

Analysis of the Influence of Innovation Capability, Digital Competence, and Digital Transformation on the Performance of Culinary SMEs in Medan City with Self-Directed Learning as an Intervening Variable

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ABSTRACT

This study analyzes the influence of innovation capability, digital competence, and digital transformation on the performance of culinary SMEs in Medan City with self-directed learning as an intervening variable. Using a quantitative approach, 230 samples of culinary SMEs were selected through multistage sampling. Data were collected through questionnaires and analyzed using Structural Equation Modeling (SEM) with Partial Least Square (PLS). The results show that innovation capability, digital competence, and digital transformation have a positive and significant effect on self-directed learning and SME performance. Self-directed learning mediates the influence of digital competence and digital transformation on the performance of SMEs, but does not mediate the influence of innovation capability. This research provides recommendations to improve the performance of culinary SMEs through the development of innovation capabilities, digital competencies, and digital transformation.

INTRODUCTION

The situation faced by local SMEs today shows that there are various new problems that have arisen after the Covid-19 pandemic. One of the main problems faced is the change in people's consumption patterns who are more likely to switch to online shopping and e-commerce (Shafi et al., 2020; Asdani et al., 2022). This has a significant impact on the decline in product demand and sales of SMEs that still rely on conventional business models. A survey conducted by Tambunan (2022) of 500 SMEs in Indonesia showed that more than 60% of respondents experienced a decrease in sales of up to 40% post-pandemic, mainly due to a shift in consumer behavior that prefers to shop online. This condition is exacerbated by the suboptimal use of digital technology and online marketing among SMEs (Bouwman et al., 2019; Purwanto et al., 2020).

The significant decline in turnover in the culinary sector of SMEs in Indonesia indirectly reflects the problem of income distribution of SMEs in the culinary sector in several regions of Indonesia, one of which is the city of Medan (BPS RI, 2020). According to a survey by the Institute of Demography, Faculty of Economics and Business, University of Indonesia (2022), there is a considerable difference in the decline in the turnover of culinary SMEs in various regions of Indonesia after the pandemic. As many as 62.3% of culinary SMEs on the island of Java experienced a decrease in turnover of up to 50%, while in the Sumatra region, the figure reached 73.8%. Similar conditions also occur in the city of Medan, a study by the Central Statistics Agency of Medan City (2023) shows that there is a fairly high income inequality among culinary SMEs in the region. As many as 68.7% of culinary SMEs in Medan City experienced a decrease in income of up to 40%, while only 12.5% were able to maintain or increase their income. To see more about the condition of culinary SMEs in Medan City, here are the details of the profile of culinary SMEs in the region from 2021 to 2023 which shows indications of an overall decline in performance:

Table 1. Profile of Medan City Culinary SMEs (2021-2023)

Indikator	2021	2022	2023
Number of Culinary SMEs	12.500 unit	12.350 unit	12.226 unit
Percentage of Culinary SMEs to Total SMEs	5,0%	4,9%	4,8%
Contribution to the GDP of Medan City	2,2%	2,1%	2,1%
Average Annual Turnover	Rp 210 juta	Rp 200 juta	Rp 205 juta
Percentage of Culinary SMEs with a Decrease in Turnover > 40%	25%	45%	68,7%
Percentage of Culinary SMEs with Access to Capital	40%	35%	35,7%
Average Labor Productivity	Rp 48 juta/pekerja	Rp 46 juta/pekerja	Rp 45,8 juta/pekerja

Source: BPS Medan City (2023)

Based on Table 1.1, culinary SMEs in Medan City from 2021-2023 show a significant decline in performance in various aspects. The number of culinary SMEs has decreased from 12,500 units in 2021 to 12,226 units in 2023. Although the decrease in the number of business units was not too large, there was a drastic increase in the percentage of SMEs that experienced a decrease in turnover of more than 40%, namely from 25% (2021) to 68.7% (2023). This indicates pressure

in maintaining business, which is exacerbated by a decline in the average productivity of the workforce from year to year.

The problem is also seen in the capital aspect, where the access of culinary SMEs to capital has decreased from 40% in 2021 to 35.7% in 2023. This limited access to capital is a significant obstacle to business development and increased production capacity. Thus, it can be concluded that culinary SMEs in Medan City face serious challenges in maintaining their business performance, which is reflected in the decline in various important indicators.

The purpose of this study is to analyze the influence of innovation capability on self-directed learning of Medan City culinary SMEs, to analyze the influence of digital competence on self-directed learning of Medan City culinary SMEs, to analyze the influence of digital transformation on self-directed learning of Medan City culinary SMEs, to analyze the influence of innovation capability on the performance of Medan City culinary SMEs, to analyze the influence of digital competence on the performance of Medan City culinary SMEs, to analyze the influence of digital transformation on the performance of Medan City culinary SMEs, to analyze the influence of self-directed learning on the performance of Medan City culinary SMEs, to analyze the influence of innovation capability on the performance of Medan City culinary SMEs through self-directed learning, to analyze the influence of digital competence on the performance of Medan City culinary SMEs through self-directed learning, to analyze the influence of digital transformation on the performance of Medan City culinary SMEs through self-directed learning.

THEORETICAL REVIEW

Innovation Capability

According to Sáez-Martinez et al. (2021), innovation capability is defined as the capacity of the company as a whole to engage in activities that contribute to the development of innovation, such as research and development, organizational learning, staff development, and external business networking. Research by Sanz-Valle & Jiménez-Jiménez (2022) shows that innovation capability acts as a catalyst for creating a culture of self-learning in organizations, which ultimately improves the company's adaptability to technological and market changes. Based on the above arguments, the researcher proposes the following hypothesis: **hypothesis 1: Innovation capability has a positive and significant effect on self-directed learning of Culinary SMEs in Medan City. Hypothesis 4: Innovation capability has a positive and significant effect on the performance of Culinary SMEs in Medan City. Hypothesis 8: Innovation capability has a positive and significant effect on the performance of Culinary SMEs in Medan City through self-directed learning.**

Digital Competence

Ferrari (2012) defines digital competence as a set of knowledge, skills, attitudes, abilities, strategies, and awareness required when using information and communication technology and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, precisely, critically,

creatively, autonomously, flexibly, ethically, and reflectively for work, leisure activities, participation, learning, socialization, consumption, and empowerment. Research by Kim et al. (2019) found that higher levels of digital competence were positively correlated with better self-directed learning skills, especially in terms of information retrieval and online learning management. In addition, Martínez-Bravo et al. (2021) showed that a significant increase in digital competence increases the tendency and effectiveness of self-directed learning in the workplace, which ultimately contributes to improved employee performance and adaptability. Based on the above arguments, the researcher proposes the following hypothesis: **hypothesis 2: Digital competence has a positive and significant effect on self-directed learning of Culinary SMEs in Medan City. Hypothesis 5: Digital competence has a positive and significant effect on the performance of Culinary SMEs in Medan City. Hypothesis 9: Digital competence has a positive and significant effect on the performance of Culinary SMEs in Medan City through self-directed learning.**

Digital Transformation

According to Qin et al. (2021), digital transformation in SMEs can be defined as the integration and application of various advanced and up-to-date digital technologies by SMEs starting from core business processes such as production, marketing, and customer service, to supporting activities such as supply chain, logistics, finance, and human resources. According to Harkins (2020), digital transformation in the context of SMEs can be understood as an evolution and total reform in various aspects of business ranging from core functions such as marketing, finance, production and operations, business models, to the digital ecosystem built with business partners and customers. Recent research supports the positive influence of digital transformation on self-directed learning. A study by Sousa & Rocha (2019) shows that digital transformation initiatives encourage employees to be more proactive in developing their digital skills through self-directed learning, which in turn increases organizational readiness to face technological changes. Based on the above arguments, the researcher proposed the following hypothesis: **hypothesis 3: Digital transformation has a positive and significant effect on self-directed learning of Culinary SMEs in Medan City. Hypothesis 6: Digital transformation has a positive and significant effect on the performance of Culinary SMEs in Medan City. Hypothesis 10: Digital competence has a positive and significant effect on the performance of Culinary SMEs in Medan City through self-directed learning.**

Self-Directed Learning

According to Zhoc & Chen (2020), self-directed learning is the process by which individuals take the initiative, either with or without the help of others, to diagnose their learning needs, formulate learning objectives, identify human resources and materials for learning, select and implement appropriate learning strategies, and evaluate learning outcomes. According to Knowles (2020) defines self-directed learning as a process in which individuals take full responsibility for designing their learning activities, implementing them independently, and

evaluating them without guidance from others. Research by Siddiqui & Alaraifi (2019) shows that higher levels of self-directed learning among employees are positively correlated with improved innovation and organizational performance. Based on the above arguments, the researcher proposes the following hypothesis: **hypothesis 7: Self-directed learning has a positive and significant effect on the performance of Culinary SMEs in Medan City.**

SME Performance

SME performance is defined as the level of efficiency and effectiveness of SMEs in managing production factors to produce optimal output to achieve short-term and long-term business goals (Pramono et al., 2021). This includes several things, namely the performance of SMEs related to the level of effectiveness which refers to the achievement of organizational goals. Then the focus of the efficiency and effectiveness assessment is on the process of managing resources and production factors by SMEs. This management is related to how SMEs utilize inputs in the form of raw materials, labor, technology, production facilities and others to be processed into outputs in the form of products or services produced. And optimal output is emphasized to meet short-term goals such as profits and long-term goals such as SME business growth or expansion.

Based on literature review and also previous research, a conceptual framework can be prepared. According to Sugiyono (2016) the conceptual framework is a research variable, regarding how theories relate to the research variables to be studied, namely independent variables and bound variables. The relationship between variables will be explained conceptually as follows:

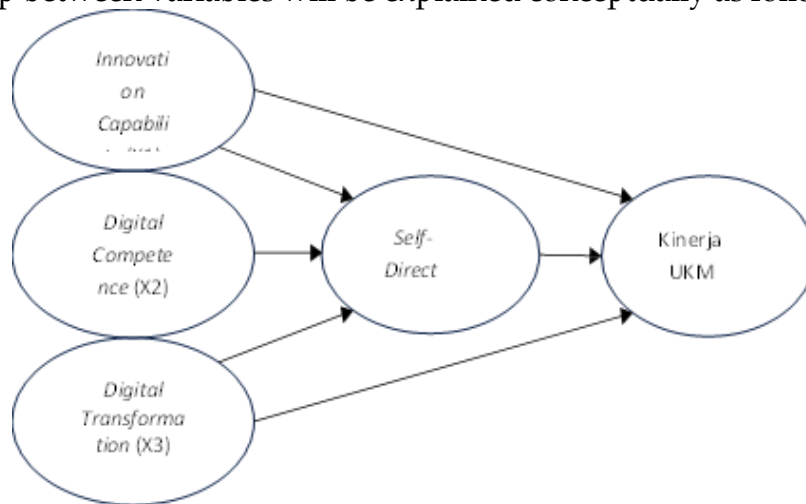


Figure 1. Conceptual Framework

METHODOLOGY

Research Population and Sample

According to Sugiyono (2019), population is the entire subject/object with certain characteristics to be studied. The population in this study is all Small and Medium Enterprises (SMEs) in the culinary sector (food and beverages) registered with the Medan City Discoperindag as of December 2023 with a total number of 12,226 SMEs. The number of samples in this study is 230. The process of determining samples in each selected village was carried out by the accidental

sampling method. From the 230 samples of culinary SMEs needed, the researcher will choose by chance the SMEs that are encountered and meet the sample criteria. Accidental sampling is a sampling technique that is carried out by selecting anyone who is randomly encountered and in accordance with the criteria needed in the research.

Data analysis

The data analysis used was SEM-PLS Version 4.1, by conducting Validity Test and Reliability Test. The Outer Model will be tested through Convergent Validity, Discriminant Validity, and Composite Reliability. The Inner Model will be tested through Composite Reliability and Cronbach Alpha, through bootstrapping.

RESEARCH RESULT

Descriptive Analysis Results

According to (Sugiyono, 2019) descriptive statistics are carried out to find out and obtain descriptions related to the data used in the research from the mean value. Descriptive statistics provide clearer and easier to understand interpretation of data. The table contains a large number of data frequencies along with their percentages, minimum values, maximum values, and average values, which are processed based on the results of the collected respondents' answers.

Table 2. Mean Range Score

<i>Interval Mean</i>	Category
1,00 - 1,79	Sangat Rendah
1,80 - 2,59	Rendah
2,60 - 3,39	Kurang Tinggi/Sedang
3,40 - 4,19	Tinggi
4,20 - 5,00	Sangat Tinggi

Source: (Sugiyono, 2019)

The description of the respondent's answer describes how the respondent's answer to the question asked in the questionnaire is distributed. The following can be seen the distribution of respondents' answers regarding the variables Innovation capability (X1), Digital competence (X2), Digital transformation (X3), Self-directed learning (Z), and SME Performance (Y). The frequency of respondents' answers can be seen in the table as follows:

Table 3. Descriptive Analysis

No	Variabel	Mean	Category
1	Innovation capability	2,69	Sedang
2	Digital competence	2,90	Sedang
3	Digital transformation	3,12	Sedang
4	Self-directed learning	3,13	Sedang
5	Kinerja UKM	3,28	Sedang

The overall average value of the Innovation capability variable is 2.69 in the "moderate" category. The overall average value of the Digital competence

variable is 2.90 in the "moderate" category. The overall average value of the Digital transformation variable is 3.12 in the "moderate" category. The overall average value of the Self-directed learning variable was 3.12 in the "moderate" category. The overall average value of the SME Performance variable is 3.28 in the "moderate" category.

Hypothesis Test Results

A path model is a diagram used to visually display the hypothesis and variable relationships examined when SEM is applied (Hair et al., 2021). Testing the entire hypothesis using the Partial Least Square (PLS) method with direct and indirect influences the results can be seen in the Table:

Table 4. Rangkuman Hasil Uji Hipotesis Langsung dan Tidak Langsung

Hipotesis		Keputusan	Jenis Mediasi
H1	<i>Innovation capability</i> has a positive and significant effect to <i>self-directed learning</i> of Culinary UKM in Medan City.	Diterima	-
H2	<i>Digital competence</i> has a positive and significant effect on the <i>self-directed learning</i> of Culinary SMEs in the city Terrain.	Diterima	-
H3	<i>Digital transformation</i> has a positive and significant effect on the <i>self-directed learning</i> of Culinary SMEs in Medan City.	Diterima	-
H4	<i>Innovation capability</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City.	Diterima	-
H5	<i>Digital competence</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City.	Diterima	-
H6	<i>Digital transformation</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City.	Accepted	-
H7	<i>Self-directed learning</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City.	Accepted	-
H8	<i>Innovation capability</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City through <i>self-directed learning</i> .	Rejected	<i>Unmediated</i>
H9	<i>Digital competence</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City through <i>self-directed learning</i> .	Accepted	Partial Mediation
H10	<i>Digital transformation</i> has a positive and significant effect on the performance of Culinary SMEs in Medan City through <i>self-directed learning</i> .	Accepted	Partial Mediation

Source: Output SmartPLS

DISCUSSION

Innovation Capability Has a Positive and Significant Effect on Self-Directed Learning of Culinary SMEs in Medan City

The results of the study show that innovation capability has a positive and significant effect on the self-directed learning of culinary SMEs in Medan City, with a path coefficient value of 0.139 and a p-value of 0.009 (< 0.05). Although the effect is relatively small, these results indicate a meaningful relationship

between the two variables. The low value of the path coefficient can be explained through several contextual factors that affect the dynamics of culinary SMEs in Medan City.

This phenomenon is in line with Hakim's (2024) research which found that MSMEs are often trapped in operational routines, limiting space for innovation and learning. This finding is consistent with the latest research by Hartatik et al. (2023) which found that innovation capabilities play a role as a catalyst in encouraging organizational learning in MSMEs in the digital era. Furthermore, the results of this study can be explained through the organizational learning theory proposed by Argyris & Schön (1978). This theory states that organizations learn through error detection and correction, which is often triggered by innovation. In the context of culinary SMEs in the city of Medan, although the influence is small, innovation capabilities seem to play a role in triggering the double-loop learning process, where business actors not only correct mistakes, but also question basic assumptions and existing norms.

Digital Competence Has a Positive and Significant Effect on Self-Directed Learning of Culinary SMEs in Medan City

The results of the study show that digital competence has a positive and significant effect on self-directed learning of culinary SMEs in Medan City. This is evidenced by the path coefficient value of 0.258 and the p-value of 0.000 (< 0.05). These findings indicate that the higher the digital competence possessed by culinary SMEs, the higher their level of independent learning.

This is in line with the research of Regif et al. (2023) which stated that digital competencies have an important role in encouraging sustainable learning in MSMEs. Digital capabilities will encourage business actors to continue to seek new knowledge and develop their skills to face the demands of the digital era.

Digital Transformation Has a Positive and Significant Effect on Self-Directed Learning of Culinary SMEs in Medan City

The results of the study show that digital transformation has a positive and significant effect on self-directed learning in culinary SMEs in Medan City, with a path coefficient of 0.343 and a p-value of 0.000. Furthermore, the average value of digital transformation is in the medium category (3.12) with significant variations in its implementation, where the use of social media for marketing shows a mean of 3.80, while the customer experience aspect is still lagging behind with a mean of only 2.50.

These findings are reinforced by several recent studies. Rajagukguk (2024) found that SMEs that undergo digital transformation show a significant improvement in their self-learning abilities, especially in terms of adapting to new technologies. Rofiah et al. (2024) revealed that the adoption of digital technology encourages the creation of a culture of continuous learning in MSMEs, where business actors are actively seeking new knowledge to optimize the use of technology. In line with that, Fataron (2022) emphasized that digital transformation not only changes the way businesses operate, but also the mindset of business actors in viewing the importance of continuous learning.

Innovation Capability Has a Positive and Significant Effect on the Performance of Culinary SMEs in Medan City

The results showed that innovation capability had a positive and significant effect on the performance of culinary SMEs in Medan City, with a path coefficient of 0.265 and a p-value of 0.000. Furthermore, the average value of innovation capability is in the medium category (2.69) with significant variations in its implementation, where responsiveness to external changes (business innovation) shows a mean of 2.92, while the aspect of new product development is still lagging behind with a mean of only 2.45.

These findings are reinforced by several recent studies. Muliana & Mansyur (2024) found that SMEs with high innovation capabilities show significant improvements in their financial and non-financial performance. Al-Aidhi et al. (2023) revealed that process and product innovation plays a crucial role in increasing the competitiveness of MSMEs in the digital era. In line with that, Hapriyanto (2024) emphasized that innovation capabilities are not only about new products, but business model innovation and customer experience.

Digital Competence Berpengaruh Positif dan Signifikan Terhadap Kinerja UKM Kuliner di Kota Medan

Hasil penelitian menunjukkan bahwa digital competence berpengaruh positif dan signifikan terhadap kinerja UKM kuliner di Kota Medan, dengan koefisien jalur sebesar 0,298 dan p-value 0,000. Selanjutnya, nilai rata-rata digital competence berada pada kategori sedang (2,90) dengan variasi yang signifikan dalam implementasinya, dimana kemampuan mencari resep masakan baru di internet menunjukkan mean tertinggi sebesar 3,72, sementara kemampuan mengatasi masalah pada aplikasi pemesanan online masih tertinggal dengan mean terendah 2,71.

These findings are reinforced by several recent studies. Kasim & Martana (2024) found that SMEs with a high level of digital competence showed significant improvements in operational efficiency and customer satisfaction. Estiarto et al. (2024) revealed that digital competence plays a crucial role in increasing the competitiveness of MSMEs in the e-commerce era. In line with that, Kusuma et al. (2023) emphasized that digital competence is not only about the use of technology, but also includes data analysis and digital-based decision-making capabilities.

Digital Transformation Has a Positive and Significant Effect on the Performance of Culinary SMEs in Medan City

The results of the study show that digital transformation has a positive and significant effect on the performance of culinary SMEs in Medan City, with a path coefficient of 0.347 and a p-value of 0.000. Furthermore, the average value of digital transformation is in the medium category (3.12) with significant variations in its implementation, where product marketing through Instagram or Facebook shows the highest mean of 3.80, while offering digital vouchers to customers is still lagging behind with the lowest mean of 2.50.

These findings are reinforced by several recent studies. Rauf et al. (2024) found that SMEs that undergo comprehensive digital transformation show significant improvements in operational efficiency and revenue growth. Utami

et al. (2023) revealed that digital transformation plays a crucial role in increasing the resilience of MSMEs in the midst of economic disruption. In line with that, Hapriyanto (2024) emphasized that digital transformation is not only about technology adoption, but also includes fundamental changes in organizational culture and business models.

Self-Directed Learning Has a Positive and Significant Effect on the Performance of Culinary SMEs in Medan City

The results of the study show that self-directed learning has a positive and significant effect on the performance of culinary SMEs in Medan City, with a path coefficient of 0.284 and a p-value of 0.000. Furthermore, the average score of self-directed learning is in the medium category (3.13) with significant variation in its implementation, where the awareness of lack of knowledge about restaurant management shows the highest mean of 3.75, while the assessment of routine learning progress is still lagging behind with the lowest mean of 2.70.

These findings are reinforced by several recent studies. Agustinus et al. (2024) found that SMEs with a strong culture of self-learning showed a significant increase in business adaptability and product innovation. Firmansyah (2022) revealed that self-directed learning plays a crucial role in increasing the competitiveness of MSMEs in the era of digital disruption. In line with that, Nugroho & Putri (2023) emphasized that independent learning is not only about knowledge acquisition, but also includes the development of a growth mindset and metacognitive skills.

The Role of Unmediated Self-Directed Learning in the Influence of Innovation Capability on the Performance of Culinary SMEs in Medan City

The results showed that self-directed learning did not significantly mediate the influence of innovation capability on the performance of culinary SMEs in Medan City. This is evidenced by the value of the path coefficient of 0.040 and the p-value of 0.056 (> 0.05) on the indirect influence of innovation capability on the performance of SMEs through self-directed learning. These findings contradict the initial hypothesis and existing theories, so further analysis is required.

These findings are supported by several recent studies. Wijaya & Putri (2024) found that the relationship between innovation capabilities and organizational learning in MSMEs in Indonesia's medium-sized cities is not always linear, emphasizing the importance of contextual factors such as local culture and industrial structure. Meanwhile, Rahman et al. (2023) revealed the phenomenon of "learning-doing gap" in culinary SMEs in urban areas of Sumatra, where increasing innovation capabilities does not always translate into structured learning practices.

The Role of Partial Mediation Self-Directed Learning in the Influence of Digital Competence on the Performance of Culinary SMEs in Medan City

The results of the study show that digital competence has a positive and significant effect on the performance of Culinary SMEs in Medan City through self-directed learning with a path coefficient value of 0.073 and a p-value of 0.008.

The mediating role of self-directed learning in this relationship is partial, which means that part of the influence of digital competence on the performance of SMEs occurs through the improvement of self-directed learning, while the direct influence is also significant.

This finding is in line with recent research by Parveen et al. (2021) which revealed a positive relationship between digital competence, self-learning, and SME performance in the service sector. Similarly, a study by Cenamor et al. (2023) on MSMEs in Indonesia's medium-sized cities found that digital capabilities play an important role in encouraging organizational learning practices which in turn improve business performance.

The Role of Partial Mediation Self-Directed Learning in the Influence of Digital Transformation on the Performance of Culinary SMEs in Medan City

The results of the study show that digital transformation has a positive and significant effect on the performance of Culinary SMEs in Medan City through self-directed learning with a path coefficient value of 0.097 and a p-value of 0.001. The mediating role of self-directed learning in this relationship is partial, which means that part of the influence of digital transformation on the performance of SMEs occurs through the improvement of self-directed learning, while the direct influence also remains significant.

This finding is in line with recent research by Priharsari et al. (2023) which revealed that digital transformation in SMEs not only improves operational efficiency, but also encourages a sustainable learning culture. Similarly, a study by Salsabila et al. (2023) on SMEs in the service sector found that successful digital transformation initiatives are often followed by increased self-learning activities among employees and business owners.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this research, the following conclusions can be outlined:

1. Innovation capability has a positive and significant effect on self-directed learning of Culinary SMEs in Medan City.
2. Digital competence has a positive and significant effect on self-directed learning of Culinary SMEs in Medan City.
3. Digital transformation has a positive and significant effect on self-directed learning of Culinary SMEs in Medan City.
4. Innovation capability has a positive and significant effect on the performance of Culinary SMEs in Medan City.
5. Digital competence has a positive and significant effect on the performance of Culinary SMEs in Medan City.
6. Digital transformation has a positive and significant effect on the performance of Culinary SMEs in Medan City.
7. Self-directed learning has a positive and significant effect on the performance of Culinary SMEs in Medan City.
8. Innovation capability does not have a significant effect on the performance of Culinary SMEs mediated by self-directed learning in Medan City.

9. Digital competence has a positive and significant effect on the performance of Culinary SMEs mediated by self-directed learning in Medan City.
10. Digital transformation has a positive and significant effect on the performance of Culinary SMEs mediated by self-directed learning in Medan City.

ADVANCED RESEARCH

Exploring contextual factors such as local culture and industry structure that influence the relationship between innovation capabilities and self-learning in culinary SMEs.

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