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The Influence of Resources on Competitive Advantage through Clustering in Printing Companies in JABODETABEK

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KEYWORDS

Capacity Constrained Assets, Intellectual Capital, Innovative Capability, Clustering, Competitive Advantage

ABSTRACT

Flexible packaging is the most widely consumed packaging material in the Indonesian packaging industry, estimated to reach 43.8% by 2024. This research aims to present a conceptual framework and understanding for MSME printing companies in Jabodetabek to achieve competitive advantage through clustering using limited assets capacity, intellectual capital, and innovative capabilities based on a review of relevant literature and integrated through existing theory. The analysis results are based on 32 questionnaires collected from MSME printing companies in Jabodetabek. This research was tested using Structural Equation Modeling (SEM) to test the conceptual framework empirically. The research results show that capacity-constrained assets have a direct effect on clustering and do not affect competitive advantage but indirectly affect competitive advantage mediated by clustering. Intellectual capital does not directly influence competitive advantage and clustering, but indirectly influences competitive advantage mediated by clustering. Innovative capability has a direct effect on competitive advantage and clustering but indirectly has no effect on competitive advantage mediated by clustering. Clustering directly affects competitive advantage. Therefore, with the emergence of many new printing machines, ease of interaction with printers receiving print processing services, and the high level of utilization of business services from the internet, clustering can be implemented so that MSME printing companies in Jabodetabek can achieve competitive profits.

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INTRODUCTION

Flexible packaging is the most widely consumed packaging material in the Indonesian packaging industry, accounting for a market share of 40.2 % in 2019. It is estimated that it will reach 43.8 % in 2024. Plastic and paper or cardboard rigid boards are other popular packaging materials. The food industry is characterized by the most extensive use of packaging in Indonesia, accounting for 44.2 % of the market share (Global Data, 18 December 2020). Followed by non-alcoholic beverages and other industries, with shares of 38.3 % and 15.3%, respectively. The food industry is at the forefront regarding the use of rigid plastic, with a share of 83.3 % in 2019. Followed by the non-alcoholic sector, which contributed 9.6 % in the same year.

The printing industry, especially cardboard printing, is needed by almost all other industrial fields to package or label their final products. Cardboard is more environmentally friendly because it can be recycled easily and decomposes quickly. This is one of the conditions expected from cardboard suppliers (Sholihah & Habib, 2024). Cardboard boxes are also very familiar with everyday life because they are often used to store rarely used items. Because of this, demand for cardboard as a whole (from total industry and total individuals) will continue to increase. The increasing demand for

automatic cardboard will mean that producers must constantly adjust the company to the limited utility capability of the machine (capacity constraint resource).

Capacity constraint resources cause cardboard producers to be unable to accept orders that exceed machine utility. The particular demands of each consumer require cardboard manufacturers to have various sizes and types of machines. The main challenge that cardboard manufacturers face in order manufacturing is combining their regular operations with continuous development and improvement and keeping up with new trends that regularly emerge in the economic environment (Dostatni & Trojanowska, 2017). The demand for cardboard is fluctuating in quantity, and the demand for product specifications is very varied, forcing cardboard manufacturers to buy various types and sizes of printing machines and the need for a large factory area. This causes high fixed costs and burdens cardboard producers, especially when demand for cardboard decreases. Finally, cardboard producers hand over part of the production process to other cardboard printers.

The locations of all printing presses can be found in areas around Jabodetabek as if they form a printing industry cluster. Industrial clusters form new growth poles in the regional economy by agglomerating companies and related institutions (He et al., 2019). The concentration of cardboard printing producers in the Jabodetabek area allows them to collaborate in the cardboard manufacturing process so that cardboard producers do not need to increase the number of automatic machines or increase their factory area. Cardboard manufacturers can still accept orders with quantities above the current factory capacity and take orders with specifications outside the existing machines. Clustering is the most appropriate method for organizing an industry with apparent features such as expensive large-scale fundamental and applied research, long manufacturing cycles, and high production costs so that clusters can be used to increase the growth of cardboard companies efficiently based on the one idea. Stop shopping to create a competitive advantage (Efimova & Sutyrin, 2019).

Innovative capability is essential to increase sales and attract consumers to buy a product. Innovation not only focuses on the creation of new products or services that are introduced to the market but also includes the development of new methods that increase the efficiency and effectiveness of the company. Thus, innovation in improving products and implementing new products and product quality is significant for a company, especially considering the high level of competition and demands from developing people's lifestyles, which continue to increase (Al-Ahmad Chaar & Easa, 2021). This is to ensure the company's continued survival. The main driver of sustainable market excellence is new product design and packaging, followed by innovative retail outlets (Quaye & Mensah, 2019). Companies can maintain sustainable competitive advantage and sustainable business by promoting constant product innovation, service process improvement, and overall supply chain value (Liao et al., 2017). Considering that middle consumers are entrepreneurs who produce a product to be sold, provide education to middle consumers about the function of each stage in cardboard printing so that middle consumers understand the function, benefits, and aesthetic value of cardboard, considering that cardboard affects the value of the product in the eyes of the final consumer (end users) will be a competitive advantage for the company. Through clustering, small businesses can share resources and access specialists and knowledge so that cluster members can reduce costs, achieve scale economies, and share knowledge (Grimstad & Burgess, 2014).

The challenge for MSME cardboard producers is the significant investment costs and lack of time and knowledge, which are obstacles to achieving competitive advantage for small companies (Grimstad & Burgess, 2014). Often, cardboard manufacturers have to turn down jobs because machine utilities are full or because they need machines that match consumer demand. With

clustering, cardboard producers in Jabodetabek will still be able to receive work that exceeds production utility in terms of quantity, quality, and aesthetics of cardboard without having to add machines. Apart from that, machine operators need particular skills because each machine is different, and it takes a long time to assemble the machine automatically. You also have to increase the factory area, which will cause an increase in fixed production costs. Clustering is a solution for cardboard printing manufacturers to manage resource capacity constraints and intellectual capital in innovating to achieve the company's competitive advantage.

Managers or company owners are aware of resource-based logic, which has the potential to gain strategic advantages that have yet to be fully realized by managers or company owners. Printing companies use internal resources by using capacity constraint resources and intellectual capital to innovate and use external resources as opportunities through the cluster concept. The implementation of the Resource Based View (RBV) theory, which focuses on internal problems, can be utilized by managers to achieve a sustainable competitive advantage. According to researchers, the success of an organization depends on internal resources, such as the workforce, which includes all employees and their training, experience, expertise, knowledge, skills, and capacity (Purnaya & SE, 2016). A positive reputation is a rare resource that a company has so that the company gains the trust of fellow cluster members.

Companies need help maintaining competitive advantage due to fundamental changes in the business environment. Printing companies face the challenge of excess quantity demand just before the Eid, Christmas, and New School Year (TAB) holidays. However, demand will drop drastically after the holidays and the New School Year, causing machine utility vacancies. This is burdensome for cardboard printing companies because costs continue to run, and usually, to fill gaps in machine utilities, cardboard printing companies ask for printing service fees from other printing companies whose printing locations are not far away, considering the high cost of transportation to move the raw material, namely paper. In this case, competitive advantage is a function of how the company is run and how its assets must be utilized and rejuvenated in a dynamic market. Company leaders apply a capabilities approach to improve internal processes and ensure sustainable growth.

The dynamic capability approach is the ability of a company to combine, build, and reconfigure its internal and external competencies to face rapid environmental changes and use resources to increase the company's competitiveness (Sawlani et al., 2021). The company carries out capability updates (renewing dynamic capabilities) so that it can adapt to the conditions of the dynamic business environment. Companies must change their capabilities (regenerative dynamic capabilities), not just adapt. This is done by maximizing capacity constraint resources through innovation-based behaviour that shows how companies can adapt to innovation to achieve competitive advantage.

The theory of constraints (Goldratt) concept states that all companies have at least one critical constraint that limits their production capacity. Constraints are any elements that occur in a system and prevent it from achieving optimal performance (Supardi, 2016). By using the theory of constraints, management can control the contribution margin and production cycle of product units about critical resources, namely bottlenecks, thereby increasing production capacity.

Innovation in constraint-based environments, an innovation process led by the reuse of already available resources through exaptation during the pandemic crisis, clearly illustrates the antecedents of exaptation processes in constraint-based environments, which are usually able to quickly adapt to their environment, requiring new solutions, namely time and resource constraints (Sedita et al., 2022). Cluster initiatives facilitate spontaneous knowledge diffusion (Dyba & De Marchi, 2022).

Collaboration between organizations facilitates value-based design and experimentation with new supply chains. Thus, manufacturing companies can focus on something other than investing in Additive Manufacturing machines (Luomaranta & Martinsuo, 2022).

This research has a significant impact in two main aspects: contribution to theory development and practical contribution, especially in business and government policy.

In terms of theory development, the results of this research provide new enlightenment for academics that maintaining competitive advantage can be achieved more efficiently through optimal management of limited resources. Organizations can maximize limited resources, such as capacity constraint resources, to gain a competitive advantage by paying attention to intellectual capital and innovative capability concepts.

From a practical perspective, this research has significant implications for business and government. This research helps business people understand the importance of innovation in facing ever-growing market demands. By adopting innovative behaviour and utilizing available assets, such as intellectual capital through clustering, business people can develop effective strategies to compete in the market. On the other hand, for the government, this research provides a basis for better predicting and managing economic conditions. By facilitating the formation of clusters and formulating appropriate policies, the government can create an environment that supports economic growth, increases state revenues, and benefits society and companies.

The purpose of the study "The Influence of Resources on Competitive Advantage through Clustering in Printing Companies in JABODETABEK" is to investigate how the resources owned by printing companies in the JABODETABEK region, such as finance, technology, human resources, and infrastructure, affect their competitive advantage through the clustering process. This study aims to analyze the contribution of these resources to the competitive advantage of printing companies, understand the role of clustering in improving competitive advantage, identify factors that influence the clustering process, and provide insights for managers of printing companies in JABODETABEK to improve resource management and clustering strategies to achieve better competitive advantage.

METHOD

This research uses a descriptive and quantitative approach with an explanatory approach. This research uses a deductive-inductive approach, which starts with a theoretical framework, previous research, and the researcher's understanding to develop research questions that will be tested with empirical field data. The research location used is a cardboard printing MSME company in the Jabodetabek area. This research was conducted in 2022. The research uses a questionnaire distribution method to collect research data. The sample for this research is MSME printing companies in Jabodetabek with a total population estimated at over a thousand with under a hundred employees and a company age of over five years. The sampling technique or method used in this research is purposive sampling. Primary data is used as a source in this research, namely data obtained by researchers directly from the first source. In this research, the questionnaire was prepared using Google Forms. It will be distributed via online media or email to the target sample meeting the research sample selection criteria.

RESULTS AND DISCUSSION

Based on the empirical model structure proposed in this research, the proposed hypothesis can be tested through path coefficient analysis in a structural equation model. Hypothesis testing is carried out by comparing the p-value with the significance level by the rules set out as follows (Sekaran, 2020) :

1. If the p-value ≤ 0.05, then Ho is not supported, and the research hypothesis is supported.
2. If the p-value is > 0.05, Ho fails to be supported, and the research hypothesis is not supported.

The results of the hypothesis testing analysis are described in the following discussion.

Influence of Capacity Constraint Resources Against Competitive Advantage

The significant test results for hypothesis one show no influence of resource capacity constraints on competitive advantage, as shown by the p-value of 0.360, which is more critical than 0.05, so the proposed hypothesis is not supported. Capacity constraint resource is a capacity limitation that is a source of problems in the form of resources (machines, places, and human resources) that the company needs to have, which is most significant about the organization's ability to move towards its goals. Printing companies can still accept orders above machine, space, or human resource capacity. After receiving an order from a customer, the next step is to choose another printing company whose machine utilities, space, or human resources still need to be fully equipped to do the work, known as an outsourcing system.

In the outsourcing system, the company's operational activities always discuss customer order details, getting the highest mean score among respondents' answers (Orue et al., 2021). Order details that are usually discussed include sharp or soft printed colors, shiny or dove varnish, as well as whether to choose to use glue that does not have a strong smell but has strong stickiness due to the contents of the goods in heavy cardboard or choose a type of glue that is food grade based because of food cardboard. After all the order details have been discussed, the next step is to provide detailed design documents for the customer to approve the project. This is done because the printing company that receives the outsourcing does not have direct contact with the customer, so every detail of the customer's order must be conveyed in full to the printing company that receives the outsourced services. To carry out the detailed plans that have been discussed and put into written form, the next step is to organize a team that will continue the following production process so that the production process does not stop midway. In this way, the production chain will be controlled from when the order is received until the goods are ready to be sent.

Respondents' answers regarding the signing of the Travel Letter by the customer, if the finished product is sent directly by the service recipient's printer to the customer, have the minor mean because there is a situation of horizontal competitiveness between homogeneous companies (Juliya & Konstantin, 2017). First-hand printers do not do this because there are concerns that the order will be taken by the printer who receives the service if they hand over delivery directly from the printer who gets the service to the customer.

Contrary to the opinion that capacity constraint resources limit the performance of organizational systems, a collection of assets that fundamentally cannot be consumed simultaneously by many people without capacity limitations (Wirtz et al., 2019; Orue et al., 2021). However, this aligns with the opinion that the contribution of strategic resources to maintaining a competitive position aligns with the practice-based view that practice by doing) can increase the company's competitive advantage/performance (Lizarralde-Aiastui et al., 2020).

The Influence of Intellectual Capital on Competitive Advantage

The significant test results for hypothesis two show no influence of intellectual capital on competitive advantage, as demonstrated by the p-value of 0.333, which is more critical than 0.05, so the proposed hypothesis is not supported. Intellectual capital is an intangible asset that can be formalized in a structured manner that has a unique ability to create value for the organization and become a source of competitive advantage.

Printing works because it prioritizes communication so that the production process can run effectively and efficiently and that production results comply with consumer specifications. Using high teamwork to remind each other about minor things; for example, it must be cleaned immediately if fellow workers see melted glue from one cardboard box to another, which will cause damage to other cardboard boxes.

Frequently holding internal communications regarding the production process is essential to remind each other so that every process is noticed to comply with consumer orders. After the production process, the quality of the cardboard and packaging must be tested. Furthermore, through a smooth distribution network, finished cardboard products are sent directly to consumers on time.

Managers or owners of MSME printing companies invest time, energy, and focus in completing the work of consumers. Accuracy is needed in production because a small mistake can have fatal consequences. For example, cutting paper smaller than it should be will prevent the paper from becoming unusable. This is detrimental to the company because they must repurchase new paper. Paper that has already been cut is stored while waiting for a request for cardboard of the appropriate size. What is more fatal is that when the paper has been printed, there is writing that does not match consumer demand, so this printing is forced only to be sold at a price per kilogram as cardboard waste.

The quantity of orders received by MSME printing companies is generally small, for example, one thousand to five thousand units. Some cardboard processing processes can be done manually. For instance, after cutting the paper and printing it on a machine, the next step is gluing the sides of the cardboard to become ready-to-use cardboard. This process will usually be carried out by the manager/owner himself outside of working hours or even working days so that the next day, the goods are ready to be sent, making delivery faster so that consumers are delighted.

The events above resulted in valuable experiences or lessons that built the character of the manager/owner to be more disciplined and never give up. By working hard, managers/owners of MSME printing companies have succeeded in satisfying consumers. The above can be carried out by managers or printing owners well without requiring special abilities (intellectual capital).

Respondents' answers regarding the attitude of mutual assistance between MSME printing companies and customers were high, with the most minor mean. Printing companies do not help each other deal with customers because there is a horizontal competitiveness situation between homogeneous companies. This is because there is concern that after getting to know the customer, another printing service will take the order (Juliya & Konstantin, 2017).

This is in line with the opinion that human capital influences company growth, like a good horse equipped with a good saddle (Qian et al., 2023). However, this differs from the opinion that intellectual capital is an intangible asset that creates value for the business, improves company performance, and is always a source of competitive advantage (Mubarik et al., 2019) ; (Rehman et al., 2021) ; (Weqar et al., 2020) .

The Influence of Innovative Capability on Competitive Advantage

The significant test results for hypothesis three show innovative capability influences competitive advantage, as indicated by the p-value of 0.000, which is smaller than 0.05, so the proposed hypothesis is supported. Innovative capability is a company's capacity to meet changing market demands by making various breakthroughs, either by replacing all old methods or adding new capabilities to survive and achieve a competitive advantage.

To meet changing market demands, especially in terms of attractive cardboard designs and environmentally friendly cardboard processing processes to attract the attention of end users (Rundh, 2016; Yeo et al., 2020). Through joint planning for developing new services by researchers by helping customers design images or types of cardboard raw materials, which have been the customer's responsibility (Liao et al., 2017). Cross-functional core team meetings involve meetings between the design, cutting, printing, and finishing teams to equalize perceptions. Partner (fellow cardboard company) will open discussions about new ideas and win-win partnerships, a shared vision between partners that supports organizations in achieving competitive advantage.

Respondents' answers regarding always sharing current trend information for external predictions have the most minor mean. MSME printing companies do not do this because they only work based on job orders, leaving all matters related to external predictions to the brand owner.

In line with the opinion that product and packaging design innovation, promotional innovation, retail innovation, and price innovation provide sustainable market advantages (Quaye & Mensah, 2019 ; (He et al., 2019), increasing competitiveness by increasing business competency can carried out through cost efficiency, improving product quality and improving worker skills (Hutahayan & Yufra, 2019; Eidizadeh et al., 2017; Flores-Garcia et al., 2021). Product innovation will enhance the company's competitive advantage (Wahyono, 2020).

The Effect of Capacity Constraint Resources on Clustering

The significant test results for hypothesis four show that resource capacity constraints influence clustering, as indicated by the p-value of 0.001, which is smaller than 0.05, so the proposed hypothesis is accepted. Clustering is a grouping of companies that compete with each other in the same industry, located in close locations, and then modified in such a way that they become a group of companies that collaborate to achieve common goals in terms of adding value to each company to gain competitive advantage.

The close location around Jabodetabek means that cardboard printers can still receive orders when their machine utilities are full by collaborating. The parties involved in clustering collaboration consist of brand owners, namely companies that own brands and want to make their products; first-hand printing, namely printing that receives cardboard orders directly from brand owners; Printers who receive labour costs are printers who have excess production utilities to help produce orders from first-hand printers.

It works from ordering cardboard from the brand owner to the first-hand printer. Then, the first-hand printer whose machine utility is full will ask the printer who receives the labor costs to do the work by explaining the brand owner's company's request, including cardboard specifications, quantity, and delivery time. The work process can include part or all of the production process, for example, whether the first-hand printer himself will carry out only printing costs and the finishing process. First-hand printing will supervise the production process so that it remains by predetermined specifications. After production, the first-hand printer will inspect the print and packaging before sending it to the brand owner. First-hand printing is responsible for the quality of the cardboard

because first-hand printing is directly related to the brand owner. The emergence of so many new printing companies makes it easier to fulfil the demands of brand owners (Djasurovna, 2020).

Respondents' answers regarding the high level of utilization of business services from the internet have a minor meaning because MSME printing companies need to use the internet network to communicate with fellow printing companies. Information regarding the production process must be obvious, usually face-to-face. For example, if we talk about the color red, we have to show examples of the color in the form of prints on paper because the color seen on a computer screen is different from the color seen if it has been printed on paper.

Contrary to the opinion that sharing capacity constraint resources is fundamentally impossible for many people without capacity limitations to consume simultaneously (Wirtz et al., 2019). The main challenge that cardboard manufacturers face in order manufacturing is combining their regular operations with continuous development and improvement and keeping up with new trends that regularly emerge in the economic environment (Dostatni & Trojanowska, 2017). Thus, it is necessary to build success through interaction with a business model that focuses on sharing, making the clustering method the most appropriate for organizing industries that have apparent features such as expensive large-scale fundamental and applied research, long manufacturing cycles, and high production costs (Kumar et al., 2018 ; (Efimova & Sutyrin, 2019).

The Influence of Intellectual Capital on Clustering

The significant test results on hypothesis five show no influence of intellectual capital on clustering, as indicated by the p-value of 0.154, which is greater than 0.05, so the hypothesis proposed is not supported. MSME printing companies do not utilize intellectual capital within the cluster. Respondents' opinions and interviews say that high team collaboration is only carried out internally in MSME printing companies to maintain company secrets in winning the competition (Faramukti, 2019). The increase in new printing presses and the high level of utilization of business services from the internet make information increasingly open, so prices become very competitive, and intellectual capital does not affect clustering in meeting consumer demand.

Respondents' answers regarding the attitude of mutual assistance between MSME printing companies and customers were high, with the most minor mean. Printing companies do not help each other deal with customers because there is a horizontal competitiveness situation between homogeneous companies. This is because there is concern that after getting to know the customer, another printing service will take the order (Juliya & Konstantin, 2017). Contrary to the opinion that intellectual capital is an essential asset that supports production, distribution, and sales (Juliya & Konstantin, 2017), as information develops from cluster policy recommendations, it is easier to target and access individual customers. (Tsakalerou, 2015; Wang et al., 2019) .

The Influence of Innovative Capability on Clustering

The results of the significant test on hypothesis six show an influence of innovative capability on clustering, as shown by the p-value of 0.000, which is smaller than 0.05, so the proposed hypothesis is supported. This is proven by the opinions of respondents and interviews that with the emergence of many new MSME printing companies, MSME printing companies carry out joint planning for the development of new services, cross-functional core team meetings, partners will open discussions about new ideas, win-win partnerships are a shared vision between partners MSME printing company. The above is only done internally at MSME printing companies, not within clusters, to avoid horizontal competitiveness between homogeneous companies (Juliya & Konstantin, 2017).

Respondents' answers regarding always sharing current trend information for external predictions have the most minor mean. MSME printing companies do not do this because they only work based on job orders, leaving all matters related to external predictions to the brand owner. After all, packaging/cardboard creates attraction and influences customers' purchasing intentions (Yeo et al., 2020).

Contrary to the opinion that innovation in clusters has more excellent capabilities as a generator of new knowledge and provides a high level of competitiveness, expanding input in R&D of new products and technologies, utilizing resources from other organizations (Mazur et al., 2016; Xue et al., 2019; Zhang, 2019; Li & Cai, 2019). Thus,gh clusters are more effective in traditional industries than in high-tech sectors (Gatune, 2016).

The Effect of Clustering on Competitive Advantage

The significant test results for hypothesis seven show that clustering influences competitive advantage, as indicated by the p-value of 0.000, which is smaller than 0.05, so the hypothesis is supported. This is proven by respondents' opinions and interviews that with the emergence of many new printing companies, more printing presses can accommodate the overflow of orders received beyond the utility of first-hand printing machines. Printing companies do not need to focus on investing in machines, which ultimately reduces the fixed costs of MSME printing companies (Luomaranta & Martinsuo, 2022). Printing companies can use a strategy of low prices and timely customer service. The above causes clustering influence on competitive advantage.

Respondents' answers regarding the high level of utilization of business services from the internet have a minor mean. MSME printing companies do not use the Internet network to communicate with fellow printing companies. This is because information about the production process requires obvious information, which is usually required to be met face to face; for example, if we talk about the colour red, and then we have to show an example of the colour in printed form on paper. The colours seen on a computer screen are different from the colours seen when printed on paper.

In line with the opinion that clustering improves economic efforts such as providing skilled labour, research and development capacity, and infrastructure that will create assets such as trust, synergy, collaboration, and cooperation, all of which are important for achieving competitive advantage, reducing production costs, resource sharing, access specialists, and knowledge sharing (Grimstad & Burgess, 2014; Awad & Amro, 2017; Pang & Dong, 2019).

The effect of clustering mediation on resource capacity constraints and competitive advantage

The significant test results for hypothesis eight show that clustering mediates the relationship between capacity constraint resources and competitive advantage, which is indicated by the p-value of the t statistic of $0.005 < 0.05$, so the hypothesis is accepted. It has been proven that clustering does not limit production capacity for printing companies in Jabodetabek. It depends on how the company utilizes limited internal resource capacity to create new resources that can be used to add value to the company and achieve a competitive advantage.

Various obstacles that limit production capacity can be resolved by providing services to printers who receive services. With a detailed explanation of the specifications, raw materials, semi-finished goods, and auxiliary materials can be processed in part or in whole by the printing service recipient. Printers who receive the first order can still maintain quality, quantity, and timely delivery to satisfy the brand owner and ultimately create a competitive for the company. Clusters are an example of a network structure in which the collaboration of companies is aimed at benefiting mainly

from geographical proximity, sectoral concentration, and social factors that not only allow increasing operational capacity but also gaining competitive advantages by partners (Frankowska & Cheba, 2022). Cluster management can promote the specialization of companies in clusters, realize resource sharing in clusters, and increase the influence of company brands in clusters. The main goal is to improve the core competitiveness of companies in the cluster through inventory coordination strategies throughout the chain; companies can effectively reduce inventory costs and capital costs and increase profits for both parties. Supply capacity limitations increase, making inventory synergy situations more diverse and aligned with reality (Pang & Dong, 2019).

The effect of clustering mediation on innovative capability on competitive advantage

However, the significant test results on hypothesis nine show that clustering does not mediate the relationship between innovative capability and competitive advantage, as indicated by the p-value of the t statistic of 0.166 > 0.05, so the hypothesis is not supported.

As researchers say in m, in modern production conditions, clusters provide the implementation of two opposing processes, namely horizontal competitiveness between homogeneous companies and vertical cooperation between two companies in the same process chain; competition and collaboration are the essence of clusters (Juliya & Konstantin, 2017). In this case, clustering shows its negative side so that it does not mediate joint planning of new service development, cross-functional core team meetings, partners will open discussions about new ideas, and win-win partnerships are a shared vision between partners of fellow printing companies. Information related to confidentiality between the first-hand printing company and the brand owner (customer), especially regarding the customer's data.

Contrary to the opinion that managing innovation properly, the connecting company (first-hand printing) must have reliable and friendly interactions with partner companies in the cluster. Through proper coordination, firms in an industrial cluster can link knowledge, technology, relationships, and various heterogeneous resources to achieve complementarity through a sharing process. (Liao et al., 2017) ; (Sedita et al., 2022) . Flexible and cooperative relationships benefit cluster members by helping them adapt to market competition (Ye et al., 2021). It turns out that printing companies are more worried about competition between fellow printing partners (Juliya & Konstantin, 2017).

Effect of clustering on intellectual capital on competitive advantage

Meanwhile, the significant test results on hypothesis ten show that clustering mediates the relationship between intellectual capital and competitive advantage, as indicated by the p-value of 0.000 < 0.05, so the hypothesis is supported.

Printing works because it prioritizes communication so the production process can run effectively and efficiently when ordering cardboard according to consumer specifications. Good communication skills can facilitate the diffusion of knowledge so that the printing company receiving the services understands the content of the communication and carries out the work as intended to match consumer orders (Dyba & De Marchi, 2022). After the production process, the quality of the cardboard and packaging must be tested. Furthermore, through a smooth distribution network, finished cardboard products are sent directly to consumers on time.

Respondents' answers regarding the attitude of mutual assistance between MSME printing companies and customers were high, with the most minor mean. Printing companies do not help each other deal with customers because there is a horizontal competitiveness situation between homogeneous companies. This is due to concerns that the printing service will take the order after getting to know the customer (Juliya & Konstantin, 2017).

Companies need to pay greater attention to benefits that can be crucial to their growth potential. Therefore, new companies must not exclusively develop their internal resources and capabilities but must utilize them to benefit from externalities originating from the cluster (Subyantoro & Suwarto, 2020). Companies can utilize limited internal resource capacity into new resources that can be used to add value to the company in achieving competitive advantage. However, in modern production conditions, clusters implement two opposite processes: horizontal competitiveness between homogeneous companies and vertical cooperation between companies in the same process chain (Juliya & Konstantin, 2017).

Independent companies, mergers, and acquisitions restrain economic growth and reduce quality, while clusters accelerate economic growth and improve quality (Sergi & Scanlon, 2019). Cluster economies and cluster diseconomies companies experience different experiences depending on how the economy or diseconomy increases its resource strengths, reduces resource weaknesses, or is overcome by resource strengths. In addition, the ability to take advantage of available cluster externalities also differs (Pandit et al., 2018).

The positive impact of economic clusters on the level of development of countries is based on several features that emerge for the financial entities participating in innovation clusters: uniqueness of the internal environment and infrastructure of the cluster; strengthening interconnections and relationships formed between participants; openness of information, trust between cluster subjects; changes in the company/cluster's overall intellectual capital; increasing the level of employee competence, changing management style and psychology, improving social security, building new communication networks; access to new technologies, R&D findings; joint scientific research aimed at further introduction into production; financing effectiveness; cost reduction (Rautela et al., 2019) , stable position in the market; positive impact on other economic entities in the region; positive experiences of the cluster and its participants that influence the reputation of the area and the country as a whole (Kookueva & Tsertseil, 2018) .

CONCLUSION

This research concludes that clustering mediates limited resource capacity, competitive advantage, intellectual capital, and competitive advantage. Six of the ten hypotheses proposed were proven to be accepted. The research results show no influence between limited resource capacity and competitive advantage. This is due to the ability of MSME printing companies to receive orders above the capacity of machines, space, or human resources and use an outsourcing system to fulfil these requests so that investment costs and limited time do not burden them. Furthermore, there is no influence between intellectual capital and competitive advantage because most MSME printing companies are run by their owners, who can handle most of the production process manually outside regular working hours. This allows faster delivery and satisfies customers, considering the importance of packaging in product marketing. Innovation influences competitive advantage by developing new services jointly with printing partners, which supports creating profitable partnerships and discussing new ideas. The mediating effect of clustering on limited resource capacity on competitive advantage increases the competitiveness of companies in clusters with effective inventory coordination strategies, reduces inventory costs, and increases profits for both parties. Clustering also influences competitive advantage by facilitating interaction between printers and customers and increasing healthy competition in the market. However, there is no influence between innovation ability and competitive advantage through clustering because printing companies tend to withhold information

from competitors in the cluster. Good communication skills explain the mediating effect of clustering on intellectual capital on competitive advantage in facilitating the dissemination of knowledge and better understanding of consumer orders.

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