



## Unravelling Dynamics: Social Media, Absorptive Capacity, and Organizational Performance

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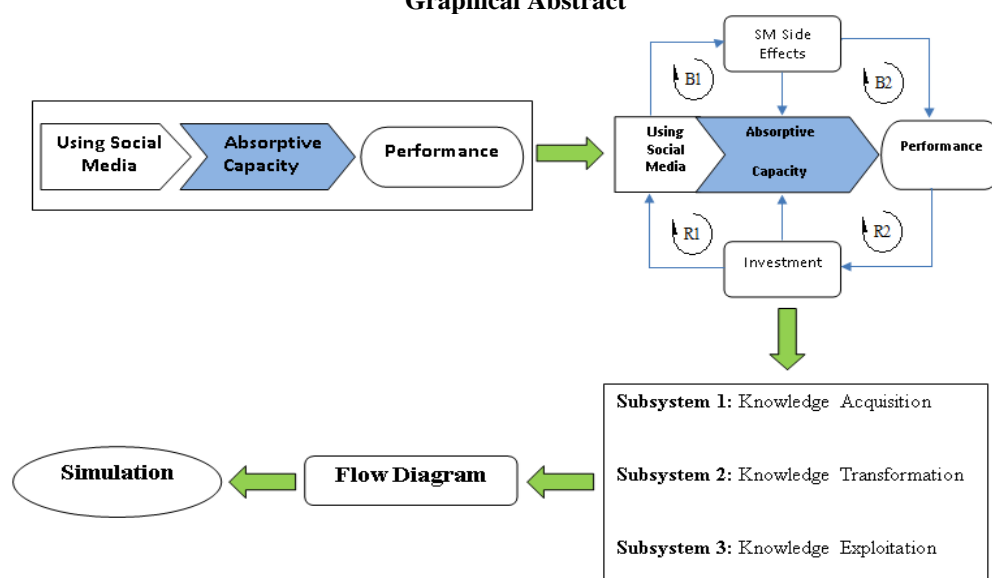
System Dynamics

### ABSTRACT

Nowadays, using social media has expanded in societies and organizations. So the question arises: What are the effects of social media on organizations? It seems the varied effects of social media on organizations altogether form a complex, dynamic system. This study examines this issue with system dynamics to model the dynamic complexity. The concept *absorptive capacity* is used as a mediator to apply the social media effects on the system. Absorptive capacity means the organization's ability to recognize valuable external information, assimilate, and utilize it in the organization, explaining the difference in the performance of organizations. After modeling, using the data obtained from a company active in the Iranian food industry, the relationships between the model variables are defined. To generalize the model, its variables are normalized so that the results can be applicable for different organizations. To improve the current situation, four policies are proposed and exerted to the model. The results demonstrate that proactively managing social media, compared to increasing the investment share of social media, has a more considerable effect on the organization's financial performance and market share.

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### Graphical Abstract



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## 1. INTRODUCTION

Since the advent of social media (SM) in the late 1990s, the number of active users has grown to several billion (1). Statistics at the beginning of 2023 depict that about 4.76 billion of the world's people are using these technologies (2), reaching 6 billion in 2027 (3). Social media users are not only content consumers but can also produce content themselves (4). Individuals frequently utilize social media platforms as an outlet for expressing their opinions regarding published content (5). The content highlights aspects of users' real lives, thus providing organizations with the incredible potential to benefit from it (6).

Today, social media have become so widespread among businesses that they have changed how organizations communicate with their environment (7, 8). Communication through SM promotes competitive advantage by helping network with customers and other organizations (9). Besides, social media have also changed internal processes, thus becoming an essential strategic tool (10). So, organizations should manage their social media to implement new strategies and boost their performance (11).

Despite the high capabilities of SM, their capability for creating business opportunities is not yet fully understood. While many executives have plans to increase their company's social media budget in the coming years; however, the majority of businesses have not achieved the desired results from using social media (12). According to Garcia-Morales et al. (7), social media produces a highly complex, dynamic ecosystem for growth and innovation, not considered in previous research. Thus, we address the following research questions:

1. What opportunities or threats do social media create for organizations?
2. Through which mechanism do social media overshadow the organizational performance?
3. How can we leverage social media to boost organizational performance?

In this research, after showing the complexity of the issue, we gather the various effects of using SM in organizations in a dynamic model, considering system feedbacks. So, by examining the literature and introducing the concept *Absorptive Capacity* (AC) as the main channel of SM influence in organizations, the causal relationships between the problem variables and the existing feedbacks are identified, and a model is built in the form of a Causal Loop Diagram (CLD). The model should be able to predict the effects of implementing different policies on the use of SM. The model is developed into a System Dynamics (SD) simulation model. To formulate the model, we applied the data of a typical organization of Iranian food industry. Then we defined four policies derived from SM variables and

applied them to obtain the best policy according to the results.

The remainder of this paper is arranged as follows. In the next section, we introduce SM effects on organizations based on the existing literature. Then the absorptive capacity and the motivation for using this structure in the model are discussed. Subsequently, we model the problem in three evolutionary phases. The fifth section is dedicated to define the policies and their implementation and analysis. Finally, we conclude the paper.

## 2. AN OVERVIEW OF SM EFFECTS ON ORGANIZATIONS

Social media have democratized the creation and access to content for all its users as they can all contribute to content creation (4, 13). Organizations can create value by receiving a large volume of comments, suggestions, reviews, and other types of content and then exploiting it properly. Apart from consumer information, employees' work-related posts on social media change consumers' evaluations of the organization (14). In addition, studies show that the implementation of communication strategies such as timeliness, responsiveness, and the use of human voice can improve positive relations with stakeholders (15). Social media drastically reduces the customer's distance from the organization. Therefore, perhaps the most prominent consequence of using these media is their impact on customer relationship management. This issue has become so serious that some authors have brought forward the discussion of the social customer and Social CRM (SCRM) (16, 17). Social media values the customer so much that even their opinion is included in the organization's innovations, and this is one of the differences between traditional CRM and SCRM (16, 18).

Nonetheless, Myddleton and Fullwood (19) have introduced SM as a tool for marketing. Social media affects marketing performance through SCRM capability (20). Consumers share information about an organization's products and services through SM, quickly disseminated among users (21). This is electronic word-of-mouth (eWOM), a marketing tool creating a brand image (19, 22). Moreover, using SM for customer service affects organizational reputation (22).

Using SM to communicate with stakeholders has made it a rich source of knowledge that helps better to understand markets and customer feedback (10, 23). Besides this, social media have facilitated access to specialists, especially when grouping people in an organization based on their skills has distanced knowledge resources (ibid). Apart from acquiring knowledge, social media can act as a backer for creating knowledge in organizations (24, 25). Social media affect

the new product development process by facilitating knowledge sharing, idea refinement, idea development about organizational functions, accurate idea screening, and ignoring hierarchical barriers to idea development (26).

Although some of the variables mentioned in the literature can be considered performance indicators, some authors have immediately stated the concept of performance as a result of using SM (12, 27-31).

So far, we have introduced the positive effects of SM, including

- CRM,
- marketing, branding and reputation,
- knowledge acquisition, innovation and knowledge creation, and
- performance.

However, SM brings risks to organizations for reasons such as interactivity, spontaneity, and unedited content (32). First, SM have caused organizational boundaries to fade as a barrier to knowledge transfer (13). Critical knowledge, including business secrets or products developed by organizations, may be compromised using SM (4). Knowledge leakage occurs by SM in various ways, for example, hacking attacks (32, 33) and careless messaging (4, 32).

Second, as much as eWOM can benefit an organization, it can be equally or even more dangerous. Reputations are at stake whenever a negative discussion starts on SM (19, 34, 35). SM is the basis that accelerates the spread of bad news and negative opinions faster than positive ones through eWOM (36, 37). Therefore, the risk of knowledge leakage and losing reputation are two major SM risks for organizations.

The effects of using SM on organizations have been examined in several studies. Most of them have looked the particular effects. In some cases, effects have been introduced from an island perspective and independent of other effects. Moreover, the feedback of variables has not been seen in most models. In most studies, a particular dimension of performance has been considered, while the organization's performance is a multidimensional construct (12). In general, there is no comprehensive model including the different effects of SM- desirable or adverse- on various aspects of performance, considering feedbacks, to allow a better understanding of the issue. In this study, we intend to cover the above gaps using the SD approach.

### 3. ABSORPTIVE CAPACITY, A KEY TO ANALYZING SOCIAL MEDIA DYNAMICS

Absorptive capacity is a concept first introduced in 1980s as the ability of an organization to recognize the value of new information gained from the outside, assimilate it within the organization, and utilize it to achieve economic goals (38). Absorbing knowledge is vital for

the long-term survival of organizations and makes them more profitable (39). To succeed, organizations must exchange knowledge with the outside world and work closely with suppliers and potential markets to innovate new products (40).

AC has been proposed as an alternative to the theories that explain the differences in the performance of organizations (41). According to Todorova and Durisin (42), organizations can make lasting differences in performance against competitors by constantly investing in their absorptive capacity. Therefore, we choose this structure as the main channel of SM influence on the performance and base our conceptual model on it.

So far, several conceptualizations of AC have been suggested, one of the most widely used of which is the 3D model of Lane et al. (43). They looked at AC through a learning lens. According to them, there are two main views on the AC: a funnel that seeks and discovers knowledge; and a pipeline in which efficiency is important and determines how much a company can utilize new knowledge. The first look is at the initial stage of the absorption process and is called *exploratory learning*, and the second look is at the end of this process and is called *exploitative learning*. To connect these forms of learning, it is necessary to combine the received knowledge with the existing knowledge, called *transformative learning*. The triple dimensions proposed by Lane et al. (43) are found suitable for modeling in this study.

### 4. MODEL BUILDING

To start modeling, in the first phase, a simple linear model is built to display the relationship between the main elements. By depicting the primary dynamics of the problem; the model becomes a dynamic model in the second phase. Finally, by adding more variables and loops to the model, more dynamics and complexity of the problem are shown through CLD. At this stage, the absorptive capacity's dimensions will form three subsystems, merged to construct a flow diagram and simulate.

To do the second and third phases, dynamic hypotheses were formed by conducting an in-depth literature review and holding semi-structured interviews with subject-matter experts. Therefore, in the first step, to contextualize the research, related literature was reviewed. The literature review results serve as input for theory building on the system dynamics model (44). The output of the first phase is a skeletal model, useful for data collection in subsequent steps (45). The literature review covered the fields of social media (nature, application, and organizational effects), absorptive capacity (definition, dimensions, and variables involved), organizational performance (financial and non-financial dimensions), as well as causal relationships between

these concepts. The literature review was used as the basis of this research. Then in the second step, to add more confidence in our findings, multiple follow-up conversations by phone, direct and group discussion, and intensive document review were also done. Various data collection methods enhance theory generation by offering multiple viewpoints, detailed information, cross-checking, and robust evidence (45). Key variables and causal relationships between them emerged during the analysis.

Of course, the above steps overlapped and were done iteratively. This topic in conceptual modeling helps to refine and improve the models and, as a result, to build models with more validity.

**4. 1. Model Assumptions** All models are limited and simplified representations of reality (46). Therefore, every model is surrounded by a set of assumptions that determine the model's boundary. These assumptions prevent the modeler from approaching areas outside the research scope. This research also follows this proposition and contains the following assumptions:

- the organization is a manufacturing organization (and not a service),
- during the simulation period, the sale price of the organization's products will be fixed,
- during the simulation period, none of the production machinery and equipment will be changed, replaced, or added,
- there will be no shortage of resources for production,
- the number of employees in the organization will be constant during the simulation period, and
- All the organization's social capital in cyberspace are members of the organization's virtual pages.

**4. 2. Basic Model** The absorptive capacity is the main channel through which SM affects performance. Using SM in various organizational processes plays a vital role in the development and maintenance of AC (41, 47). According to Roberts et al. (47), an organization's absorptive capacity depends primarily on its members' personal knowledge and mental models; they evaluate the environment, bring fresh knowledge to the organization, and apply it to products and processes. Considering the limited rationality of people, new information technologies can help organizations in this matter (ibid). Also, the ability to exchange knowledge and establish internal communication develop AC (41, 48), which can be facilitated using SM (12, 19, 29, 41, 49).

Moreover, AC changes organizational performance. The relationship between AC and performance is such that the difference in the performance of organizations can be found in the difference in their absorptive capacity of knowledge (41). Continuous investment in AC, which can be operationalized as R&D costs, leads to sustainable performance differences (42) that manifest as higher

profitability (39, 40) as well as improved non-financial performance such as higher customer satisfaction levels and faster time to market (40).

Figure 1 depicts the basic model of the relationship between SM use and performance.

**4. 3. Dynamic Nature of the Problem** At this phase, the cause and effect in the previous model are swapped. That is, the organizational performance, which was an effect, becomes a cause for improving the AC and using SM. Therefore, we encountered feedback loops that are the basis of the dynamics of the problem.

The dynamic model of SM effects on the performance of organizations is shown in Figure 2. The diagram is presented in the form of a simple CLD. CLDs are tools for systems thinking that help display the feedback structure (46). A CLD contains variables connected by arrows that represent causal relationships between them. The two reinforcing and balancing feedbacks that create the dynamics of systems are characterized by R and B, respectively. The former is a loop in which the change of any variable in any direction is intensified by other variables in the loop in the same direction. In the latter, the change of each variable within the loop is controlled by other variables and goes to balance. The diagram includes five variables: Using Social Media, Absorptive Capacity, Performance, SM Side Effects, and Investment. The path of Using Social Media-Absorptive Capacity-Performance is the same as we introduced in the previous phase. In addition to performance feedbacks, the variable *SM Side Effects* has been added to the previous model. As a result, four loops will be formed: two reinforcing loops (R1 and R2) and two balancing loops (B1 and B2).

**4. 3. 1. Loop R1: Using Social Media- Absorptive Capacity- Performance- Investment** Considering that a share of the organization's profit is devoted to investment in SM, improving financial performance (FP) leads to an increase in this investment. This investment is spent on items like installation, support, employee training, content creation, and digital infrastructure, thus increasing social media use at the organizational level. Other causal relationships were described in the basic model.

**4. 3. 2. Loop R2: Absorptive Capacity- Performance- Investment** In the previous model, we described the effect of AC on performance. On the contrary, the organization's financial performance can lead to the improvement of AC due to the investments in R&D. The effect of R&D investment on AC is so great that Cohen and Levinthal (48) consider it an antecedent of AC (43). Organizations should seriously invest in R&D to complement their AC capabilities (50). According to Marrucci et al. (51), knowledge acquisition (exploratory learning) can occur due to investment in



Figure 1. The linear model for the problem

R&D. Also, a firm's ability to exploit external knowledge often develops as a by-product of its R&D activities (48). Therefore, a part of the organization's financial performance allocated to research and development leads to the improvement of AC.

Apart from the absorptive capacity, there is also a detour channel formed after the organization uses SM: the side effects of SM. The side effects include the risks and costs of social media. The speed of spreading SM is so much that organizations do not have time to understand its risks (4). Furthermore, there is a trade-off between opportunities and threats of SM such that if a manager finds the use of SM risky, the organization is less likely to use it (33). This highlights the complexity of the problem. By adding SM Side Effects, two more loops are attached to the model (B1 and B2).

**4. 3. 3. Loop B1: Using Social Media- SM Side Effects (Risks)- Absorptive Capacity- Performance**

In a highly competitive environment, an organization's knowledge assets are critical to maintaining its competitive advantage (52). Knowledge leakage through SM occurs in various ways, such as hacker attacks and negligence in sending messages (4, 32, 33). A 2021 survey revealed that nearly 3/4 of the world's organizations have experienced at least one social media attack (53). Imitation of organizational innovation by competitors is a threat that jeopardizes investment in R&D (54). In other words, knowledge leakage hinders practical innovation. The more innovative an organization is, the more capable it is in continuously creating products and improving processes (7). The endangered innovation in an organization jeopardizes the exploitation of knowledge as one of the AC dimensions (43, 55).

Other causal relationships were described earlier in loop R1.

**4. 3. 4. Loop B2: Using Social Media- SM Side Effects (Costs)- Performance**

Entering the web and especially social media will create costs for the organization over time. These costs include website support, bandwidth, managing the organization's virtual pages, and upgrading user behavior analysis software. For example, the purchase and support price of some software packages, such as Hotjar, changes according to the number of users (56). The increase in SM costs has the opposite effect on financial indicators of performance (such as profit). This is the cause of creating a negative loop (B2).

This loop closes with performance feedback on Using SM, as described earlier.

**4. 4. Model Expansion** In this phase, the previous model is extended. For this, we broke the problem into three subsystems derived from the dimensions of AC and extended causal relationships in each one.

In each model, there are delays displayed as two parallel lines on the arrows. This means that the dependent variable does not immediately reflect a change in the independent variable. Delays are crucial to show the dynamics of the problem (46) and make it difficult to predict the system's behavior (57). Also, a dashed arrow indicates an information link, required to formulate the final model. Eventually, numbered variables are exogenous ones whose value is determined by another subsystem. The number inside <> is the subsystem number.

**4. 4. 1. Subsystem 1: Knowledge Acquisition**

What happens here is the acquisition and entry of external knowledge into the organization, strengthened through SM. So, the organization should consider amounts as investments, borrowed from *financial performance* (FP → Investment → SM investment). The SM investment, spent on things like planning, choosing appropriate technologies, establishing digital infrastructure, training employees, and support, would elevate organizational maturity in SM utilization (SM investment → SM maturity). The maturity shows the effectiveness of efforts in implementing and developing SM. In the first level,

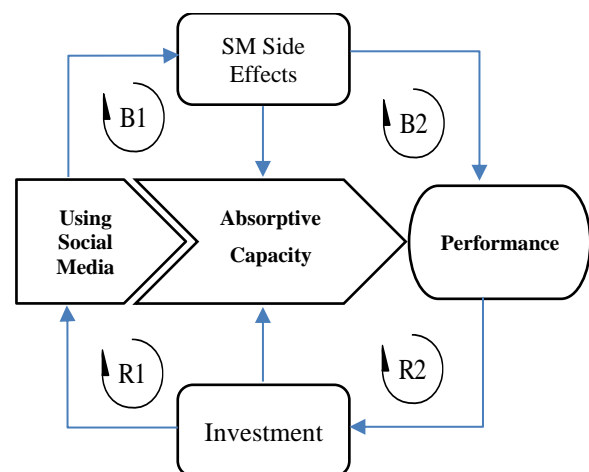


Figure 2. The dynamic model for the social media effects on organizational performance

the organization introduces itself to external users by creating an account in cyberspace. Next, the organization develops its user accounts and presents itself and its products. Finally, by providing the proper infrastructure, the organization enables its employees to use cyberspace and social media. However, money alone cannot bring SM efforts to the desired result (12). Items like a developed strategy for using SM, the variety of the organization's social media (58), the quality of its pages, internet speed and bandwidth play a fundamental role in *SM investment effectiveness*, as it enhances user engagement. So, *SM investment effectiveness* also affects *SM maturity*. The higher the organization's SM maturity level, employees will use social media more and more useful (SM maturity → Internal use of SM). In addition to systemic factors, investing in high-quality personnel and training, after a while, strengthens Human Resource Capabilities (HRC) for effective SM use (Figure 3).

One of the applications of social media is information search (59, 60). Through this, people can search social media space for the knowledge they need and broadcast it in the organization's virtual channels and forums (41). Social media is a powerful tool for knowledge exchange, especially with knowledge holders (19). As a result, internal use of social media leads to knowledge acquisition.

Also, developing customer relationships amplifies innovation processes and enables organizations to harness knowledge from customers (18, 61). The knowledge comprises customer needs, customer knowledge, and market conditions, which can be processed for use by organization's departments. Of course, technological advances have enabled organizations to interact with customers more effectively and efficiently, which has increased the speed and effectiveness of responding to customers (18). The prominence of the customer's role in organizations through SM has prompted some researchers to point out the context of SCRM (16, 17). SCRM expands the organization's understanding of markets and customers and brings a large amount of knowledge (SCRM performance → Knowledge acquisition), which will ultimately affect the organization's performance. The knowledge results from the opinions and views of customers in SM, spread by eWOM. eWOM is the sharing of consumers' opinions about products, brands, and organizations through the web (62). By producing positive and negative comments, customers evaluate the organization and its products. So the more eWOM, the more valuable content is provided to the organization (P-eWOM (and N-eWOM) → Valuable user content).

Satisfied customers share their positive opinions about the organization and its products with others, resulting in positive eWOM (P-eWOM). Conversely,

customer dissatisfaction with product defects is the precursor to their complaints (63). These complaints are expressed as negative comments and posts on SM and spread quickly, generating Negative eWOM (N-eWOM). In the model, the customer complaint equates to negative satisfaction (Figure 3), as there is an inverse relationship between the two (63, 64).

User-generated content can improve customer relationship performance when properly managed by an organization (58). The organization may respond to the doubts and criticisms through their active and constructive presence in cyberspace interactions and complying with the principle of customer orientation, solving their problems, apologizing where necessary, and informing betimes. Thus, clarification is made, and mutual trust is established between the organization and the customer. This improves SCRM performance (18). So, the *active management of SM* is placed in the model as an organizational policy related to SM.

Also, investment is necessary but not sufficient for growth of CRM; instead, some organizational capabilities are required (11). The effectiveness of CRM activities largely depends on how well the organization is structured around customer groups (65). This issue contributes to the customer-oriented culture in the organization and guarantees that the organization's activities are driven by the customer's needs (17). The alignment improves CRM performance because: first, the organization will have a better understanding of the customers' needs, leading to a proper response to their needs; Second, by facilitating the implementation of information systems, it increases the motivation of employees and accelerates the information sharing at the organization (17). Therefore, the *structure's customer-centricity* is included in the model<sup>1</sup>.

P-eWOM leads to the accumulation of social capital for the organization in the social media environment (On the contrary, N-eWOM reduces the social capital). This capital, Social Media Capital (SMC), is a valuable resource that underlies any benefit from SM engagement and can be leveraged to achieve organizational outcomes (67). By supporting user interaction, SM strengthen trust and common language between them (68), increasing word-of-mouth behavior about the organization's products, and in addition to consolidating existing social ties, it creates new ties raising social capital (69). The relationship between SMC and eWOM is not one-way, but the former likewise affects the latter (R3 and B3). Wang et al. (69) have demonstrated this in their research on how different dimensions of social capital affect eWOM. Also, eWOM relates to customers' behavior using social media (70). If they establish strong ties with others, their opinions increase in importance and escalate eWOM (71). The variable *involvement* in the model,

information, technology, and applications (66), marketing activities can also be defined under SCRM.

<sup>1</sup> Since CRM is known as the cross-functional integration of processes, people, operations, and marketing capabilities that are empowered by



Apart from SM, some of the knowledge is acquired from other sources, such as buying new technology or information.

As such, the first subsystem's CLD is formed (Figure 3). In the subsystem, the internal use of SM and social media capital, by creating content, apply the SM's effect.

#### 4. 4. 2. Subsystem 2: Knowledge Transformation

In this subsystem, common knowledge acquired is assimilated and transformed into exclusive and usable knowledge for the organization. So, the knowledge acquired from the first subsystem is poured into *knowledge storage*<sup>2</sup> after the assimilation process. Assimilating knowledge means analyzing, interpreting, and understanding acquired knowledge from external sources (55). The more knowledge an organization receives, the better insight it will obtain about markets and competitors, supporting the understanding and interpretation of new external knowledge (72). The greater the capacity to absorb knowledge, the more acquired knowledge is assimilated (38). As a result, *knowledge acquisition* and *absorptive capacity (AC)* directly improve *Knowledge assimilation*. Considering that the ability to evaluate and use external knowledge is a function of the level of related previous knowledge (40, 41, 48), knowledge storage is a context for improving absorptive capacity. By establishing this causal relationship, R5 is created (Figure 4). In addition, financial support and organizational capabilities help strengthen AC. Financial support through R&D investment increases absorptive capacity (48, 50, 51). This issue was explained in the dynamic model of the second phase.

Also, organizational learning (OL), the ability of an organization to continuously transform experience into common knowledge (73), helps the organization learn in interactions with the environment and apply it in the future (74). Therefore, from the perspective of organizational capabilities, organizational learning directly affects the organization's ability to absorb and exploit knowledge (absorptive capacity) (43, 55). To reach organizational learning, the knowledge and experience of individuals should become common knowledge (73) (KS → OL). Organizational learning and knowledge sharing (KS) are closely related so that knowledge sharing maintains the learning flow throughout the organization and integrates it for practical applications (75). KS is formed based on three categories of variables: management, communication, and trust (76). One of the important tools of management to influence knowledge sharing is reward systems (*KS incentives* in the model). From the communication aspect, SM, as communication technology, is a platform

that facilitates knowledge sharing and user participation (77). But, more consequential than these two, the organization's atmosphere for participation provides the ground for knowledge sharing (78), referred to in the model as Organizational Culture of Participation (OCP).

For developing OL, the role of people in the organization is also considerable (74). Expertise and skills serve as a foundation for creativity in organizations (77), which is enhanced by challenging the existing routines (79) (HRC → OL).

However, *knowledge storage* is completed through another route, also: knowledge creation (Figure 4). Research reveals that organizational knowledge affects knowledge creation, straight (80, 81), making R4. An organization with more breadth of knowledge has more chances to develop existing knowledge and create new knowledge. In this regard, the R&D activities, strengthened by investment, help the organization create knowledge (81, 82).

Also, knowledge comes out of the organization through two channels (Figure 4). First, social media have provided a context for knowledge leakage by increasing the probability of hacking and stealing the organization's information (32, 33). *Knowledge leakage risk*, rises when the organization's SM user account is connected to many users (SMC → Knowledge leakage risk). Every user can be a potential hacker to harm the organization's information security and leak a percentage of the knowledge (B4).

Second, knowledge depreciation, as an exogenous cause, removes knowledge from the organization. Knowledge depreciation occurs when the knowledge gained from past experiences does not continue but is depreciated over time (83), for reasons such as employee departures or technological changes (84). As some of the knowledge stock is depreciated, B5 is created.

With these words, the second subsystem is built (Figure 4). In the subsystem, SM exerted its effect directly by aiding to share of knowledge and indirectly increasing the risk of knowledge leakage.

#### 4. 4. 3. Subsystem 3: Knowledge Exploitation

Organizations exploit the absorbed knowledge by predicting technological trends, reconfiguring existing capabilities, and creating innovative products (47). The performance of the organization belongs to this subsystem (Figure 5).

The general function of this model is as follows: the existing knowledge and HRC help improve the Innovation Capability (IC), causing the subsystem dynamics. First, by developing new products and improving the process, it causes differentiation, and then, indirectly, sales, and finally, financial performance. FP is

<sup>2</sup> knowledge storage is the special non-common knowledge of the organization, including the explicit knowledge and the tacit knowledge.



the source of reinvestment. Besides, IC reduces costs by improving the process capability. This increases the financial performance directly and indirectly (by enhancing the *competitive advantage*). A more detailed description of these follows.

Some researchers have highlighted innovation-related performance as an output of absorptive capacity (40, 43, 55). Innovation capability is the organization's

ability to continuously transform knowledge into new products, processes, and systems (7). Through AC, companies transform external knowledge into their innovations (85) (AC → IC) because AC relates to learning processes, skills accumulation, and knowledge transfer (86). Innovation relies not only on organizational capabilities, but also on motivated, trained employees challenging established routines quo to create

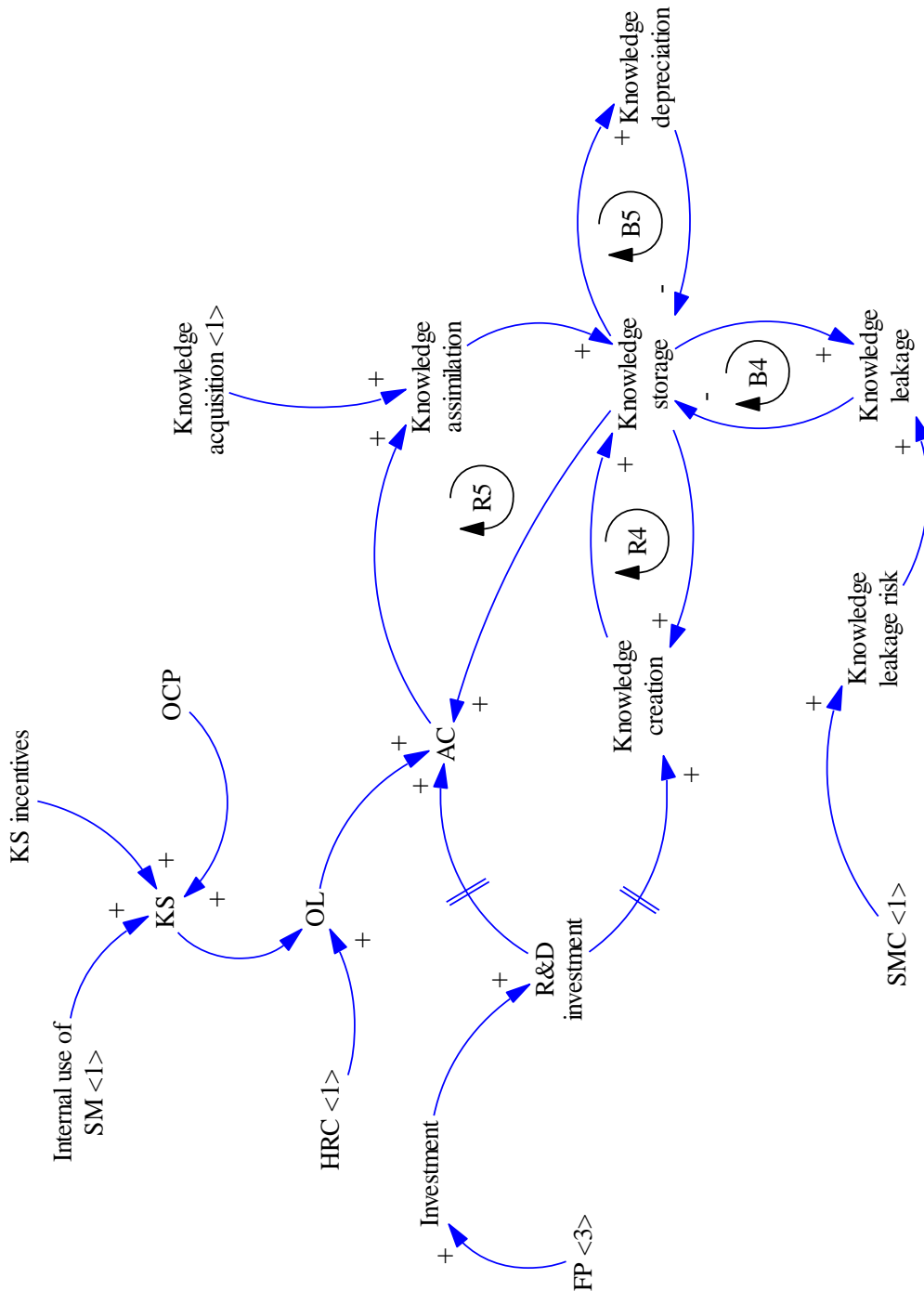


Figure 4. Subsystem 2, knowledge transformation

knowledge (87) (HRC → IC). The social media effect can also be seen here. Creating products requires uncovering new ideas from obscure and unrelated information sources (49), where social media plays the role of this source. So, AC and social media use enhance HRC's role in innovation.

IC often shows its effect in two ways: *product innovation*, including physical products and services, and *process innovation*, including production processes and related technologies (88). Process innovation can be done to reduce unit costs of production or delivery, and increase product quality (88, 89). Therefore, process innovation gives the organization a capability, *process capability*, through which the organization can improve the quality of its product or reduce its costs by reducing waste. Of course, because production machines process an essential part of production processes, their depreciation can harm the capability, as depreciated machines have high downtime and low efficiency (Figure 5). The greater the share of machinery, the greater the extent of depreciation. So, we will have B6.

Porter's generic model proposes two main approaches for establishing competitive advantage: cost leadership and differentiation (90). The first means minimizing costs to protect the organization against influential buyers and suppliers (91). The last means creating a distinction in products or services to be perceived as unique in the market (92). Hence, product innovation and product quality differentiate the organization from competitors (93), and as a result, it affects *competitive advantage* along with *costs*. Further, Customers are attracted to companies with a more competitive advantage, leading to higher market share (94). A more significant *market share* leads to more significant *sales* (46), improving *revenue* and *financial performance*, respectively.

Customer relationship management aims to manage real customers and deliver value to create value through defined value propositions (18). By offering superior services to customers, the organization can distinguish itself in customers' eyes (95), strengthening differentiation. *Differentiation* has another input called brand value (BV) (92, 96). Customers tend to pay higher prices for premium brands, which naturally have higher value (97). According to Porter (91), differentiation is an insulator against competitors due to customers' loyalty to the brand and, thus, less sensitivity to price. Of course, BV itself is derived from the differentiation, and these two are posited in a reinforcing circle (R6). High differentiation creates a better image of the organization in society, increasing *brand value* after a while because the brand value is the value offered by the organization

to the target customers (98). In addition, the study of Stojanovic et al. (99) demonstrated that brand awareness through social media affects other dimensions of brand equity. As a result, increasing SMC leads to enhanced brand value due to heightened brand awareness (SMC → BV).

In addition to creating a competitive advantage, *differentiation* directly leads to *customer satisfaction* due to increasing perceived performance (100). Satisfied customers are more willing to purchase the organization's products, so they increase *sales* (Figure 5).

However, despite the apparent dominance of positive loops, side effects push the model toward equilibrium. Spending more on innovation through R&D investment does not guarantee sales increase (101); high expenses may not be recouped for product development or process improvement; for example, the market may not welcome the new product. This risk can be calculated in terms of cost (Innovation risk → Innovation cost), and the higher it, the higher the costs, which may deter the organization from the desired innovation. Also, managing SM platforms becomes costlier with an increase in SM capital increase because the organization should respond to a larger volume of users. The price of some user behavior analysis software, such as Hotjar, changes pursuant to the volume of users (56). Likewise, these costs are higher when the organization has adopted an active management approach in the SM sphere. For this, it is necessary to train the relevant personnel to be active, interactive, and responsive in SM. All these have been seen as *SM costs*. The sum of these two costs (*innovation risk* and *SM costs*) makes the innovation cost because both have arisen in line with innovative changes in the organization.

Regardless of these costs, the organization incurs production costs. The greater the ability of the processes to reduce production unit costs, waste, or production time, the lower the production cost will be. This inverse relationship has been pointed out in some researches (e.g. (88, 89)) (Figure 5).

Here, the construction of three subsystems related to the research problem ends. By integrating those through joint variables, a comprehensive model is built<sup>3</sup>. The primary loops of the model, presented in the second phase, appear in the final model with more details. Table 1 shows each one with their functionality and constituent variables. As the table shows, loops R1 and R2 strengthen the amount of social media investment and knowledge absorptive capacity, respectively, while loops B1 and B2 move the model toward equilibrium by increasing the risk of knowledge leakage and organization costs, respectively.

<sup>3</sup> Due to a comprehensive representation of the flow diagram in the next section and for brevity, we refrain from showing the final causal loop diagram, here.

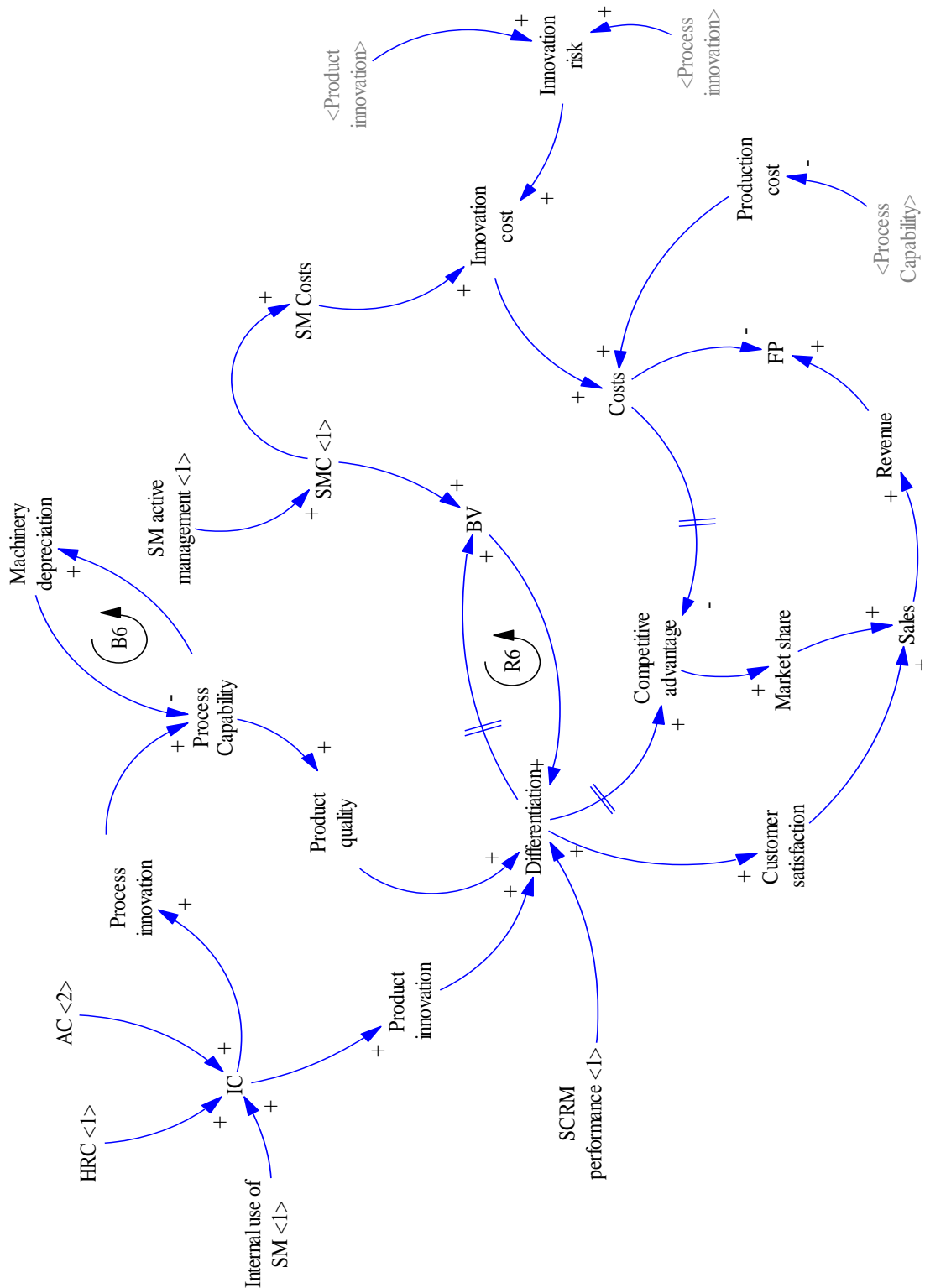


Figure 5. Subsystem 3, knowledge exploitation

Other loops are also formed after connecting the subsystems, and we are satisfied with the most important ones. Vensim modeling software displays about 310

loops in this model, illustrating the complexity of the problem. Balancing loop B7 among others curbs

innovation's growth and performance enhancement while escalating costs:

Investment → (after some dynamics) AC → IC → Process innovation (and product innovation) → Innovation risk → Innovation cost → Costs → FP.

Our model features aspects, e.g. financial performance, customer satisfaction, innovation capability and process capability, corresponding to balanced scorecard measures.

**4. 5. Flow Diagram**

Causal loop diagrams focus on feedback, while stock and flow diagrams highlight physical structure (46). Stocks and flows are prominent in the latter. Stocks ascertain system status and generate data for decision-making. Flow variables have time dimensions, enabling changes over time. Based on this, the flows and stocks of the model are defined as follows:

- Due to the importance of performance in the problem and the fact that a system's performance indicates the system's current state, *financial performance* is considered a stock. If the accumulated profit measures that, the annual revenue will increase it, and the annual expenses will reduce it. Therefore, *revenue* and *costs* are its flows.
- The *process capability* does not change momentarily and is created (or deteriorates) with time, so it is placed in the diagram as a stock. Also, the variables *process capability improvement* and *Machinery depreciation* are defined as *process capability* flows. The *Machinery depreciation rate* is also needed to calculate the depreciation.
- *Knowledge storage*, regardless of its nature as an accumulation, has a particular gravity in this problem because the model is based on the knowledge concept *absorptive capacity*. Thus, the absorption and creation of knowledge are its inflows, and the depreciation and leakage of knowledge are its outflows.
- From the first subsystem, with the same reasoning as before, the *acquired knowledge* as a stock with *knowledge acquisition* as a flow is added to the model.

Finally, considering the definition of the problem around SM, SMC, representing the organization's social capital in SM, is selected as a stock. SMC is fed from two paths. Therefore, the flows *Attracting SMC through eWOM* and *Attracting SMC through SM maturity* are added to that.

Because a flow diagram prepares the model for formulation and simulation, other changes have been made, the most important of which include the following.

First, according to the different impacts of positive and negative comments in attracting or estranging social capital, two variables are added to determine the amount of this impact as an input for *Attracting SMC through eWOM*, titled *Impact factor of positive comments* and *Impact factor of negative comments*.

Second, the effect of *customer satisfaction* on *sales* is parallel to the effect of *competitive advantage* on *sales*. Both are branched from *differentiation*, so the former can be eliminated due to its redundancy.

Third, the *production cost* is an endogenous variable that takes its effect from the *process capability* and has a reverse relationship with it. However, the cost increases by increasing production, while no variable represents the amount of production. For the sake of simplicity and not leaving the system boundary, it can be assumed that the production cost is proportional to the number of *sales*. Therefore, to calculate the cost, an information link connects *sales* to *production cost*. Also, *active management of SM* is useless if the organization does not have a presence in cyberspace. So an information link from the *SM maturity* is needed to address this issue. Figure 6 displays the flow diagram of the problem.

**4. 6. Model Formulation**

To formulate the model and implement the policy, we used the data of a typical organization in Iran's food industry, producing sesame products and selling part of its products online. The organization's online services are introduced and reach customers through Facebook, Instagram, and its dedicated website. The real data of the organization were

**TABLE 1.** The primary loops of the model

Loops	Functionality	Constituent variables
R1	SM Investment	SM investment → SM maturity → Internal use of SM → KS → OL → AC → IC → Product innovation (Process innovation → (Process Capability → Product quality) → Differentiation → Competitive advantage (Customer satisfaction) → Sales → Revenue → FP → Investment
R2	Reinforcing AC	R&D investment → AC → IC → Product innovation (Process innovation → Process Capability → Product quality) → Differentiation → Competitive advantage (Customer satisfaction) → Sales → Revenue → FP → Investment
B1	Knowledge Leakage	SM investment → SM maturity → SMC → Knowledge leakage risk → Knowledge leakage → Knowledge storage → AC → IC → Product innovation (Process innovation → Process Capability → Product quality) → Differentiation → Competitive advantage (Customer satisfaction) → Sales → Revenue → FP → Investment
B2	Rising SM costs	SM investment → SM maturity → SMC → SM Costs → Innovation cost → Costs → FP → Investment



To determine the relationship between the variables, three methods were used:

- the names of some variables express the relationship between the inputs. For example, *SM investment* is the product of *SM portion of investment* and *investment*.
- through analysis, it is possible to discover the logic of relationship between the input variables. Wherever the variables of the cause strengthen each other to create the effect, their product can be used; wherever the presence of one of the causes without the others is meaningless and ineffective, the product can be used; wherever the causes act independently and the existence of none of them is another precondition, the summation can be used. For example, if we consider *OCP* as a platform for *knowledge sharing*, the role of *KS incentives* and *Internal use of SM* is to intensify the effect of this platform. According to this logic, the relationship between these inputs can be defined as a product. Of course, here the opinion of subject experts was the basis of the established relationships.
- using reference functions such as lookup. These functions are formed using a table of values of independent and dependent variables, including points of the main unknown function, compatible with reality. These points are usually obtained using experts' opinions. Such functions are usually used where the variables of the function are qualitative and dimensionally unrelated, such as the effect of *Differentiation* on *Customer satisfaction*.

Of course, depending on the situation, a combination of the above methods may be used. It should also be noted the experts whose opinions were applied in modeling and formulation have experience and expertise in the fields of SD modeling (two people), social media (one person), digital marketing (one person), and organizational innovation (two people).

In constructing the basic model, we have employed the concept *absorptive capacity*. Absorptive capacity is an organizational capability that is not limited to any specific industry or organization. Therefore, the basic model is general. Furthermore, as observed, the construction of CLDs and flow diagrams heavily relied on the background research. These studies, which are mainly extracted from reliable journals and other sources, contain theories that form the theoretical foundations of the model. These theories do not have a bias towards any industry or specific field. Thus, it can be said that the CLDs and flow diagrams are also general.

Moreover, to make the formulation and so the simulation output general, the model variables have been normalized to ensure that they are not sensitive to the case study data. This was done by normalizing financial performance and its rates, sales, knowledge storage and its rates, as well as social media capital and its rates, and then making the necessary adjustments to the lookup functions.

Hence, any organization in any industry that does not violate the model assumptions can take advantage of the simulation results by applying the necessary measures.

Currently, about 6% of the annual profit of the organization is allocated to the different investments, of which social media share of it, 24%, CRM, 25%, R&D, 25%, human resources, 25%, and other sources of knowledge acquisition is 1%. The market share of this organization shows a growing trend from the beginning of 2018 to the beginning of 2022 (Figure 7). However, the general trend seems to be S-shaped. This behavior is due to a combination of positive and negative loops in the system, which causes the market share to grow well at first. Still, negative loops (especially B6) gradually reduce the organization's financial resources by increasing system costs. And as a result, they control the market share. The market share can be considered as a reference mode, and the simulation results can be compared with it.

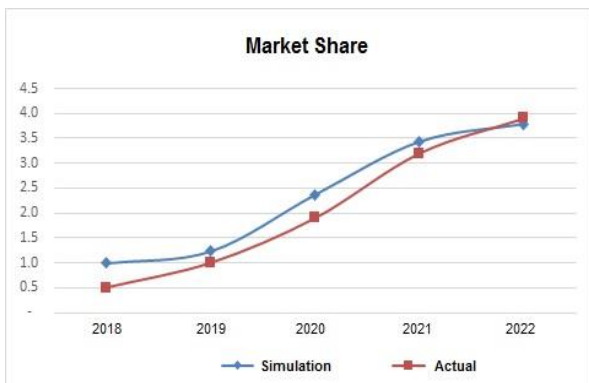
## 5. POLICY ANALYSIS

To improve the current situation, policies must be defined and implemented; then the simulation results should be compared to determine the best policy. According to the problem, we define the following policies around two exogenous variables related to social media, *SM portion of investment*, and *Active management of SM*:

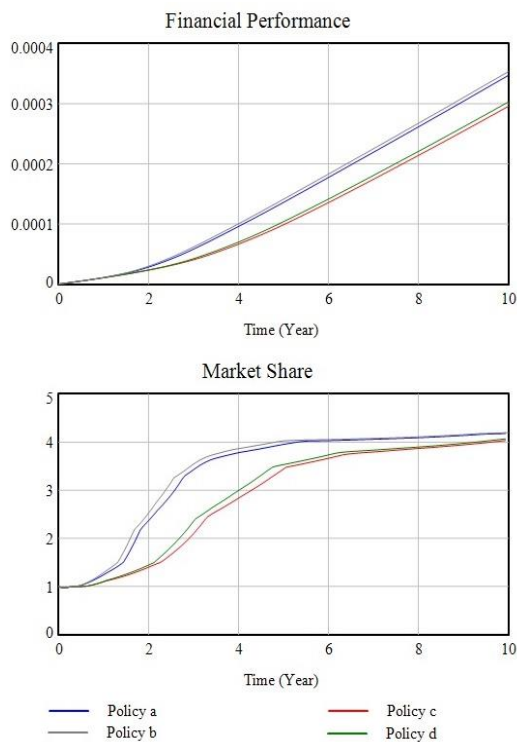
- a) the status quo continues,
- b) the organization moves towards the active management of SM (the relevant variable is defined in three levels, low, medium, and high, and is now in the middle state),
- c) considering that SM has been introduced as a suitable tool approaching and communicating with the customer, a significant share of CRM investment is allocated to SM, and
- d) alongside increasing the share of SM, the organization actively manages its social media.

Vensim PLE version 7.3.5 software is used for simulating policies and sensitivity analysis. To this, defining a time horizon before the simulation is necessary. According to the reference mode, it can be said that the problem has been formed for about five years since 2018. Assuming the influence of policies at the same time, the simulation period can be 10 years until the start of 2028. The graphs below depict the results of running the policies for *financial performance* and *market share* (Figure 8).

Due to the slight difference between the actual and simulation graphs (Figure 7), it is possible to use the current situation simulation graph to compare the results of different policies.



**Figure 7.** The upward trend of the organization's Market Share from 2018 to 2022



**Figure 8.** Simulation results of four proposed policies. Above: Financial Performance, Below: Market Share

As all graphs show, regardless of policies, the market share will have an upward trend, but its growth will decrease in the final years of the simulation. Also, the upward trend for financial performance will be maintained, with the difference that the slope of the accumulated profit will gradually increase. This is because the growth of the organization's revenue will be more than its costs.

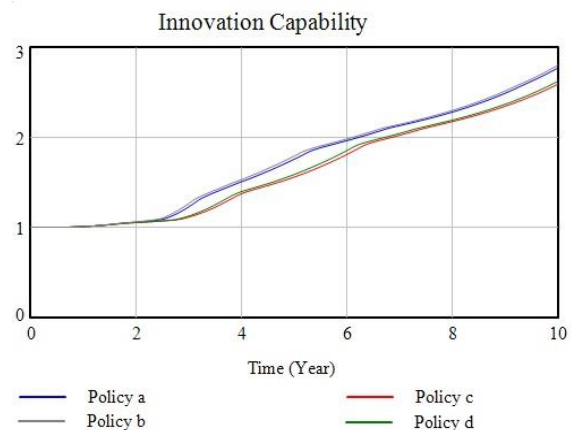
The graph above represents c and d as the worst policies, where the organization has prioritized SM over

<sup>1</sup> The seven-item scale employed in Garcia-Morales et al. (7) has been used to display the values of innovation capability.

CRM. According to the above graphs, these two policies will reduce financial performance at least 12.7% in the tenth year compared to the first policy. Although, in the long run, policy d shows a slight growth compared to c, this difference is not so significant. These results prove that though social media helps the organization to attract customers and knowledge, it is the management of customer relationships that provides the necessary base for attracting and retaining customers, and from there, it helps to attract more customers by improving customer satisfaction. Therefore, CRM cannot be ignored when social media enters the organization. Instead, the role of social media is critical as an amplifier, not a base, upping SCRM performance, differentiation, and, ultimately, market share. Therefore, policies a and b, in which a balanced combination of CRM and SM efforts, give better results to the organization.

SCRM performance not only directly increases the organization's differentiation from competitors but also indirectly enhances it by improving innovation capability (Figure 9). This conclusion can be traced back to the investment variable. The general trend of this variable is similar to financial performance, as it is a proportion of it. The space between the first and last two policies is revealed almost from the second year on the financial performance (Figure 8). The space brings more funds into the organization's human resources and R&D, improving innovation capability, albeit with a delay (Figure 9). The capability grows the number of innovations, leading to more differentiation.

Meanwhile, policy b, according to which there is no change in investment policies, brings the organization to the best result among the available policies so that in the 10th year, financial performance compared to the policy *the status quo continues* 1.8% will grow. While the organization values CRM and social media equally,



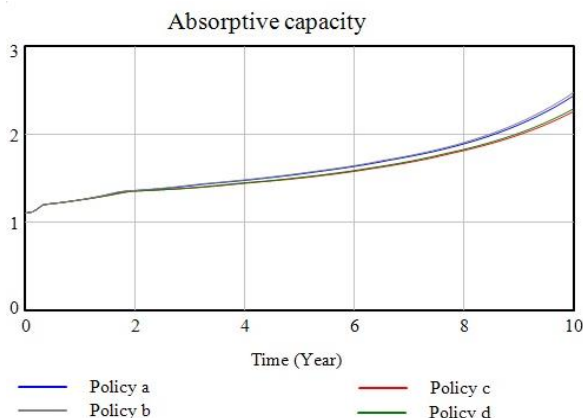
**Figure 9.** Innovation Capability changes according to the four proposed policies<sup>1</sup>

adopting a proactive approach to interacting with cyberspace users achieves greater accountability and transparency, leading to customer trust. This approach increases *market share* by directly improving SCRM performance, even as SM costs increase. Therefore, the organization can make positive changes in its performance by modifying how it is present in the SM environment and how to manage them instead of allocating more financial budget to that.

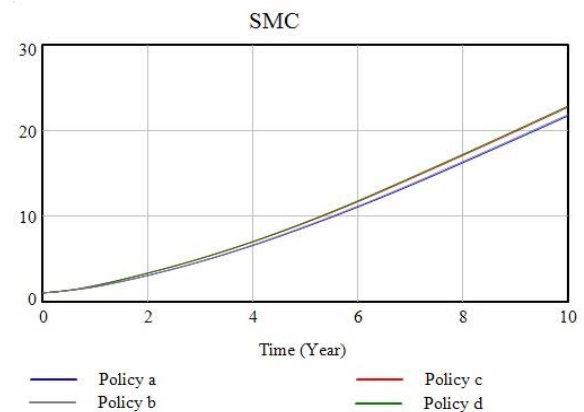
Amidst all of this, one must not overlook the role of absorptive capacity in regulating organizational performance, as absorptive capacity is essential for explaining the performance of organizations. The first and second policies, which focus more on CRM, contribute significantly to strengthening absorptive capacity (Figure 10). Improving the performance of SCRM (through active management of social media) increases the absorption of market and customer knowledge, thereby improving the organization's knowledge storage, which is the main foundation of absorptive capacity. Moreover, after strengthening absorptive capacity, a greater portion of the organization's profit is allocated to R&D investment (another factor in strengthening absorptive capacity) and human resources (the basis of organizational learning) and thus contributes effectively to absorptive capacity.

However, the outcome of the organization's effort in applying SM can be found directly in *SM capital*. The graph of Figure 11 depicts its change trend for four policies.

The third and fourth policies outperformed the previous two in attracting social capital by attaining high social media maturity levels quickly through increased investment. According to the model, the organization at high maturity levels can attract more SM users. Furthermore, the fourth policy has taken the lead from the third policy by utilizing proactive management of social media, which leads to greater customer satisfaction.



**Figure 10.** Absorptive capacity changes according to the four proposed policies



**Figure 11.** SM capital changes according to the four proposed policies

## 6. DISCUSSION AND CONCLUSION

In this paper, we proposed a dynamic model to investigate the effects of using SM on the organization's performance. To maintain their competitiveness, organizations should manage SM to implement new strategies and improve their performance. Although much research has been done on the effects of SM on organizational performance (104), SM's potentials to create business opportunities or threats are not yet fully understood. Also, as we demonstrated, the effects of SM on performance are not linear and direct and include dynamics that have not been considered in previous research.

To build this model, we used the concept of absorptive capacity as a mediator between SM and the organization's performance. The difference in the performance of organizations may be explained in terms of the difference in their AC (41). As a result, if SM is effective on organizational performance, then it has to exert its effect through the AC. We started with a linear model that includes three variables *Using SM*, *Absorptive Capacity*, and *Performance*. To show the effect of SM on AC, we used the 3D model of Lane et al. (43) and showed the effects of using SM on its different dimensions.

In the second phase, by describing the effect of performance on AC and using SM, which leads to the formation of feedback loops, we demonstrated that the problem is inherently dynamic. Therefore, the SD approach was considered a suitable method for modeling. Also, the risks resulting from using SM were added to the model at this phase. As a result, a more comprehensive model was made than the previous research.

As the model developed and more components were added, the dynamics and complexity of the problem became more apparent. The triple dimensions of AC helped us to construct three subsystems and continue modeling for each. These small systems revealed the dynamics and complexity of the problem from two



aspects: first, by displaying the new feedbacks created in each one. Second, the delays in the problem appeared in some cause and effect relationships. After connecting the subsystems, more feedbacks displayed themselves.

The final model was converted into a flow model to be formulated and simulated. Four policies related to SM investment and management were defined and implemented using data from a typical organization in the food industry in Iran. The simulation results illustrated the high importance of SM space management compared to the investment. While previous research only highlights the impact of using social media, we concluded that the way this technology is managed is an important factor in the effectiveness of its use.

Our contribution to this research includes the following three items. First, we assigned the effects of using SM on the organization's performance entirely to absorptive capacity, as differences in organizations' performance are due to differences in their capacity to absorb knowledge (41). This caused the role of knowledge and innovation to become prominent in the model. This way, variables such as acquired knowledge, knowledge storage, organizational learning, absorptive capacity, innovation capability, process innovation, and product innovation emerged. Second, we demonstrated understanding the effect of SM on performance is not so simple, and the problem has complexity and dynamics that we depicted by the system dynamics so that 310 feedback loops were identified along with delays causing complexity of systems. Unlike other researches, which mainly used statistical methods, we modeled SM in a dynamic system. Third, through simulation, we recognized essential variables in SM policymaking. As a result, the active and responsive management of organizations in this area will seriously help improve its performance so that its impact is more significant than the investment.

## 7. LIMITATIONS AND FUTURE RESEARCH

For simplicity, we built the model for a manufacturing organization. There will be differences in modeling service organizations, for example, there is no question of machinery depreciation. Also, in service organizations, the role of social media is more prominent, because the importance of information and its exchange is much vital. Nevertheless, today the value of customer service in manufacturing organizations is also increasing and it seems the model does not need to change in this respect. By removing this limitation, a more comprehensive model can be made in future researches.

Another assumption of the model is the constant number of employees in the simulation period. However,

<sup>1</sup> The process by which newly hired staff acquire the essential beliefs, values, attitudes, behaviors, social awareness, and job-specific

If the inflow of new employees to the organization is significant, the organization faces the challenge of their socialization<sup>1</sup>, and social media is a tool that helps socialize new employees. At the same time, the new employees will improve the innovation capability of the organization. Therefore, the dynamics of the model increases. Future researches can consider this issue in modeling.

Moreover, the research model is a generalized model regardless of the regional conditions governing the virtual space. For example, the specific laws of virtual space in Iran can affect the amount of people's presence in social media and, as a result, the amount of knowledge gained. In addition, addiction to SM is different in different countries and can increase the unhelpful use of SM and indirectly reduce the rate of knowledge acquisition. For future research, these suggestions can be applied by adding exogenous coefficients to the model.

## 8. REFERENCES

1. Zdravkova K. Reinforcing Social Media Based Learning, Knowledge Acquisition and Learning Evaluation. *Procedia - Social and Behavioral Sciences*. 2016 Jul;228: 16–23. <https://doi.org/10.1016/j.sbspro.2016.07.003>
2. Petrosyan A. Global digital population 2023 [Internet]. *Statista*. 2023. Available from: <https://www.statista.com/statistics/617136/digital-population-worldwide/>
3. Dixon SJ. Number of Social Media Users Worldwide from 2017 to 2027 [Internet]. *Statista*. [www.statista.com](https://www.statista.com); 2023. Available from: <https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/>
4. Fourie I. Auditing Social Media: A Governance and Risk Guide 2012 Peter R. Scott and J. Mike Jacka. *Auditing Social Media: A Governance and Risk Guide*. Hoboken, NJ: John Wiley & Sons for the Institute of Internal Auditors Research Foundation 2011. 187 pp. US\$69.95 (hard cover), ISBN: 9781118061756. *Online Information Review*. 2012 Jun 15; 36(3): 479–80. <https://doi.org/10.1108/14684521211241459>
5. Farhoodi M, Toloie Eshlaghi A, Motadel MR. A Proposed Model for Persian Stance Detection on Social Media. *International Journal of Engineering, Transactions C: Aspects*. 2023; 36 (06): 1048-59. <https://doi.org/10.5829/ije.2023.36.06c.03>
6. Yavari A, Hassanpour H. Election Prediction Based on Messages Feature Analysis in Twitter Social Network. *International journal of engineering Transactions C: Aspects*. 2023 Jan 1; 36(6): 1179–84. <https://doi.org/10.5829/ije.2023.36.06c.16>
7. Garcia-Morales VJ, Martín-Rojas R, Lardón-López ME. Influence of social media technologies on organizational performance through knowledge and innovation. *Baltic Journal of Management*. 2018 Jul 2;13(3):345–67. <https://doi.org/10.1108/BJM-04-2017-0123>
8. Song Q, Wang Y, Chen Y, Benitez J, Hu J. Impact of the usage of social media in the workplace on team and employee performance. *Information & Management*. 2019 Apr;56(8). <https://doi.org/10.1016/j.im.2019.04.003>

competencies necessary to successfully perform their new organizational duties and obligations (104).

9. Tajvidi R, Karami A. The effect of social media on firm performance. *Computers in Human Behavior*. 2017 Sep;115(105174). <https://doi.org/10.1016/j.chb.2017.09.026>
10. Martín-Rojas R, Garrido-Moreno A, García-Morales VJ. Fostering Corporate Entrepreneurship with the use of social media tools. *Journal of Business Research*. 2020 May; 112:396–412. <https://doi.org/10.1016/j.jbusres.2019.11.072>
11. Foltean FS, Trif SM, Tuleu DL. Customer relationship management capabilities and social media technology use: Consequences on firm performance. *Journal of Business Research*. 2018 Nov; 104. <https://doi.org/10.1016/j.jbusres.2018.10.047>
12. Hanafizadeh P, Shafia S, Bohlin E. Exploring the consequence of social media usage on firm performance. *Digital Business*. 2021 Jul; 1 (2): 100013. <https://doi.org/10.1016/j.digbus.2021.100013>
13. Kane GC. The evolutionary implications of social media for organizational knowledge management. *Information and Organization*. 2017 Mar;27(1):37–46. <https://doi.org/10.1016/j.infoandorg.2017.01.001>
14. Soens E, Claeys A. The ambassadorship potential of employees: Examining the impact of work-related social media posts on consumer attitudes and behaviors. *Public Relations Review*. 2023 Dec 1; 49 (5): 102390–0. <https://doi.org/10.1016/j.pubrev.2023.102390>
15. Cheng I-Huei, Lee ST. Timeliness, responsiveness and the human voice: The effects of dialogic strategies and the mediating role of perceived communication ethicality on social media relationship building. *Public Relations Review*. 2023 Nov 1; 49 (4): 102355. <https://doi.org/10.1016/j.pubrev.2023.102355>
16. Greenberg P. The impact of CRM 2.0 on customer insight. Peters LD, editor. *Journal of Business & Industrial Marketing*. 2010 Aug 3;25(6):410–9. <https://doi.org/10.1108/08858621011066008>
17. Trainor KJ, Andzulis J (Mick), Rapp A, Agnihotri R. Social media technology usage and customer relationship performance: A capabilities-based examination of social CRM. *Journal of Business Research*. 2014 Jun;67(6):1201–8. <https://doi.org/10.1016/j.jbusres.2013.05.002>
18. Trainor KJ. Relating Social Media Technologies to Performance: A Capabilities-Based Perspective. *Journal of Personal Selling & Sales Management*. 2012 Jun;32(3):317–31. <https://doi.org/10.2753/PSS0885-3134320303>
19. Myddleton J, Fullwood C. Social Media Impact on Organisations. *Applied Cyberpsychology*. 2016; 216–35. [https://doi.org/10.1057/9781137517036\\_13](https://doi.org/10.1057/9781137517036_13)
20. Luo Z, Guo J, Benitez J, Scaringella L, Lin J. How do organizations leverage social media to enhance marketing performance? Unveiling the power of social CRM capability and guanxi. *Decision Support Systems [Internet]*. 2023 Nov 14;114123. <https://doi.org/10.1016/j.dss.2023.114123>
21. Yan Q, Zhou S, Zhang X, Li Y. A System Dynamics Model of Online Stores' Sales: Positive and Negative E-WOM and Promotion Perspective. *Sustainability*. 2019 Oct 31; 11 (21): 6045. <https://doi.org/10.3390/su11216045>
22. Guo Y, Fan D, Zhang X. Social media-based customer service and firm reputation. *International Journal of Operations & Production Management*. 2020 May 5; 40(5):575–601. <https://doi.org/10.1108/IJOPM-04-2019-0315>
23. Patroni J, von Briel F, Recker J. Unpacking the social media-driven innovation capability: How consumer conversations turn into organizational innovations. *Information & Management*. 2022 Jan;103267. <https://doi.org/10.1016/j.im.2020.103267>
24. Kaschig A, Maier R, Sandow A. The effects of collecting and connecting activities on knowledge creation in organizations. *The Journal of Strategic Information Systems*. 2016 Dec; 25 s(4): 243–58. <https://doi.org/10.1016/j.jsis.2016.08.002>
25. Martín-Rojas R, García-Morales VJ, Garrido-Moreno A, Salmador-Sánchez MP. Social Media Use and the Challenge of Complexity: Evidence from the Technology Sector. *Journal of Business Research*. 2020 Jan; 129: 621–640. <https://doi.org/10.1016/j.jbusres.2019.12.026>
26. Peltola T, Mäkinen SJ. Influence of the Adoption and Use of Social Media Tools on Absorptive Capacity in New Product Development. *Engineering Management Journal*. 2014 Sep; 26 (3): 45–51. <https://doi.org/10.1080/10429247.2014.11432019>
27. Alalawneh AA, Al-Omar SYS, Alkhatib S. The Complexity of Interaction between Social Media Platforms and Organizational Performance. *Journal of Open Innovation: Technology, Market, and Complexity*. 2022 Sep 22;8(4):169. <https://doi.org/10.3390/joitmc8040169>
28. Cao G, Weerawardena J. Strategic use of social media in marketing and financial performance: The B2B SME context. *Industrial Marketing Management*. 2023 May; 111: 41–54. <https://doi.org/10.1016/j.indmarman.2023.03.007>
29. Ma G, Jia J, Ding J, Wu M, Wang D. Examining the Impact of Social Media Use on Project Management Performance: Evidence from Construction Projects in China. *Journal of Construction Engineering and Management*. 2021 Mar; 147 (3): 04021004. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002009](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002009)
30. Itani OS, Kalra A, Riley J. Complementary effects of CRM and social media on customer co-creation and sales performance in B2B firms: The role of salesperson self-determination needs. *Information & Management*. 2022 Feb;59(3):103621. <https://doi.org/10.1016/j.im.2022.103621>
31. Liu Z, Geng R, Tse YK (Mike), Han S. Mapping the relationship between social media usage and organizational performance: A meta-analysis. *Technological Forecasting and Social Change*. 2023 Feb;187:122253. <https://doi.org/10.1016/j.techfore.2022.122253>
32. Demek KC, Raschke RL, Janvrin DJ, Dilla WN. Do organizations use a formalized risk management process to address social media risk? *International Journal of Accounting Information Systems*. 2018 Mar;28:31–44. <https://doi.org/10.1016/j.accinf.2017.12.004>
33. Fusi F, Feeney MK. Social Media in the Workplace: Information Exchange, Productivity, or Waste? *The American Review of Public Administration*. 2016 Nov 11;48(5):395–412. <https://doi.org/10.1177/0275074016675722>
34. Nisar TM, Prabhakar G, Ilavarasan PV, Baabdullah AM. Up the ante: Electronic word of mouth and its effects on firm reputation and performance. *Journal of Retailing and Consumer Services*. 2020 Mar; 53. <https://doi.org/10.1016/j.jretconser.2018.12.010>
35. Rokka J, Karlsson K, Tienari J. Balancing acts: Managing employees and reputation in social media. *Journal of Marketing Management*. 2013 Jul 15;30(7-8):802–27. <https://doi.org/10.1080/0267257X.2013.813577>
36. Gu B, Ye Q. First Step in Social Media: Measuring the Influence of Online Management Responses on Customer Satisfaction. *Production and Operations Management*. 2013 Jun 25; 23 (4): 570–82. <https://doi.org/10.1111/poms.12043>
37. Park C, Lee TM. Information direction, website reputation and eWOM effect: A moderating role of product type. *Journal of Business Research*. 2009 Jan; 62 (1): 61–7. <https://doi.org/10.1016/j.jbusres.2007.11.017>
38. Arora AS, Sivakumar K, Pavlou PA. Social capacitance: Leveraging absorptive capacity in the age of social media. *Journal of Business Research*. 2021 Jan; 124: 342–56. <https://doi.org/10.1016/j.jbusres.2020.11.035>
39. Perez E, Toro Jaramillo ID. The realized absorptive capacity: The process of transformation and exploitation of knowledge. A study in two scenarios, Colombia and Brazil. *Journal of Industrial*

- Engineering and Management. 2018 Sep 27;11(4):617. <https://doi.org/10.3926/jiem.2634>
40. Najafi Tavani S, Sharifi H, Soleimanof S, Najmi M. An empirical study of firm's absorptive capacity dimensions, supplier involvement and new product development performance. *International Journal of Production Research*. 2013 Jun; 51 (11): 3385–403. <https://doi.org/10.1080/00207543.2013.774480>
  41. Schlagwein D, Hu M. How and why Organisations Use Social Media: Five Use Types and their Relation to Absorptive Capacity. *Journal of Information Technology*. 2017 Jun;32(2):194–209. <https://doi.org/10.1057/jit.2016.7>
  42. Todorova G, Durisin B. Absorptive Capacity: Valuing a Reconceptualization. *The Academy of Management Review* [Internet]. 2007;32(3):774–86. Available from: <https://www.jstor.org/stable/20159334>
  43. Lane PJ, Koka BR, Pathak S. The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. *The Academy of Management Review* [Internet]. 2006;31(4):833–63. Available from: <https://www.jstor.org/stable/20159255>
  44. Engelbertink DGL. System Dynamics-based Scenario Planning [Internet]. *essay.utwente.nl*. 2019. Available from: <http://essay.utwente.nl/77106/>
  45. MIT Theses [Internet]. *dspace.mit.edu*. Available from: <http://dspace.mit.edu/handle/1721.1/7582>
  46. Sterman J. *Business dynamics : systems thinking and modeling for a complex world*. Boston: Irwin/Mcgraw-Hill; 2000.
  47. Roberts, Galluch, Dinger, Grover. Absorptive Capacity and Information Systems Research: Review, Synthesis, and Directions for Future Research. *MIS Quarterly*. 2012; 36 (2): 625. <https://www.jstor.org/stable/41703470>
  48. Cohen WM, Levinthal DA. Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*. 2020 Mar; 35 (1): 128–52. <https://www.jstor.org/stable/2393553>
  49. Lam HKS, Yeung ACL, Cheng TCE. The impact of firms' social media initiatives on operational efficiency and innovativeness. *Journal of Operations Management*. 2016 Jul 15; 47-48 (1): 28–43. <https://doi.org/10.1016/j.jom.2016.06.001>
  50. Lewin AY, Massini S, Peeters C. Microfoundations of Internal and External Absorptive Capacity Routines. *Organization Science*. 2011 Feb; 22 (1): 81–98. <https://doi.org/10.1287/orsc.1100.0525>
  51. Marrucci L, Iannone F, Daddi T, Iraldo F. Antecedents of absorptive capacity in the development of circular economy business models of small and medium enterprises. *Business Strategy and the Environment*. 2021 Oct 10; 31 (1): 532-44. <https://doi.org/10.1002/bse.2908>
  52. Ahmad A, Bosua R, Scheepers R. Protecting organizational competitive advantage: A knowledge leakage perspective. *Computers & Security*. 2014 May; 42: 27–39. <https://doi.org/10.1016/j.cose.2014.01.001>
  53. Global social media attacks on organizations 2019 [Internet]. Statista. Available from: <https://www.statista.com/statistics/1149299/share-social-media-attacks-organizations-experienced/>
  54. Ritala P, Olander H, Michailova S, Husted K. Knowledge sharing, knowledge leaking and relative innovation performance: An empirical study. *Technovation*. 2015 Jan; 35: 22–31. <https://doi.org/10.1016/j.technovation.2014.07.011>
  55. Zahra SA, George G. Absorptive Capacity: A Review, Reconceptualization, and Extension. *The Academy of Management Review*. 2002 Apr;27(2):185–203. <https://www.jstor.org/stable/4134351>
  56. Hotjar - Pricing Plans [Internet]. Hotjar. Available from: <https://www.hotjar.com/pricing/>
  57. McGarvey B, Hannon B. *Dynamic Modeling for Business Management*. Springer Science & Business Media; 2006.
  58. Jędrzejczyk W. Barriers in the Use of Social Media in Managing the Image of Educational Institutions. *Procedia Computer Science*. 2021; 192: 1904–13. <https://doi.org/10.1016/j.procs.2021.08.196>
  59. Parveen F, Jaafar NI, Ainin S. Social media usage and organizational performance: Reflections of Malaysian social media managers. *Telematics and Informatics*. 2015 Feb;32(1):67–78. <https://doi.org/10.1016/j.tele.2014.03.001>
  60. Tajudeen FP, Jaafar NI, Ainin S. Understanding the impact of social media usage among organizations. *Information & Management*. 2018 Apr; 55 (3): 308–21. <https://doi.org/10.1016/j.im.2017.08.004>
  61. Hultman M, Iveson A, Oghazi P. Talk less and listen more? The effectiveness of social media talking and listening tactics on export performance. *Journal of Business Research*. 2023 Apr; 159: 113751. <https://doi.org/10.1016/j.jbusres.2023.113751>
  62. Robinson SL. Trust and Breach of the Psychological Contract. *Administrative Science Quarterly* [Internet]. 1996 Dec;41(4):574–99. Available from: <https://www.jstor.org/stable/2393868>
  63. Wu IL. The antecedents of customer satisfaction and its link to complaint intentions in online shopping: An integration of justice, technology, and trust. *International Journal of Information Management*. 2013 Feb; 33 (1): 166–76. <https://doi.org/10.1016/j.ijinfomgt.2012.09.001>
  64. Yilmaz C, Varnali K, Kasnakoglu BT. How do firms benefit from customer complaints? *Journal of Business Research*. 2016 Feb; 69 (2): 944–55. <https://doi.org/10.1016/j.jbusres.2015.08.038>
  65. Wang Y, Feng H. Customer relationship management capabilities. *Management Decision*. 2012 Feb 3; 50 (1): 115–29. <https://doi.org/10.1108/00251741211194903>
  66. Coltman T. Why build a customer relationship management capability? *The Journal of Strategic Information Systems*. 2007 Sep; 16 (3): 301–20. <https://doi.org/10.1016/j.jsis.2007.05.001>
  67. Saxton GD, Guo C. Social media capital: Conceptualizing the nature, acquisition, and expenditure of social media-based organizational resources. *International Journal of Accounting Information Systems*. 2020 Jan; 100443. <https://doi.org/10.1016/j.accinf.2019.100443>
  68. Sun Y, Shang RA. The interplay between users' intraorganizational social media use and social capital. *Computers in Human Behavior*. 2014 Aug; 37: 334–41. <https://doi.org/10.1016/j.chb.2014.03.048>
  69. Wang T, Yeh RKJ, Chen C, Tsydygov Z. What drives electronic word-of-mouth on social networking sites? Perspectives of social capital and self-determination. *Telematics and Informatics* [Internet]. 2016 Nov;33(4):1034–47. Available from: <https://www.sciencedirect.com/science/article/pii/S0736585315300125>. <https://doi.org/10.1016/j.tele.2016.03.005>
  70. Kanje P, Charles G, Tumsifu E, Mossberg L, Andersson T. Customer engagement and eWOM in tourism. *Journal of Hospitality and Tourism Insights*. 2020 Mar 17;3(3):273–89. <https://doi.org/10.1108/JHTI-04-2019-0074>
  71. Thourmrunroje A. The Influence of Social Media Intensity and EWOM on Conspicuous Consumption. *Procedia - Social and Behavioral Sciences* [Internet]. 2014 Aug; 148 (1): 7–15. <https://doi.org/10.1016/j.sbspro.2014.07.009>
  72. Daspit JJ, D'Souza DE. Understanding the Multi-Dimensional Nature of Absorptive Capacity. *Journal of Managerial Issues* [Internet]. 2013 [cited 2024 Jan 27]; 25 (3): 299–316. Available from: <https://www.jstor.org/stable/43488823>

73. Bontis N, Crossan MM, Hulland J. Managing An Organizational Learning System By Aligning Stocks and Flows. *Journal of Management Studies*. 2002 Jun;39(4):437–69. <https://doi.org/10.1111/1467-6486.t01-1-00299>
74. Sinkula JM. Market Information Processing and Organizational Learning. *Journal of Marketing*. 1994 Jan; 58 (1): 35. <https://www.jstor.org/stable/1252249>
75. Yang J. The impact of knowledge sharing on organizational learning and effectiveness. *Journal of Knowledge Management*. 2007 Apr 10; 11 (2): 83–90. <https://doi.org/10.1108/13673270710738933>
76. Arif M, Al Zubi M, Gupta AD, Egbu C, Walton RO, Islam R. Knowledge sharing maturity model for Jordanian construction sector. *Engineering, Construction and Architectural Management*. 2017 Jan 16;24(1):170–88. <https://doi.org/10.1108/ECAM-09-2015-0144>
77. Tohidi H, Jabbari MM. Measuring organizational learning capability. *Procedia - Social and Behavioral Sciences*. 2012; 31: 428–32. <https://doi.org/10.1016/j.sbspro.2011.12.079>
78. Design of a Knowledge Flow Network for the Personnel of an Organization under Various Scenarios and its Solution using Lagrangian Relaxation. *International journal of engineering Transactions C: Aspects*. 2022 Jan 1; 35 (6): 1154–69. <https://doi.org/10.5829/ije.2022.35.06c.07>
79. *Encyclopedia of complexity and systems science / 11. Index*. New York: Springer; 2009. P. 1-14.
80. Antunes H de JG, Pinheiro PG. Linking knowledge management, organizational learning and memory. *Journal of Innovation & Knowledge*. 2019 May;5(2). <https://doi.org/10.1016/j.jik.2019.04.002>
81. Von Krogh G, Geilinger N. Knowledge creation in the ecosystem: Research imperatives. *European Management Journal*. 2014 Feb; 32 (1): 155–63. <https://doi.org/10.1016/j.emj.2013.04.002>
82. Lyles MA. Organizational Learning, knowledge creation, problem formulation and innovation in messy problems. *European Management Journal*. 2014 Feb;32(1):132–6. <https://doi.org/10.1016/j.emj.2013.05.003>
83. Kim I, Seo HL. Depreciation and transfer of knowledge: an empirical exploration of a shipbuilding process. *International Journal of Production Research*. 2009 Feb 10;47(7):1857–76. <https://doi.org/10.1080/00207540701499481>
84. Li G, Rajagopalan S. A learning curve model with knowledge depreciation. *European Journal of Operational Research*. 1998 Feb 16; 105 (1): 143–54. [https://doi.org/10.1016/S0377-2217\(97\)00033-7](https://doi.org/10.1016/S0377-2217(97)00033-7)
85. Müller JM, Buliga O, Voigt KI. The role of absorptive capacity and innovation strategy in the design of industry 4.0 business Models-A comparison between SMEs and large enterprises. *European Management Journal*. 2020 Feb; 39 (3). <https://doi.org/10.1016/j.emj.2020.01.002>
86. Medase K, Barasa L. Absorptive capacity, marketing capabilities, and innovation commercialisation in Nigeria. *European Journal of Innovation Management*. 2019 Oct 3; 22 (5): 790-820. <https://doi.org/10.1108/EJIM-09-2018-0194>
87. Delgado-Verde M, Martín-de Castro G, Emilio Navas-López J. Organizational knowledge assets and innovation capability. *Journal of Intellectual Capital*. 2011 Jan 18;12(1):5–19. <https://doi.org/10.1108/14691931111097890>
88. Frishammar J, Kurkkio M, Abrahamsson L, Lichtenhaler U. Antecedents and Consequences of Firms' Process Innovation Capability: A Literature Review and a Conceptual Framework. *IEEE Transactions on Engineering Management*. 2012 Nov; 59 (4): 519–29. <https://doi.org/10.1109/TEM.2012.2187660>
89. Kafetzopoulos D, Psomas E. The impact of innovation capability on the performance of manufacturing companies. *Journal of Manufacturing Technology Management*. 2015 Feb 2;26(1):104–30. <https://doi.org/10.1108/JMTM-12-2012-0117>
90. Orges Ormanidhi, Stringa O. Porter's Model of Generic Competitive Strategies. *Business Economics*. 2008 Jul; 43 (3): 55–64. <https://doi.org/10.2145/20080305>
91. Porter ME. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York ; London: Free Press; 1998.
92. Zehir C, Can E, Karaboga T. Linking Entrepreneurial Orientation to Firm Performance: The Role of Differentiation Strategy and Innovation Performance. *Procedia - Social and Behavioral Sciences [Internet]*. 2015 Dec; 210: 358–67. <https://doi.org/10.1016/j.sbspro.2015.11.381>
93. Brenes ER, Ciravegna L, Acuña J. Differentiation strategies in agribusiness – A configurational approach. *Journal of Business Research*. 2020 Aug; 119: 522-539. <https://doi.org/10.1016/j.jbusres.2020.07.048>
94. Kahn I, Leinwand P, Mani MM. How to Gain a Competitive Advantage on Customer Insights [Internet]. *Harvard Business Review*. 2022. Available from: <https://hbr.org/2022/10/how-to-gain-a-competitive-advantage-on-customer-insights>
95. Knight G, Moen Ø, Madsen TK. Antecedents to differentiation strategy in the exporting SME. *International Business Review*. 2020 Aug; 29 (6): 101740. <https://doi.org/10.1016/j.ibusrev.2020.101740>
96. Ralston RW. The effects of customer service, branding, and price on the perceived value of local telephone service. *Journal of Business Research*. 2003 Mar;56(3):201–13. [https://doi.org/10.1016/S0148-2963\(01\)00221-1](https://doi.org/10.1016/S0148-2963(01)00221-1)
97. Niyas N, Kavida V. Impact of financial brand values on firm profitability and firm value of Indian FMCG companies. *IIMB Management Review*. 2023 Feb; 34 (4): 346-363. <https://doi.org/10.1016/j.iimb.2023.01.001>
98. Qiao Y, Yin X, Xing G. Impact of Perceived Product Value on Customer-Based Brand Equity: Marx's Theory – Value-Based Perspective. *Frontiers in Psychology*. 2022 Jun 30; 13. <https://doi.org/10.3389%2Ffpsyg.2022.931064>
99. Stojanovic I, Andreu L, Curras-Perez R. Effects of the intensity of use of social media on brand equity. *European Journal of Management and Business Economics*. 2018 Mar 15; 27 (1): 83–100. <https://doi.org/10.1108/EJMBE-11-2017-0049>
100. Fornell C, Johnson MD. Differentiation as a basis for explaining customer satisfaction across industries. *Journal of Economic Psychology*. 1993 Dec;14(4):681–96. [https://psycnet.apa.org/doi/10.1016/0167-4870\(93\)90016-E](https://psycnet.apa.org/doi/10.1016/0167-4870(93)90016-E)
101. Drake MP, Sakkab N, Jonash R. Maximizing Return on Innovation Investment. *Research Technology Management [Internet]*. 2006 [cited 2024 Jan 27];49(6):32–41. Available from: <https://www.jstor.org/stable/24134971>
102. Arnulf Grübler, Nemet GF. *Sources and Consequences of Knowledge Depreciation*. Cambridge University Press eBooks. 2013 Dec 30; 133–45. <https://doi.org/10.1017/cbo9781139150880.014>
103. Zou B, Guo F, Guo J. Absorptive capacity, technological innovation, and product life cycle: a system dynamics model. *SpringerPlus*. 2016 Sep 26; 5 (1). <https://doi.org/10.1186/s40064-016-3328-5>
104. Leidner DE, Gonzalez E, Koch H. An affordance perspective of enterprise social media and organizational socialization. *The Journal of Strategic Information Systems*. 2018 Jun; 27 (2): 117–38. <https://doi.org/10.1016/j.jsis.2018.03.003>

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**Persian Abstract****چکیده**

امروزه استفاده از رسانه‌های اجتماعی در جوامع و سازمان‌ها گسترش یافته است. بنابراین با این سوال مواجه می‌شویم: اثرات رسانه‌های اجتماعی بر سازمان‌ها چیست؟ به نظر می‌رسد اثرات متنوع رسانه‌های اجتماعی بر سازمان‌ها به طور کلی یک سیستم پیچیده و پویا را تشکیل می‌دهد. مطالعه‌ی حاضر این موضوع را با کمک رویکرد پویایی‌شناسی سیستم بررسی می‌کند تا این پیچیدگی پویا را مدل کند. مفهوم ظرفیت جذب به عنوان کانالی برای اعمال اثرات رسانه‌های اجتماعی بر سیستم استفاده می‌شود. ظرفیت جذب به معنای توانایی سازمان در تشخیص اطلاعات بیرونی ارزشمند، همسان‌سازی و استفاده از آن در سازمان است و تفاوت عملکرد سازمان‌ها را توضیح می‌دهد. پس از مدل‌سازی، با استفاده از داده‌های به دست آمده از یک شرکت فعال در صنایع غذایی ایران، روابط بین متغیرهای مدل تعریف می‌شود. به منظور تعمیم‌پذیرکردن مدل، متغیرهای آن نرمال می‌شوند به نحوی که مدل برای سازمان‌های مختلف قابل به کارگیری است. برای بهبود وضعیت فعلی، چهار سیاست پیشنهاد شده و بر مدل اعمال می‌شود. نتایج نشان می‌دهد مدیریت فعال رسانه‌های اجتماعی، در مقایسه با افزایش سهم سرمایه‌گذاری رسانه‌های اجتماعی، تاثیر قابل ملاحظه‌تری بر عملکرد مالی سازمان و سهم بازار دارد.