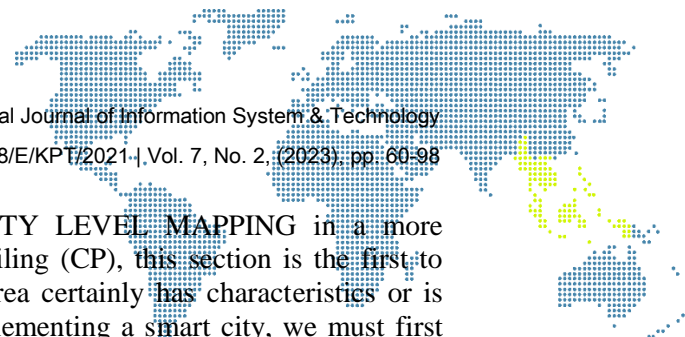


Figure 16 describes SMART CITY MATURITY LEVEL MAPPING in a more detailed context and content. Stage 1- culture profiling (CP), this section is the first to have a very detailed culture mapping. A city or area certainly has characteristics or is unique in culture and habits; therefore, before implementing a smart city, we must first understand the people who live in that city/area. Several things that answered are: (1) is the culture in the city/region immutable, or can it open itself to new things? If not, why? What is the solution? If yes, then what are the new things that are part of a smart city that implemented? (2) Does the city/area have a stable and safe, and comfortable community structure? It should be a concern before implementing a smart city because it will be very difficult to implement a smart city if it cannot do stably from the security and comfort side. After all, investors will certainly be worried about their assets; there will be little development in the local community because it is not safe if they live in the city/area.

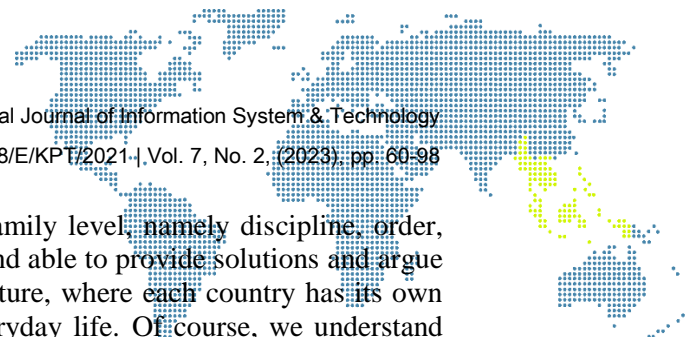
In culture profiling, we must be able to understand several things: (1) a cultural condition will be able to influence the success factor of implementing a smart city in an area; (2) The human resources in the area must be ready and have sufficient competence before implementing a smart city. These two things are interrelated and must not be separated from each other because if the two things are separated, Smart City Maturity Level Mapping cannot run effectively. Specifically, for culture profiling, this can be described as follows:



Figure 17. The process of culture mapping

Culture affects all the factors contained in a smart city. Figure 4 explains that to implement a smart city, especially social profiling, the first thing to do is to form individuals who have high-quality competence (knowledge). It is very important and done because without high education and knowledge. It will be difficult to form a new understanding of globalization. The next stage is to form highly competent individuals; this includes basic education, secondary education, upper level, university level and other higher levels. In the first two stages, a good educational infrastructure needed in the area and the availability of highly competent human resources and a well-functioning mentoring system.

Furthermore, suppose these two stages have been fulfilled, of course. In that case, it will form a new culture in each individual because they already know the capacity of globalization, which will affect families' formation with a new culture, where this does not change the basic principles that already owned. But each individual must change into the global mindset. Family culture or that which each family owns will form a culture in each area and then form a culture in each city; of course, we can understand that each region has cultural diversity that we must respect. A city must have a standard culture that



must implement to every individual down to the family level, namely discipline, order, broad mindset about things that need to be known and able to provide solutions and argue professionally. The final stage will form a state culture, where each country has its own culture and habits and becomes a standard for everyday life. Of course, we understand that not everyone can change because change will take a long time. However, change must still occur because of the development of information technology and lifestyles adapted to the way we live our lives.

Stage 2 - People profiling (PP). In this section, it is necessary to pay attention to the education sector and human resources competence. In that city/region: (1) is the education sector in the city/region good? Because this affects the ability level of human resources, or are there still significant differences in education? (2) who are the people who have a big influence on the community in the city/area? How big is the authority? It should also get attention because when building a smart city, if people are continuously affected by negative things, this will certainly hinder the pace of development and application of smart cities in the city/area. Stage three – Market profiling (MP). Is economic growth in the city/region stable? What about the standard of life of the people? Is there a gap that is too high? What about infrastructure development in the area? Is the location for setting up a business available and safe? How do people react to companies that come or built in the city/area? The fourth stage - customer profiling (C), what about the people's purchasing power in that city/area? Is there accurate data regarding the number of productive men and women, family, and other matters related to community data? What are the things that can attract their attention to buy or use a product/service? [78] Sixth stage - investor profiling. Who are the people who have big businesses in the city/area? Does it have the potential to be invited to work together? What things can attract outside investors to invest in the city/area? How about sharing profits with investors? What about the available locations? Can you be sure that there is no conflict with the community? How do you resolve conflicts if there are people who disagree? What solutions given to investors? What about the term of the business agreement between the investor and the city / local government? The sixth stage - national profiling (NP), can the products/services develop at the local level developed into the national level? What obstacles might occur if the product/service launched nationally? What is the solution to overcome if there are problems while the business is running? What is the solution if a situation hampers the implementation of the smart city? Can the product/service be of use to society at the national level? What about the level of security on personal data? Seventh stage - international profiling (I), can these products/services be developed more broadly to the international level? What are the strengths and weaknesses of implementing this? How long does the implementation take to achieve a level of stability? What is the short term, medium-term and long-term solutions if problems arise? What is the process that implemented immediately to reach the international level? What about the security of personal data?

After we understand what contained in Smart City Maturity Level Mapping, the final stage is how to apply Smart City Maturity Level Mapping to a city/region? And combine it with the competing with the giant's method?

3.9. The implementation of Smart City Maturity Level Mapping & case study

At this stage, it will explain how to apply Smart City Maturity Level Mapping and competing with the giants so that a city/region can be effective and efficient. It can describe as follows:

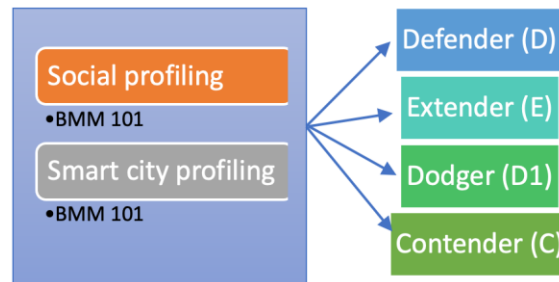
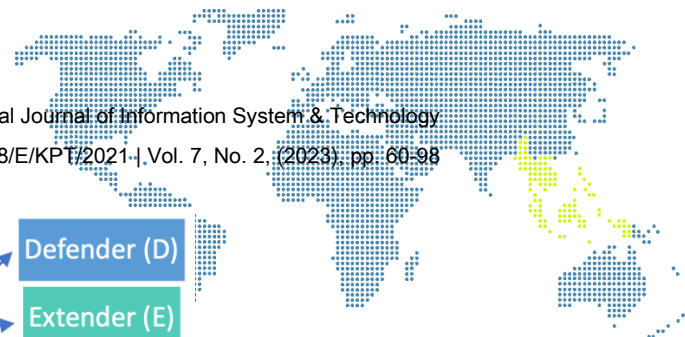


Figure 18. Framework Social Profiling

Figure 18 explains the relationship between social-smart city profiling, Smart City Maturity Level Mapping and the four factors competing with giants. The implementation stage is as follows: (1) SP-SCP-Smart City Maturity Level Mapping-D: in this position, a city/region must strengthen its local products first. If local products in terms of quality are still less good than international products, it will be difficult to build local strength. Local strength is the key to developing a city/region. In this case, it must know who are the people who have the strong potential to develop this and the availability of other resources. For instance, Case study-1: a city/region has catfish food products, here the city government must be able to improve the quality of catfish food and have a strong distribution to be able to expand it into a national product, where this catfish can use substitute commodities in daily food consumption for the community. Things like the availability of a place for breeding catfish seeds must provide better processing technology infrastructure, the place's security, and experts in improving quality. In this position, if a city can improve on these things, it said that it is already in a position of local power. Here, we must understand that not all countries have to consume catfish, but this product can be a local food brand that can be unique for each city to strengthen the local structure. (2) SP-SCP-Smart City Maturity Level Mapping-E: at this stage, a city/region develops local products by distributing them to neighbouring countries, where other countries have similar cultures. For instance, catfish, a local product and a strong brand are produced more and distributed to other countries for people in other countries. This stage will strengthen local products and benefit a certain city/area, a catfish nursery Centre. (3) SP-SCP-Smart City Maturity Level Mapping-D1: After the catfish can be produced in large quantities and distributed well, catfish companies in these cities/regions must start thinking about innovative business models, meaning that there must be cooperation with other countries in developing more catfish products in terms of variations in flavour's, varieties of dishes and attractive packaging, as well as better distribution methods so that they can develop to countries with different cultures. This stage is the stage where investors will enter and work together in a better business model. (4) SP-SCP-Smart City Maturity Level Mapping-C: the catfish company is developed into a multinational company and then deals with other companies with similar products. It will increase competitiveness and higher creativity so that catfish products will reach a stronger brand level. Furthermore, several catfish companies can be established in the nursery's city/area of origin and established in other countries. Furthermore, the network process of Smart City Maturity Level Mapping described as follows:

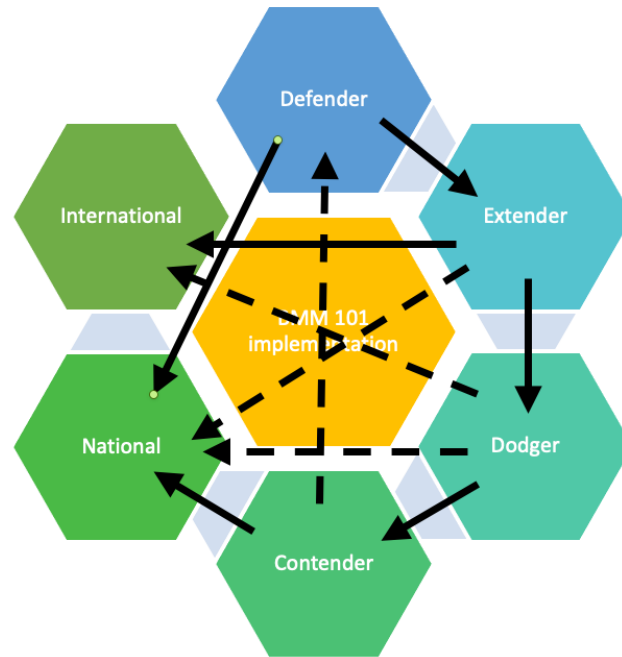


Figure 19. The network of Smart City Maturity Level Mapping

Figure 19 explains that the defender position is a very important position at the local level, where mentoring is needed to develop local strength and human resources with high competence and good local infrastructure. If the defender not developed perfectly, then going to the next process, such as extender, dodger, and contender, won't be easy to do. Figure 6 shows that the defender goes through a normal process, but what if the defender jumps at the national level? Can this be done? It can be done but requires a strong foundation in the city/region to go directly to the national level. Figure 7 also shows the defender process going directly to the international level. However, it still has to go through the extender process, meaning that a mentoring system and investors are needed to do this; of course, this must consider the profit-sharing element of a business profit. The next process is if you are in the dodger position, then the same thing applies, namely having a good local strength standard and requires a mentoring system and investors who are willing to do this.

3.10. The Maturity Level Of Smart City Profiling

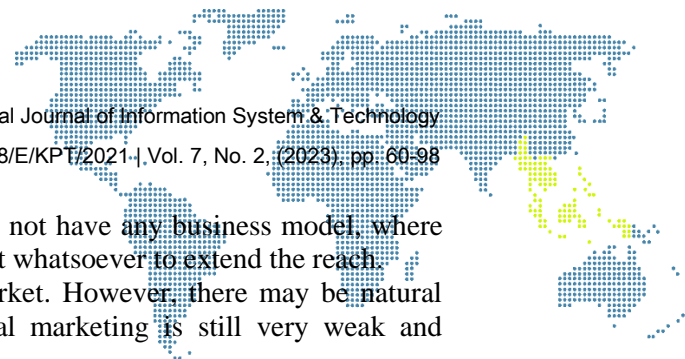
Stage 1 - None.

Culture - the cultures in this area are very strong and difficult to change. As if they do not want to accept new things and are very difficult to convince to change, it is impossible to implement a smart city in the area. However, communication must still do so that people can change because their changes will improve people's lives.

Social - the people in the area, have standard habits and activities that carried out daily. If seen, there may be the same activity, and things that happened did not change too much. It can be said to be stable but not dynamic and flexible.

Education - education in these areas is still low. It can say that there has been no progress, transportation is experiencing difficulties in reaching education, there is no integration, infrastructure is still lacking and the availability of minimum human resources[79].

The area's technologies are still very low, where they are very limited in terms of using **technology**- this area requires a lot of infrastructure development in terms of information technology.



Business Model- this regional business model does not have any business model, where activities occur as usual, and there is no development whatsoever to extend the reach.

Market- these regional markets do not have a market. However, there may be natural resources that can improve people's lives, regional marketing is still very weak and inaccessible, and there is no integration whatsoever.

Implementation - The implementation process of the six parameters in this area has not been going well and is still weak in overall coordination.

Stage 2- Unstructured.

Culture -the cultures in this area are still quite closed. Society is open to new things, socialization and more consistent explanations are needed to understand that these changes and new things can improve people's lives. Change is good if it focuses on people's economic growth.

Social - interactions in our area are still limited, where activities are running normally, but the development of these activities has not reached global progress.

Education- in our area still needs to be developed, education infrastructure still needs improvement and development, and in terms of human resources, competency improvement needed[80].

Technology-technological developments in our area still require development, where technology infrastructure is still lacking, and information technology integration is still at a minimum.

Business Model - Our regional-business model has an old business model, where activities run as usual, without any significant changes. Business models require development and change to be able to face globalization.

Market-marketing in our area needs support because our area's products/services still consumed by the community, but only a few marketed outside our area.

Implementation - the six points' implementations are still lacking and require proper development, development, and application in this area.

Stage 3- Initial.

Culture - the cultures in this area are quite open, and there are cultural changes here. People use new things like daily activities and begin to form modern and global habits. The application in level three is gradual, where the community begins to make changes in itself so that it affects others, but of course, still keeps what is already there.

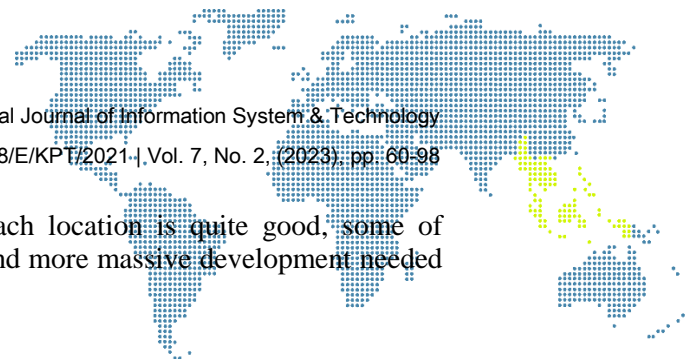
Social - the people in this area, have an openness and desire to change and try new things, where there are changes in their daily activities. Activities are not only carried out in general but have started to implement new things.

Education - in this area is quite good and meets standards, the infrastructure already owned, but human resources' availability still lacks competence. This area must specialize in several fields so that this area can develop positively. Furthermore, the infrastructure must be buildable and integrated[81].

Technology-implementation of Technology in the regions is quite good, where there is a lifestyle using technology. Infrastructure already uses technology but is not fully integrated. The human resources to run the technology are good enough, but a lot of specialization needed in certain fields.

Business Model - this regional business model has a fairly good business model but not evenly distributed, where some locations are still not undergoing development, and there is no change. Therefore, a more detailed mapping is needed so that the development level, such as infrastructure needed at each location.

Market - this area is good enough by having one product/service that is a selling point and is useful for attracting other people to come to the area. It still needs a wider development because it only focuses on the local area but has not yet reached the national and broader international level.



Implementation - planning implementations in each location is quite good, some of which integrated, but there are still many changes and more massive development needed so that this area can develop into a smart city[82].

Stage 4- General development.

Culture - the cultures in this area are quite modern; we can say that this area means a city and can be called a mid-level modern city. In this city, a culture of freedom in expression applied, but of course, with clearer boundaries. This limit called the middle way so that local culture is maintained, but international culture can still apply.

Social - the community's social level can be said to be on average good and meet the standards in implementing a smart city. People are familiar with the use of information technology as an activity in their daily life.

Education - education in this area can also be said to be good. The infrastructure evenly established, where educational facilities are well available, there are several education integrations with other institutions. Human resources are available quite well, and several competencies fulfilled very well[83].

Technology - the implementation of information technology in this area is quite good and well developed, where there is the use of technology. However, in several locations, it is still untouched by technology. This area also has a fairly modern lifestyle in terms of communication and interaction.

Business Model - this regional business model has fairly good planning, where the business model created can improve people's lives. However, this business model is not fully integrated and can touch the whole, so it still needs consistency and innovation in implementing the planned business model.

Market-marketing in this area is quite good; this area integrated with nearby areas. Products/services from this area well distributed to other regions. Furthermore, these regional products/services have also reached the national level but only in a few locations[84],[85].

Implementation-supervision is needed at this stage because the planning without supervision process will not run perfectly. Supervision without significant improvement will not achieve the desired yield point. Therefore, this stage is an important stage, where whether a region can increase to the next level or remain at this level for a long time.

Stage 5- Fairly good development

Culture - this regional culture can be said to enter at a fairly high level, namely the top 10 cities with a large and modern population, where culture is mixed with new things, resulting in a new culture that has begun to be consistent[86].

Social - the community's social-lifestyle in it is a high social interaction, where there are new things and are very dynamic in its development. Open attitudes and behaviour and freedom in an expression are visible in society[87].

Education - education at this level is already good, where several educational institutions have started to enter the international level. Facilities are available, and highly competent human resources are also available here[88].

Technology-integration of Technology with transportation, facilities for activities of daily life and other things are well connected. Technology is at the heart of city life, and people use technology as the main means of communication and other activities[89].

Business Model - this city-based business model has a good business model. The business model is integrated with other nearby cities or regions so that distribution can easily carry out[90].

Market-marketing is good and has reached the national level and has expanded to the international level in 2-3 countries, thus providing significant benefits[91].

Implementation-management of city layout is quite good. The implementation of the six points above is above average so that this city can be categorized as a smart city and



included in the smart city profiling group. this city needs supervision and developing a better one to increase the level

Stage 6- Good development

Culture - this regional culture can be said to be in the category of the five largest cities in the entire country, where this city is the economic and cultural heart of this city which is very clearly international-minded[92]

Social-social levels of society are very diverse, and freedom in expression exists in this city. The large population and the busyness of their daily activities have become commonplace in this city.

Education-education is very advanced, where facilities and buildings built in quite a large number. Human resources are well available and have reached the international level[93].
Technology-implementation of Technology is very good, and technology is the main centre

Business Model - this city-based business model has a very good business model, but it still needs a good city layout and supervision[90].

Market-marketing in this city is very good and has reached the international level in many countries[94].

Implementation -the implementations in this city have been running very well but require more solid supervision and integration so that standard operating procedures can run effectively and efficiently.

Stage 7- The highest standard of development

Culture - this regional culture can be said to mean the three largest cities in the entire country. Culture in this city is very flexible, openness and modern cultural patterns[95].

Social - the social-lifestyle of the people in this area is the same as the culture it holds. Openness, flexibility and the use of technology as daily activities are common.

Education - education in this city is very advanced, where facilities, human resources and other things fulfilled, and there is international cooperation.

Technology-in this city, technology is very advanced and is developing very fast. Implementation of Technology in various sectors and the use of technology for daily activities

Business Model - this city-based business model already has a very good plan; the process is already running; what is needed is good management in executing the plan[89],[96].

Market-marketing in this city is very broad, where there are international connections, and every area around it is also developing nationally and internationally[97],[98].

Implementation - In each area around the city, there is a very good implementation and integration. Still, it needs continuous supervision and improvement so that it is maintained and can continue to develop for the better.

3.11. Case Studies & Implementation of The 7S Of Smart City Profiling

3.11.1. Case Study A

Table 2. Case study analysis- A

Stage Parameter	Stage 1 None	Stage 2 Unstructured	Stage 3 Initial	Stage 4 General development	Stage 5 Fairly good development	Stage 6 Good development	Stage 7 Highest standard of development
Culture		■					
Social			■				
Education			■				
Technology				■			
Business Model				■			
Market		■					
Implementation			■				

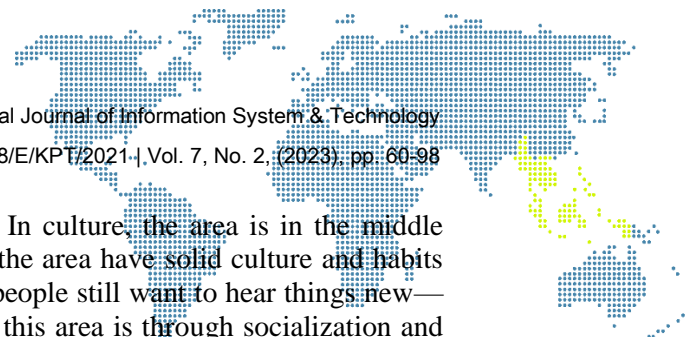


Table 2 describes the maturity level of an area. In culture, the area is in the middle between levels 1 and 2, meaning that the people in the area have solid culture and habits that they have been doing for a long time, but here people still want to hear things new—flexible listening change. Building a new culture in this area is through socialization and explanation slowly with and about to implement and do without thinking and discussing. Of course, this must have a certain period to be able to raise the level. On the social side, of course, this is related to culture; these two things cannot separate. On the one hand, the culture they hold is very strong.

Still, on the other hand, there is an openness to new things. It might be good if the community gave examples of case studies of success in implementing these new things to ensure that these new things can increase community life. In the education position, education in that area has an infrastructure that must be built but lacks human resources. Therefore, it is necessary to develop infrastructure and human resources by increasing mentoring, training and any form of education to increase competence in this area. The position of Technology, Technology in this area is quite developed but requires competent human resources to run it. The right investment is a balance between technology and human resources. If there is technology to be implemented, human resources must be ready if human resources are ready. Still, there is no technology; then, this, too, will not be balanced. A business model's position may have a business model or long-term planning to develop its region, but this has not yet achieved its main objective, namely being in a wider market position. Strong facilities and human resources must support strong regional marketing. Implementation. The conclusion is

- Culture level 1.5
- Social level 2.5
- Education level 2.5
- Technology level 3.5
- Business model 3.5
- Market level 2.5
- Implementation level 3.5
- The maturity level area A: 2.5

3.11.2. Case Study B

Table 3. Case Study Analysis- B

Stage Parameter	Stage 1 None	Stage 2 Unstructured	Stage 3 Initial	Stage 4 General development	Stage 5 Fairly good development	Stage 6 Good development	Stage 7 Highest standard of development
Culture							
Social							
Education							
Technology							
Business Model							
Market							
Implementation							

Table 3 explains that this area is quite good at the maturity level. Culture position is at level 3.5 as well as social position. It illustrates that the community's culture and social level are quite open to new things but still have boundaries that must maintain. Some several cultures and habits may have to be carried out together with these new things. In the position of education, technology and business models, this area has reached level 4.5. It explains that education is very good in this city and has facilities, infrastructure and human resources that meet international standards. The application of technology here can be said to have reached an advanced level and daily activities using technology to carry out a business process. The market position and implementation are at level 5.6, meaning that the marketing of products/services in this city includes national and international levels. In this case, city layout management, marketing management, and other



management are operating well but still requires strong control, and further development to increase the level.

- Culture level 3.5
- Social level 3.5
- Education level 4.5
- Technology level 4.5
- Business model level 4.5
- Market level 5.5
- Implementation level 5.5
- The maturity level area B: 4.5

3.11.3. Case Study C

Table 4. Case Study Analysis- C

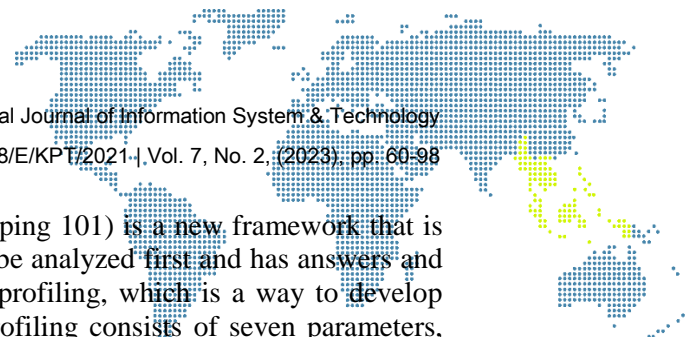
Stage Parameter	Stage 1 None	Stage 2 Unstructured	Stage 3 Initial	Stage 4 General development	Stage 5 Fairly good development	Stage 6 Good development	Stage 7 Highest standard of development
Culture					[Progress bar from Stage 5 to Stage 6]		
Social						[Progress bar from Stage 6 to Stage 7]	
Education						[Progress bar from Stage 6 to Stage 7]	
Technology					[Progress bar from Stage 5 to Stage 6]		
Business Model						[Progress bar from Stage 6 to Stage 7]	
Market						[Progress bar from Stage 6 to Stage 7]	
Implementation						[Progress bar from Stage 6 to Stage 7]	

Table 4 explains that culture's position has reached level 5.5, social and education is at level 6.5, technology level 5.5, and business model-market-implementation at level 6.5. It explains that the Culture and social community in the city is very advanced and the activities are very dense, and it can say that this is the main city centre in a country. Infrastructure, education and human resources are available in the city, and the existing marketing and business models very well planned in cooperation with international partners. This implementation certainly requires strong management and human resources competent in running the wheels of business and daily activities.

- Culture level 5.5
- Social level 6.5
- Education level 6.5
- Technology level 5.5
- Business model level 6.5
- Market level 6.5
- Implementation level 6.5
- The maturity level area C: 6.0

4. Conclusions

After conducting the research, the conclusions that gamification consists of four significant categories, namely: (1) Open gamification (OG); (2) Specific gamification (SG); (3) Innovative gamification (IG); (4) Undeveloped gamification (UG). These four categories will help us determine the type of gamification and how to implement it. In this research, we created a formula for gamification, namely $GMF = P.B2. E2. I2. U2$, which functions to combine and produce more detailed categories. There are seven critical categories in gamification, where the last four categories are the big picture, while these seven categories are more detailed sub-categories, including: (1) See; (2) Copies; (3) Old & New; (4) Create; (5) Try; (6) Gamification-National; (7) Global Gamification. Social & smart city profiling are things done in building a smart city in a city/region. Things such as data must be perfect so that implementing SP and SCP can be done perfectly. Smart

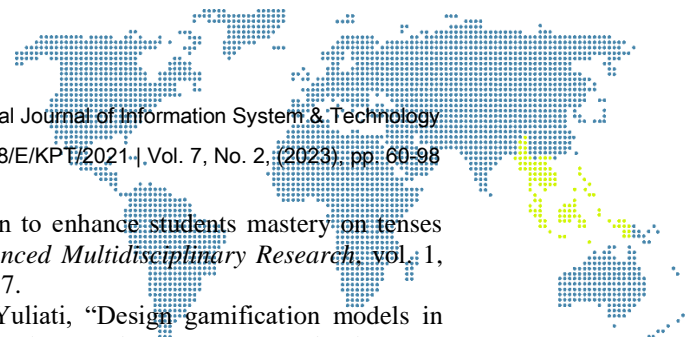


City Maturity Level Mapping (Business model mapping 101) is a new framework that is useful for finding out in detail the profile that must be analyzed first and has answers and solutions. This article will continue on innovation profiling, which is a way to develop innovation in a smart city. The 7s of smart city profiling consists of seven parameters, including culture, social, education, technology, business model, market, implementation. There are seven levels: level 1 none, level 2 unstructured, level 3 initial, level 4 general development, 5 fairly good development, 6 good development, 7 high quality of development.

There are several recommendations for research on this concept, gamification can be combined with board games and metaverse; therefore, the subsequent discussion is to combine these three things, and a framework will be produced. Combining gamification with board games and metaverse will provide many solutions to overcome many things, such as education, psychology, and medicine. Gamification can be flexibly applied to various fields, thus requiring further development that is more innovative and focuses on overall implementation and dynamic use.

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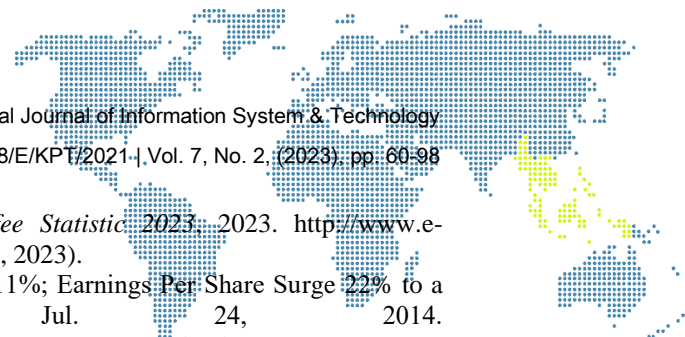
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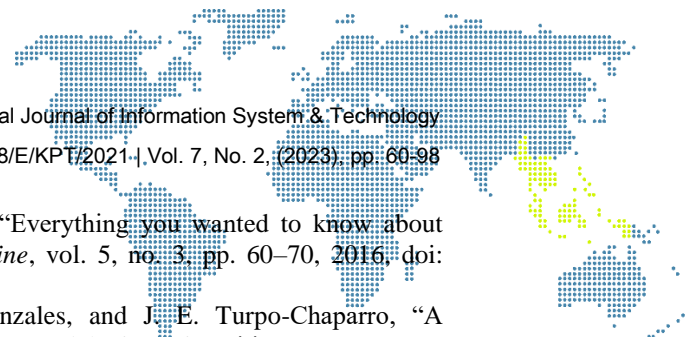
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