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The development of the Albanian wood industry and the correlation of the main strategic business factors

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Abstract

In Albania, numerous studies have been conducted on various business categories; however, there is limited or no evidence regarding strategic management within the wood industry. Over the years, this industry has undergone significant changes. Business owners report that their operations are continuously evolving, necessitating shifts in their operational models to: 1) improve efficiency, 2) reduce complexity, and 3) lower costs. The research was conducted in the Tirana and Durrës districts, with data collected from wood processing companies. A total of 30 questionnaires were processed, followed by statistical analysis. The study revealed the following findings: 1) In terms of product development, companies identified the creation of new products as a strong factor; 2) Operational management remains in its early stages, but its significance is well recognized; 3) Key areas of operations management are being implemented, though inventory management and innovation remain underdeveloped; 4) Although companies aspire to market leadership, they primarily follow customer demands, lacking innovation as a competitive advantage; 5) Regarding technology, 70% of companies cited the acquisition of new machinery as a crucial factor; 6) The generation of new product ideas faces obstacles, particularly in the financial sector and due to regional developments; 7)There is a strong correlation between improved customer service and quick response times in product distribution; 8) Companies have not yet achieved the level of synchronization necessary for optimal supply chain management; 9)Firms should focus on gathering feedback from both suppliers and customers to enhance their systems. This analysis highlights the need for greater innovation, technology investment, and operational management improvements in Albania's wood industry to remain competitive in an evolving market.

1. Introduction

Wood processing industries include a wide range of activities related to the processing and production of wood products. Nowadays, the wood processing industry faces several important challenges in the modern era where in our field of study it is worth mentioning:

1. Fluctuating wood prices;
2. Competition from alternative materials;
3. Lack of qualified workforce;
4. Market demand fluctuations;
5. Technology integration;
6. Supply chain disruptions;
7. Innovation and Design Trends;

The wood processing industry in Albania has made significant progress, evolving through a history of substantial change. Prior to the 1990s, this sector operated under a centralized state-controlled system that dictated the forms of technology (primarily large-scale schemes) and regulated product quantities based on concentrated market demand. With the collapse of the centralized system and the emergence of private enterprises, the wood processing industry experienced a shift. Large, concentrated enterprises located in a few cities gave way to a geographically dispersed industry, characterized by smaller businesses with limited resources and organizational structure. As Albania transitioned to a market economy, economic strengthening, new market opportunities—both domestic and international—and increased demand have driven the industry toward significant advancements. These include the expansion of product ranges, the adoption of modern technologies and automated production lines, and the development of a more specialized workforce equipped to manage specific technological processes.

Over the years, the wood industry in Albania has experienced continuous transformation. Business owners report that their operations are in constant flux. As noted earlier, it is essential for companies within this sector to adopt a well-defined operational management strategy. Creating competitive advantages by adding value to operational processes, particularly through the transformation of raw wood into finished products, is crucial for success in the wood processing industry. While various studies have been conducted on operational management strategies across multiple business sectors in Albania, there is a notable lack of research focused on the wood industry.

This study aims to address this gap by presenting existing operational management practices within the wood industry and emphasizing the need for their further adoption and development in this field [1-3].

2. Material and method

2.1 Defining the problem

Over the years, the wood industry in Albania has undergone drastic changes. Company owners say that their business is constantly changing in shape. The experience has shown to them the need to change their operational model in order to:

- Improve efficiency
- Reduce complexity
- Reduce costs

In Albania, a number of studies have been done for many different categories of business but there is a lack of evidence for the wood industry toward defining the current strategy and operational management model used by them.

Therefore, this study seeks to contribute by presenting the existing practices in the field of operational management and defining the need for their adoption in this direction.

The study seeks to answer two basic questions as follows:

a) Do companies in the wood industry apply operational management practices?
b) What practices have been adopted in this regard?

2.2 Aim of study

This study aims to:

- Contribute in gathering information and forming a database with regard of managerial forms applied in the Albanian wood industry and;
- To provide an understanding of operational constraints and corrective measures for companies in this industry.

2.3 Research design

For developing the proposed approach, the research has included 4 main stages, as shown in Figure 1.

2.3.1. Methodology

The study was design through the compilation of questionnaires and focus group. The content of questionnaires was divided into 6 sections as following:

Part 1: General information

Part 2: Product, processes and product variety
Part 3: Strategies in the companies under study
Part 4: Design and innovation;
Part 5: Operational management practices;
Part 6: Additional information;

The questionnaires include open and closed questions. The closed questions were set in a five-point Likert scale format.

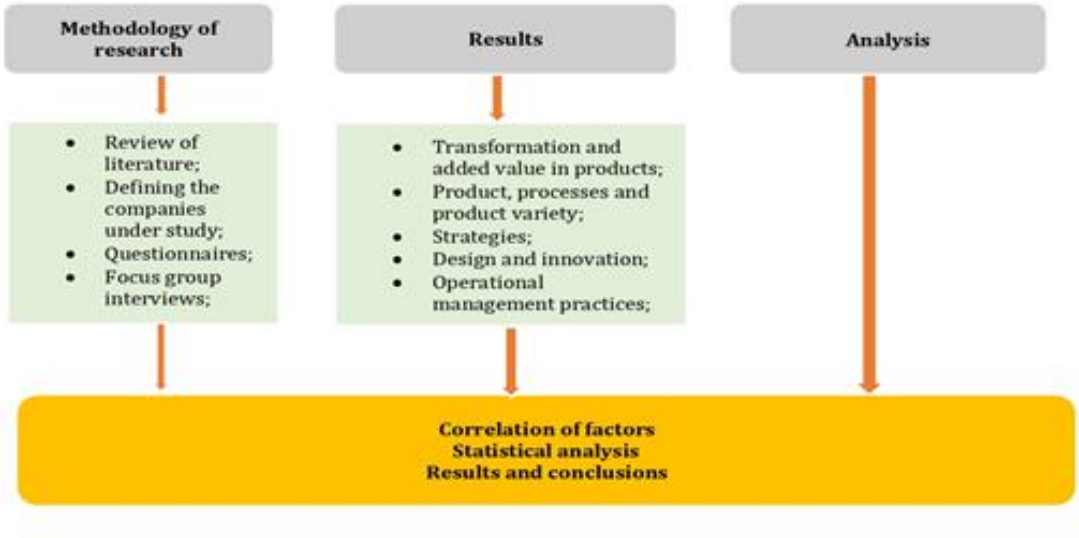

Figure 1. The phases of research design.

2.3.2. Study population

In this study, the target population was the wood processing and trading companies in Albania, registered by the National Business Center (NBC). The research was carried out in region of Tirana and Durres, since most of the companies under the "Big Business" category are located in this area.

2.4. Data collection

The data were collected in the several companies where visits in production units, meetings with managers, engineering and technical staff were held. The gathered information from questionnaires and focus group meetings were organized, tabulated and processed. The number of companies under the study is 10 and the number of questionnaires filled out is 30. Tables and graphs are used to illustrate the findings. For each section of the questionnaire, the statistical analysis was used to indicate the degree of implementation of the operations management practice.

The gathered data from the Likert scale were used to determine the degree of application of operations management practices by companies and correlation between factors. The average score of all questions was used to determine the group average. From a scale of 1-5, where 1 means strongly disagree and 5 means strongly agree, a mean score of 3.0 and above was taken to indicate the existence of the practice [4-5].

3. Results

Operations management is responsible for the transformation of inputs into outputs. The role of operations management (MO) is to transform company inputs into final products or services. Inputs include human resources, facilities, processes as well as materials, technology and information [6-8]. The wood processing industry is based on the transformation of raw materials through processing processes into semi-finished or final products. The operational processes that are key in adding the value of the raw material are several and they differ according to the type of product. In our study, we focused in identifying the main processes used by the companies during the production phases and a summary of them are shown in Table 1.

3.1 Core business factor analysis

To maintain a competitive position in the market, every company must have its own long-term plan. This plan needs to include the company's long-term goals, understanding the market and finding ways to differentiate the company from its competitors. All these decisions must be supported by this long-term plan.

Table 1. Transformation of raw material into final product.

Raw material	Processes	Product
Pine, beech wood	Wood treatment & Seasoning	Chairs
Beech wood	Cutting & sizing	Tables
Oak wood	Planning	Kitchen furniture
Beech panels	Joineries	Bedroom furniture
Oak panels	Assembly	Furniture for hotels, bars and restaurants
Solid walnut wood	Fixing	Personalized office furniture
Laminated chipboard	Finishing-sanding, painting, polishing, lacquering etc.	
MDF	Dismantling, packing and dispatching	
Multistrade		
Fiber		

The operations strategy is the long-term plan of operations that specifies the design and use of resources to support the business strategy.

Based on the theoretical framework, the company's business strategy is built after managers have considered many factors and made some strategic decisions. This includes determining what business the company has (its mission), analysis for market recognition (environmental scanning) and identification of the company's strengths (core competencies). All three of these factors are critical for the development of the company's long-term plan or business strategy [9-10].

3.2 Mission & Goals

The mission is the purpose or reason for the existence of the companies. 90% of the respondents agreed that they have a clear mission. Based on this formulation, the table below clearly shows the mission and the basic goal of the companies studied.

Based on the data expressed in the Table 2, we conclude that all the companies in the study have the product, time, quality and the customer as their main goal. In their formulations, we also distinguish their competitive advantages.

Table 2. Mission of the companies under the study.

No.	Companies	Mission
1	Ardeno ltd	Product value and brand quality. Helping customers by offering low costs and timely delivery of products
2	Erald ltd	Adapting innovations to customer requirements to create a new product
3	Euro Bicaku ltd	To compete with dignity at home and abroad
4	Saraci 95 ltd	-
5	ALBASTOJKU ltd	Trade and distribution of the product
6	RO-AL ltd	Product quality and correctness to the customer
7	Shaga ltd	Service, commitment, guarantee, art
8	VEKO ltd	We are aiming at high results and our main goal is to supply customers with the necessary products
9	"Marjani" ltd	-
10	"Kurti" ltd	To provide good quality product, fulfilled on time according to the customer's requirements

- Things must be done the right way: that is, there must be no mistakes and the clients must be satisfied with products by giving to the company the advantage of quality (Table 2).
- Things must be done quickly: minimizing the time from the moment the products or services are requested by the customer until they are fully received, thus increasing the availability of goods and services by giving to the company the advantage of time (Table 2).
- "Adaptation of innovations to customer requirements to create a new product" expressed by "Erald" ltd shows the ability of this company to change quickly and able to fulfil the customer's requirements by giving this company the advantage of flexibility (Table 2).
- "Ardeno" ltd in its strategy shows the intention to make things as least expensive as possible; that is the final price should be suitable for the market and meantime the company's profit by giving it the cost advantage (Table 2).

100% of the respondents agreed that the main goal of the company is:

- To correct the problems;
- To adopt the best practices
- To follow a strategy related to activities and advanced technology;
- To have technological processes as the main competitive advantage;

3.3 Scanning factors for improvement and new ideas

The design of products and services plays a crucial role in shaping many transformation processes. In practice, the pursuit of product improvement is a standard expectation, as operations managers continually seek innovative ideas. One of the primary reasons for this focus is the need to consistently meet customer demands. In addition to market pressures, internal factors also drive the need for product changes. Operational activities may involve adapting existing products to reduce production costs or designing entirely new products to address these evolving demands. As customer demand evolves over time, it is essential for marketing and operations management to collaborate closely in order to assess customer needs and recommend products that effectively meet those demands. Grounded in the theoretical framework, many questions in the questionnaire were designed to focus on product design and the generation of new ideas [11].

Results from the findings:

- 100% of the companies admitted that they have a special sector for design of projects.
- 100% of respondents admitted that during the last 10 years they have developed new ideas regarding technological products and processes.

A Likert scale was used in the questionnaire to measure the directions in which the new ideas addressed (Figure 2).

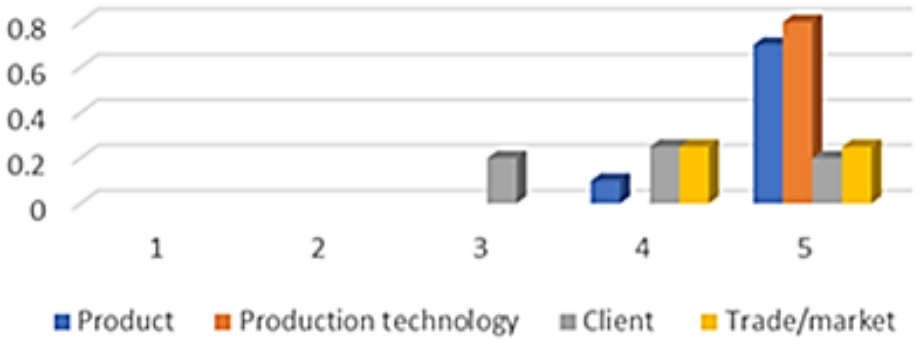

Figure 2. Direction of developing news ideas.

As illustrated in the chart (Figure 3-4), the primary focus, at a scale of 80%, is on production technology, followed by product development at 70%. These factors are considered crucial in shaping the main development trajectories of the companies. The market is also deemed an influential factor (25%), with the recognition that environmental changes significantly impact the company's strategy.

Drawing from the theoretical framework and the data gathered from the questionnaire, we conducted a more detailed analysis of two groups of questions focusing on:

a. New ideas in the direction of the product
b. New ideas in terms of technology

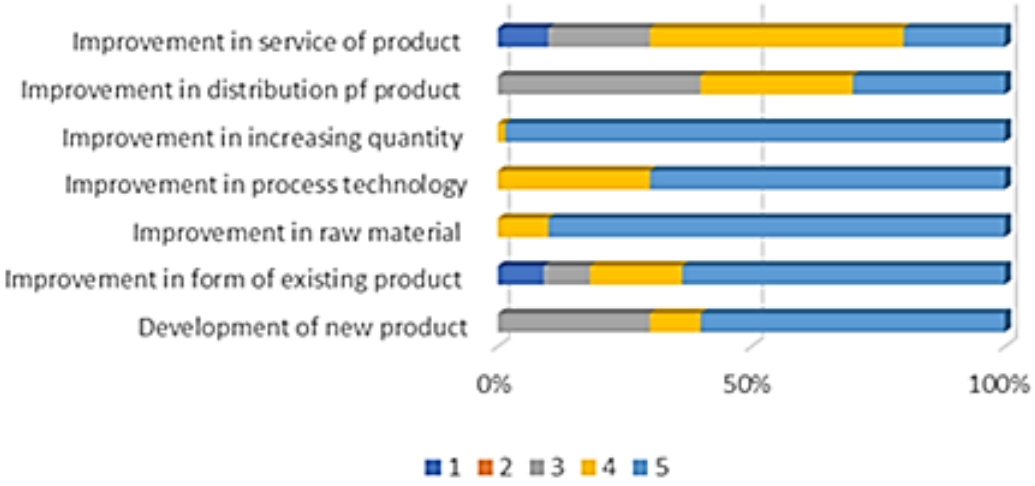

Figure 3. Chart of improvement.

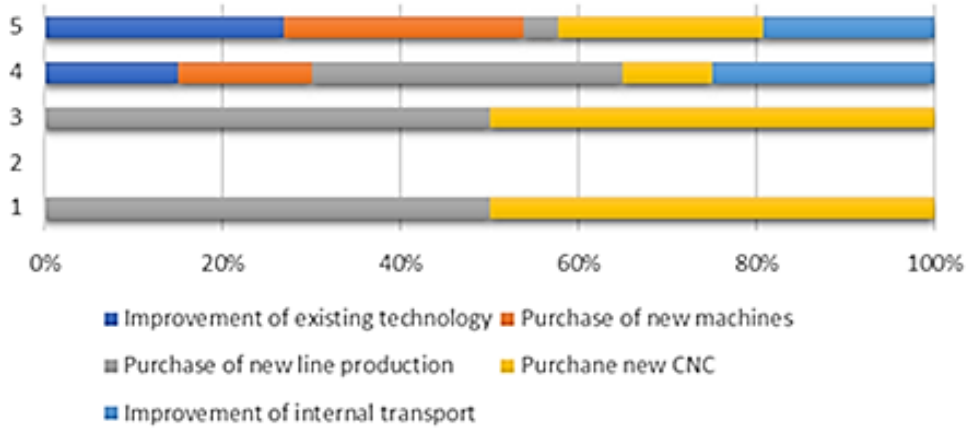

Figure 4. Improvement in production.

An important factor is identifying the resources necessary for generating new ideas. In both the questionnaire and focus groups, we targeted specific groups that we considered pivotal for accelerating innovation within the company. Internally, we focused on owners, managers, engineers, and staff across production, finance, and marketing sectors. Externally, we considered competitors, clients, and the broader environment. The data analysis (Figure 5) revealed:

- 90% of respondents identified owners as a very strong source of ideas.
- Engineers are also recognized as a key source of ideas, with 100% of companies employing more than two engineers, and their input was considered significant, at 80%.
- Production staff were regarded as a moderately strong source of ideas, with 40% of respondents acknowledging their contribution.
- The environment was recognized as a strong factor by 80% of respondents, aligning with the theoretical framework that positions the environment as a significant influence on company development.

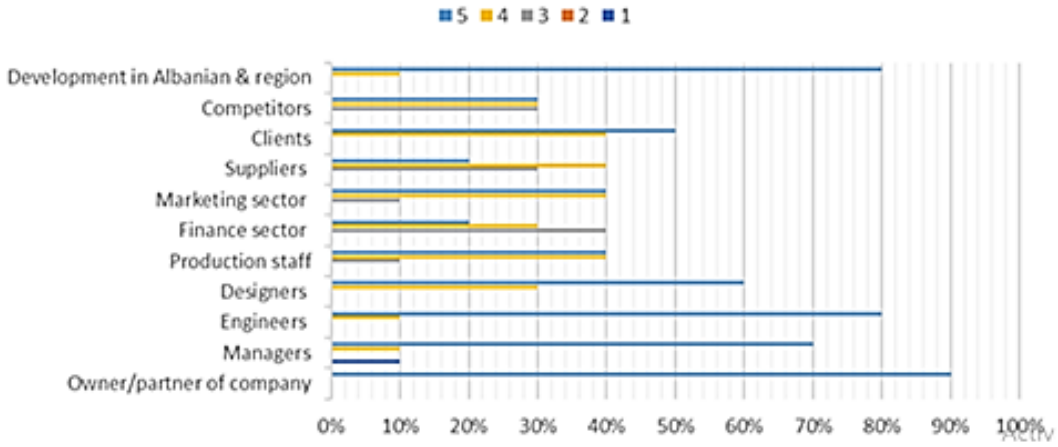

Figure 5. The source of developing new ideas & innovation.

The development of new ideas related to products is also accompanied by certain obstacles. 30% of respondents reported that they do not encounter significant challenges in generating new ideas. However, among the 6 companies that did report difficulties, the analysis revealed:

- The finance sector and production staff are perceived as hindering factors in the development of new ideas.
- Regional developments are considered a strong influencing factor. Notable changes include adjustments to the legal framework for financial reporting and increases in fuel prices and the cost of imported goods due to regional changes.

Several questions addressed workforce and job design (Figure 6), leading to the following conclusions:

- The system for collecting employee feedback is problematic. Although 40% of respondents view it as a strong factor, the system is perceived as ineffective.

- The division of duties is well-defined, with employees having a clear understanding of their responsibilities. However, there is a lack of formal documentation and inclusion of job descriptions within contracts.

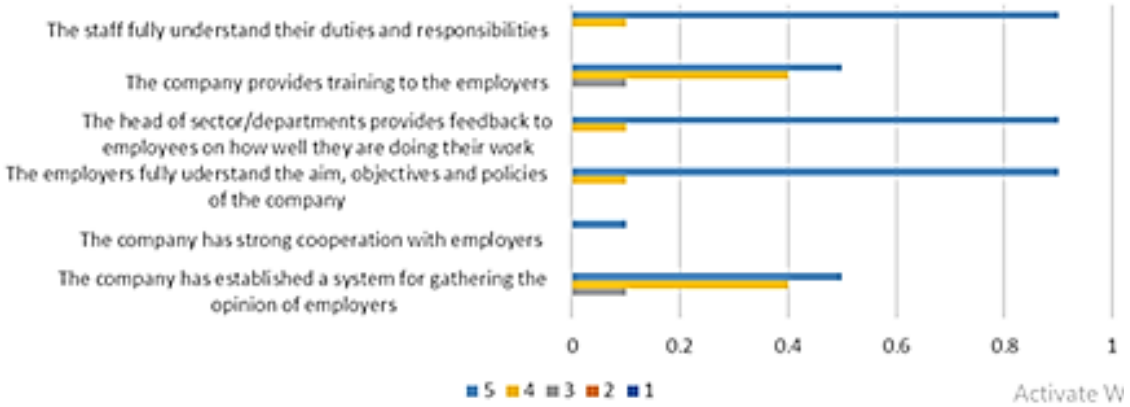

Figure 6. Company & Staff.

4. Discussion

4.1. Core competencies- Analyze of findings (SPSS)

Correlation quantifies the relationship between two variables. Correlation analysis evaluates the strength and direction of the linear association between variables. SPSS offers a range of statistical tests depending on the measurement level and data characteristics. The Pearson product-moment correlation coefficient (r) and the Spearman rank correlation coefficient (ρ) are procedures used to assess the relationship between two variables (Table 3).

Table 3. Analyze of findings (SPSS).

Hypothesis	IV (X)	DV (Y)	Parametric	Non- parametric
There is a correlation between product (P), technology (T) and client (CL)	P, T and CL	P, T and CL	Pearson Correlation	Spearman correlation

The data indicates low variance, with most responses falling between "Agree" and "Strongly Agree" on the Likert scale. Consequently, our analysis will employ both the Pearson and Spearman tests to compare the results (Table 4-5). We recognize that both tests assess the strength and direction of relationships between variables (Table 4-5).

H1: There is a correlation between product, technology and client in development of new ideas and enhancement of the strategy of the company (Table 4-5).

Table 4. Pearson correlation.

Correlations (Pearson)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Product 1	4.53	0.68	1																	
2 Product 2	4.23	0.90	-0.323	1																
3 Product 3	3.93	0.87	-0.171	-0.201	1															
4 Product 4	4.40	0.67	0.345	0.125	0.047	1														
5 Product 5	4.37	0.56	-0.534	0.444	-0.09	-0.221	1													
6 Product 6	3.33	0.76	-0.156	0.439	0.035	0.27	0.027	1												
7 Product 7	3.97	0.76	-0.229	0.363	-0.107	-0.04	0.192	0.139	1											
8 Product 8	4.07	0.98	0.048	0.609	-0.197	0.271	0.143	0.247	0.141	1										
9 Production technology 1	4.57	0.73	0.065	0.16	0.007	0.225	-0.275	0.396	-0.027	0.235	1									
10 Production technology 2	4.53	0.51	-0.053	0.096	0.24	-0.04	0.016	0.239	-0.041	0.154	-0.193	1								
11 Production technology 3	3.63	0.89	-0.008	0.131	-0.256	0.023	0.211	-0.017	0.032	0.464	-0.254	0.219	1							
12 Production technology 4	4.10	0.99	0.071	-0.259	0.247	-0.113	-0.131	0.183	-0.267	-0.007	0.042	0.369	0.199	1						
13 Production technology 5	4.27	0.64	-0.338	0.609	0.095	-0.016	0.2	0.379	0.371	0.191	0.183	-0.028	-0.186	-0.314	1					
14 Client 1	6.28	9.40	0.153	-0.058	-0.208	-0.13	0.215	-0.332	0.265	0.007	-0.389	-0.18	0.303	-0.213	-0.089	1				
15 Client 2	4.30	0.70	0.086	-0.17	0.373	-0.189	-0.291	0	0.276	-0.283	-0.074	0.213	-0.204	0.153	-0.107	-0.082	1			
16 Client 3	4.30	0.70	-0.058	0.159	0.054	0.029	-0.026	0	0.083	0.07	-0.074	0.019	0.017	0.054	0.353	0.168	-0.189	1		
17 Client 4	4.07	0.78	0.447	-0.17	-0.145	0.208	-0.137	0.077	0.061	-0.096	0.052	-0.006	-0.112	0.212	-0.174	-0.265	0.275	-0.038	1	
18 Client 5	4.30	0.84	0.073	-0.051	-0.304	-0.037	-0.096	-0.109	-0.145	0.143	-0.176	0.179	0.523	-0.203	-0.219	0.193	-0.041	-0.158	-0.032	1
19 Client 6	4.27	0.74	-0.087	0.059	0.243	-0.083	0.006	-0.102	-0.045	0.07	-0.098	0.067	0.206	0.384	0.209	0.166	-0.027	0.372	-0.091	0.033

Note: 1-8 related to product and 9-13 are related to production technology, 14-18 are related to client

Table 5. Spearman correlation.

Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
4.53	0.68	1												
4.23	0.90	-0.323	1											
3.93	0.87	-0.171	-0.201	1										
4.4	0.68	0.345	0.125	0.047	1									
4.37	0.56	-0.534	0.444	-0.09	-0.221	1								
3.33	0.76	-0.156	0.439	0.035	0.27	0.027	1							
3.97	0.77	-0.229	0.363	-0.107	-0.04	0.192	0.139	1						
4.07	0.98	0.048	0.609	-0.197	0.271	0.143	0.247	0.141	1					
4.57	0.73	0.065	0.16	0.007	0.225	-0.275	0.396	-0.027	0.235	1				
4.53	0.51	-0.053	0.096	0.24	-0.04	0.016	0.239	-0.041	0.134	-0.193	1			
3.63	0.89	-0.008	0.111	-0.256	0.023	0.211	-0.017	0.032	0.464	-0.254	0.219	1		
4.1	1.00	0.071	-0.259	0.247	-0.113	-0.131	0.183	-0.267	-0.007	0.062	0.369	0.199	1	
4.27	0.64	-0.338	0.609	0.095	-0.016	0.2	0.379	0.371	0.191	0.183	-0.028	-0.186	-0.314	

From the matrix (Table 4-5) we notice:

- The Spearman and Pearson correlation coefficients are similar, with only slight differences. The negative correlations observed are notably low and negligible, with (r) values ranging from -0.10 to -0.30.
- The low variance among variables suggests no strong relationship between them. Most respondents rated the variables between 3 and 5 on the Likert scale, resulting in low variability.

Some of the links between variables certify the sub-hypothesis (Table 4-5):

- **H1-1:** Improvement in existing technology will lead to an increase in the quantity of products. The Pearson product-moment correlation coefficient between improvements in existing technology and the quantity of products was found to be strongly positive and statistically significant. ($r=0.444$, $p<0.001$);
- **H1-2:** Improvements in existing technology and investment in new machinery will impact the development of new products. However, the correlation between improvements in existing technology or investment in new machinery (including CNC) and the development of new products was found to be negligible. ($r=.065$; $r=.053$; $r=.008$ and $r=.071$). Therefore, the development of new products is not strongly associated with investment in machinery but is more closely linked to efforts toward innovation and design. It is important to note that while correlation tests indicate the strength of relationships between variables, they do not provide information about cause & effects. Hence, additional analyses are needed to fully understand the underlying factors. It should be noted that this sub-hypothesis has not been supported by the data.
- **H1-3:** Product development and investment in technology/machinery will have a significant impact on client relationships. The test reveals a very low positive correlation between improvements in products or investment in technology and client-related factors (such as increasing the number of clients, improving client communication, or providing enhanced services). While the low positive correlation suggests a weak direct impact, it implies that investments in technology and product improvements can indirectly contribute to strengthening competitive advantages and, consequently, may have a modest effect on improving relationships with customers.

5. Conclusion

- The companies included in the study have clearly formulated their mission and vision, which are crucial for achieving the company's objectives.
- The mission statements of these companies encompass product, technology, and client focus. The hypothesis confirms that both product and technology are vital components in securing competitive advantages.
- Despite having clearly defined missions, the statements do not differentiate the companies' unique positions. Many companies are expending significant effort across product, technology, and customer relations simultaneously, which has led them to be market followers rather than leaders.
- It is noteworthy that the leadership of these companies is shifting towards a more integrated strategy, although further work is needed to strengthen their competitive advantages.
- Concentrating on a few core competencies rather than spreading resources across all areas will better position these companies in the market.
- The Pearson & Spearman test indicates a positive correlation between product development and improvements in production technology. This positive association with meeting customer demands suggests a breakdown of the strategy at the operational level. However, it is essential for companies to conduct more detailed analyses of risk and profit factors related to their policies on new product development and technology investments.

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- This study was partially presented at the 8th Advanced Engineering Days [12].

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Author contributions

Alketa Grepcka: Conceptualization, Methodology, Writing-Original draft preparation, focus group meeting, site visit
Leonidha Peri: Data curation, Data processing, Visualization, Writing-Reviewing and Editing.
Silvio Halebi: Data processing, questionnaires, focus group meeting, site visit.

Conflicts of interest

The authors declare no conflicts of interest.

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