Business Analytics for SME Productivity

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The Asian Productivity Organization (APO) is an intergovernmental organization that promotes productivity as a key enabler for socioeconomic development and organizational and enterprise growth. It promotes productivity improvement tools, techniques, and methodologies; supports the National Productivity Organizations of its members; conducts research on productivity trends; and disseminates productivity information, analyses, and data. The APO was established in 1961 and comprises 21 members.

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PREFACE

The P-Insights, short for "Productivity Insights," is an extension of the Productivity Talk (P-Talk) series, which is a flagship program under the APO Secretariat's digital information initiative. Born out of both necessity and creativity under the prolonged COVID-19 pandemic, the interactive, livestreamed P-Talks bring practitioners, experts, policymakers, and ordinary citizens from all walks of life with a passion for productivity to share their experience, views, and practical tips on productivity improvement.

With speakers from every corner of the world, the P-Talks effectively convey productivity information to APO member countries and beyond. However, it was recognized that many of the P-Talk speakers had much more to offer beyond the 60-minute presentations and Q&A sessions that are the hallmarks of the series. To take full advantage of their broad knowledge and expertise, some were invited to elaborate on their P-Talks, resulting in this publication. It is hoped that the P-Insights will give readers a deeper understanding of the practices and applications of productivity as they are evolving during the pandemic and being adapted to meet different needs in the anticipated new normal.

INTRODUCTION

In the past, productivity was the focus of experts and researchers in fields such as economics, industrial psychology, and organizational accounting; each discipline has its own principles and insights. The importance of management concepts is due to their contribution to organizational productivity. Managers should make decisions about productivity in the short and long terms so as not to face problems caused by the lack of productivity growth. The systemic approach is one of the aspects in discussions of how to increase the productivity of the workforce. The frameworks of the models should provide objectives, rules, and methods to support the systematic analysis and design of business processes. Having a model and structure provides the way for easy training of the workforce according to the systematic approach [1–3].

How to increase workforce productivity is partly dependent on business process analysis. Business processes are at the center of attention of many companies. These processes are usually a set of coordinated functions and activities, which pursue the goal of creating benefit. The purpose of business process analysis is to meet customer value requirements. The success of an organization is closely related to the success of its business processes, and the success of the processes increases productivity. Organizations need to improve their business processes to achieve and improve their levels of success and value. Performance and business process analyses can reveal the source of income loss and depletion of resources and the workforce, and with that information, resources can be continuously optimized. Sometimes, it may be necessary to review the data of the process implementers in discussions of increasing business productivity. This requires a method that continuously provides that data at runtime. Business owners can also test all kinds of methods to increase labor productivity. These solutions cover a wide range of business characteristics, and sometimes environmental conditions and political systems have an impact on their applications [4, 5].

Considering the important role they play in the economy of most developed and developing countries, SMEs are considered a key factor for economic prosperity and national production growth. Their important role is not only because of their diversity but also because of their activity in all economic

aspects. Their complementary role in supporting large economic sectors and their ability to innovate and adapt to existing conditions are other aspects of their importance. One of the most important categories for the survival and continuity of SMEs is their productivity. If SMEs cannot be productive in the competitive market environment of production and services, in the long term they will not only lose their reliability, but due to the decrease in the ratio of output to input, they will also inevitably reach the end of their activities and leave the production sector.

Business analytics (BA) is a process of identifying business needs and finding and providing solutions for various problems. In other words, BA includes a series of tasks and techniques to create relationships between stakeholders and help them understand the various structures, policies, and operations of the organization. In this way, they can provide solutions for the business to reach its goals. BA is done for different innovations in the organization. These innovations may be strategic, tactical, or operational. In addition, it may be implemented within a project or across the organization. BA can be used to understand the current state, determine the future state, and identify the activities and actions necessary to move from the former to the latter [6, 7].

BA is a part of every enterprise's plan to minimize risks because the majority of businesses face disruptions and problems. They can appear in the form of failures of suppliers, labor disputes, cyberattacks, etc. In addition, many businesses, in addition to carrying out their usual daily activities in order to use opportunities and deal with problems, must also design and define projects for applying organizational changes, improving processes, and developing new products or services.

WHAT ARE BUSINESS ANALYTICS AND SME BUSINESS DATA ANALYSIS?

The most important task of analysts to fill the gaps between IT and business is to analyze the BA data of SMEs. They can determine requirements, evaluate processes, and provide reports and recommendations to managers. Analysts who work in the business field need to analyze the BA data of SMEs through software and hardware skills. Business analysts must know how to analyze the data that exist in the organization and report the results of the process to SME managers. In addition, another important task of analysts is to share this information with others so that the information can be used to apply appropriate practices in business [8, 9].

Objectives of Business Analytics and SME Business Data Analysis

Every action related to business and its analysis should pursue the goal of improvement. In general, analysts follow goals in analyzing existing organizational data, some of which are described below. By analyzing the BA and SME business data, analysts can easily make rational decisions about the business, because with the knowledge and awareness of past experiences, the next goals of the business can be set. By analyzing the BA and SME business data, analysts can easily integrate all the information that exists in the organization and thus can more easily pursue the next goals. After analysts integrate data analysis regularly, they can access that information whenever needed [10].

How to Start the Business Analytics Process

One of the methods that can reliably help in BA can comprehensively transform an organization in seven phases. The soft system methodology (SSM) is a comprehensive organizational transformation solution that has been implemented in many businesses with good results. SSM solutions fit the goals

of organizations and can lead toward sustainable business growth by increasing performance and profitability several fold. For any problem that arises in the BA of SMEs, analysts must be able to understand that problem and clarify it to managers [11].

How to Analyze Business Analytics Data of SMEs

In order to understand BA and SME business data analysis more easily, an example can be given. Imagine that you live in 1878 and want to use a lamp or other electrical device to light your room, instead of using candles and oil lamps. You have a lot of time to create the conditions for use. First, in order to achieve your goal, you will read up on the background of electrical devices, conduct your own research, and then come up with an innovative plan to light up your own room. After you have invented the electric lamp, you can think about its production and sales and sell it. To introduce the lamp to others, you organize a press conference and announce the sale of electric lamps. Most of the processes that exist in organizations must be modeled; analysts are tasked with modeling the organization's processes. Therefore, BA and the analysis of SME business data require logical approaches and methods [12].

Among the most important questions that are answered by providing BA and SME business data analysis are the following:

1. Have business expenses decreased or increased?

2. Should business processes be faster, with less time spent on production, because the speed of the organization's employees should be increased?

3. Have new products been developed, and have analysts presented new sales proposals based on their data analysis?

Business Analytics Methods

In general, there are three main BA methods. Descriptive analysis uses historical and past business data to identify trends and patterns and interpret them. Predictive analysis relies on statistics and data to predict future results. Prescriptive analysis uses techniques to determine which output can create the best outcome for the business under the circumstances.

The best way to determine which of the above methods a business should use depends entirely on the current circumstances of the organization. Cloud analytics solutions combine data from multiple business departments, such as sales, marketing, human resources, and finance, to paint a single view of the organization to better understand how business departments are performing [13].

Business Analytics Techniques

Business analysts use dozens of different techniques to evaluate and analyze businesses. Here are just a few of the most popular:

SWOT Analysis

SWOT analysis is one of the most widely used analytical tools. Strengths, weaknesses, opportunities, and threats are the four elements of SWOT analysis. The strengths and weaknesses are related to the "internal" factors in the business, and the threats and opportunities include the "external" factors. By performing each of these analyses, business analysts achieve a detailed assessment of the current business conditions.

PESTLE Analysis

Political, economic, social, technological, legal, and environmental (PESTLE) analysis is used to identify various elements in the organizational operating environment.

MOST Analysis

The name of this type of analysis is derived from "mission, objective, strategy, and tactics." Analysts can assess the business situation by analyzing the following:

- Mission, meaning the current and future goals of an organization;

- Objectives to help businesses achieve their mission, which should be specific, measurable, achievable, realistic, and timely (SMART);

- Strategy, or a plan to achieve organizational goals and fulfill the organizational mission; and

- Tactics, meaning the methods an organization uses to implement its strategies.

Brainstorming

Brainstorming is a group activity and one of the most widely used techniques. This method is a creative strategy in which a group of people form a team to generate ideas, analyze the root causes of problems, and create innovative solutions. Brainstorming is used in conjunction with other BA techniques such as SWOT and MOST analyses.

Business Process Modeling

The purpose of business process modeling (BPM) is to improve processes. It is an older method often used as a BA approach in the analysis phase of a project to identify gaps between existing and future business processes.

Use Case Modeling

Use case modeling uses methods such as infographics to show how a business should operate in a system through interactions with users. It is mainly used in software development projects and in the design phase to convert business needs into practical specifications.

CATWOE

"CATWOE" refers to customers, actors, transformation process, worldview, owners, and environmental limitations. The method relies on the main actors and key stakeholders to bring together the perspectives of different stakeholders on one platform.

Six Thinking Caps

The six thinking caps method of BA guides group thinking by encouraging the evaluation of different ideas and perspectives. It represents different personalities, from creative types to logical thinkers.

Business Analytics Process

This section briefly describes the eight steps analysts must follow when conducting BA.

Step 1: Collect the Necessary Information

This step is the most important part of the BA process, because BA always starts with gathering a significant amount of information about a project. Since business analysts need to clearly define the scope, requirements, and goals of

the business, it is necessary to take the time to gather basic information. Business analysts at this stage must:

- Define their role(s);

- Determine the main stakeholders;

- Understand the business system and existing processes clearly and accurately; and

- Review the project history.

The next concern at this stage is to identify the influencing conditions and situations. Analysts should be looking for conditions that can affect the strategic approach of a project.

Step 2: Determine the Main Goals of the Business

Analysts must now determine business strategies and goals. Doing so helps them and project managers stay focused on the project vision. At this stage, the responsibilities of business analysts include:

- Identify stakeholder expectations;

- Be confident about the clarity and attainability of business goals; and

- Be sure that the business objectives provide the basis for determining the scope and scale of the analysis.

Step 3: Define the BA Scope

It is better to define a clear, precise, and complete term as the domain. As a forward-thinking concept, it helps team members better understand business needs. Remember that the scope is a kind of guide for all steps of the BA process. At this stage, the business analyst must:

- Prepare a clear, precise draft of the BA scope; and

- Provide appropriate, effective solutions regarding nature, technology, and process changes.

Step 4: Create a BA Plan

Planning is one of the most important factors for the success of any project. A business analyst, together with the project owner, can design and develop a useful plan to present the requirements. It answers many questions about the project, brings clarity to the analysis process, and helps accurately define project requirements. Responsibilities involved in creating a BA plan include:

- Selecting the most appropriate deliverables in the context of BA;

- Defining a specific list of BA outputs covering the full scope and identifying the stakeholders; and

- Designing a timeline for completing business deliverables.

Step 5: Define Requirements in Detail

Requirements must be defined in a precise, clear, actionable manner, as detailed requirements provide the implementation team with the necessary information to formulate solutions. The most important responsibilities of the business analyst at this stage are:

- Data collection;

- Data analysis;

- Using the information to prepare an initial draft;

- Reviewing and validating output products; and

- Designing appropriate questions to eliminate gaps.

Step 6: Support Technical Implementation

Analysts should help the technical team in any way possible. Because many solutions require the use of software, business analysts must work alongside IT teams. During this process, the main tasks of business analysts are:

- Designing and reviewing the final solution;

- Updating and packaging required documentation;

- Collaborating with quality assurance professionals;

- Ensuring understanding of the importance of technical requirements;

- Undertaking change management; and

- Answering questions and helping to solve problems.

Step 7: Help the Organization Implement Solutions

This phase includes creating clear, detailed documentation in cooperation with training end-users. The purpose of this stage is to ensure that all team members are ready to accept the changes. If an organization cannot use the solutions properly, it becomes difficult and complicated to achieve the goals. Therefore, business analysts must contribute effectively at this stage to support the business. The duties of business analysts at this stage are:

- Analysis and development of business process documents (these documents will show what changes should be made in the business process);

- Training end-users until they understand all processes and changes; and

- Collaborating with business users.

Step 8: Assess the Value Created by the Solutions

There are many steps during the BA process. The results and details are explored, problems are solved, relationships are formed, and changes are managed. In this way, analysts can review and evaluate the value created by the solutions. The main responsibilities of business analysts in this stage include:

- Assess actual progress;

- Communicate results to project sponsors, project teams; and other organization members; and

- Propose follow-up projects.

Responsibilities of Business Analysts

Figure 1 shows the BA process.

FIGURE 1

BA PROCESS.

Source: Reproduced with permission from https://www.guru99.com/business-analysis-process-techniques.html [14].
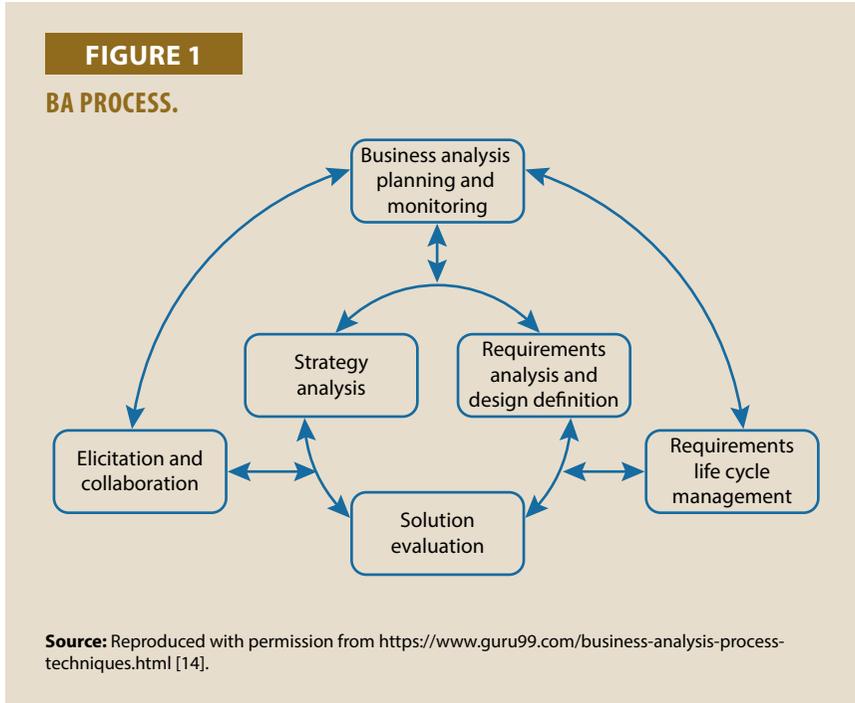
The BA process may be carried out within the scope of a project or throughout the organization for continuous improvement of the company. It can be used to understand the current situation, determine the future situation, and identify the activities and actions necessary to move from the current situation to the future [15].

The knowledge area of BA planning and supervision describes the tasks that business analysts perform in order to organize and coordinate the efforts of other business analysts and stakeholders. These tasks produce outputs that eventually become inputs and instructions for other tasks (Figure 2). The main tasks in this field of knowledge are:
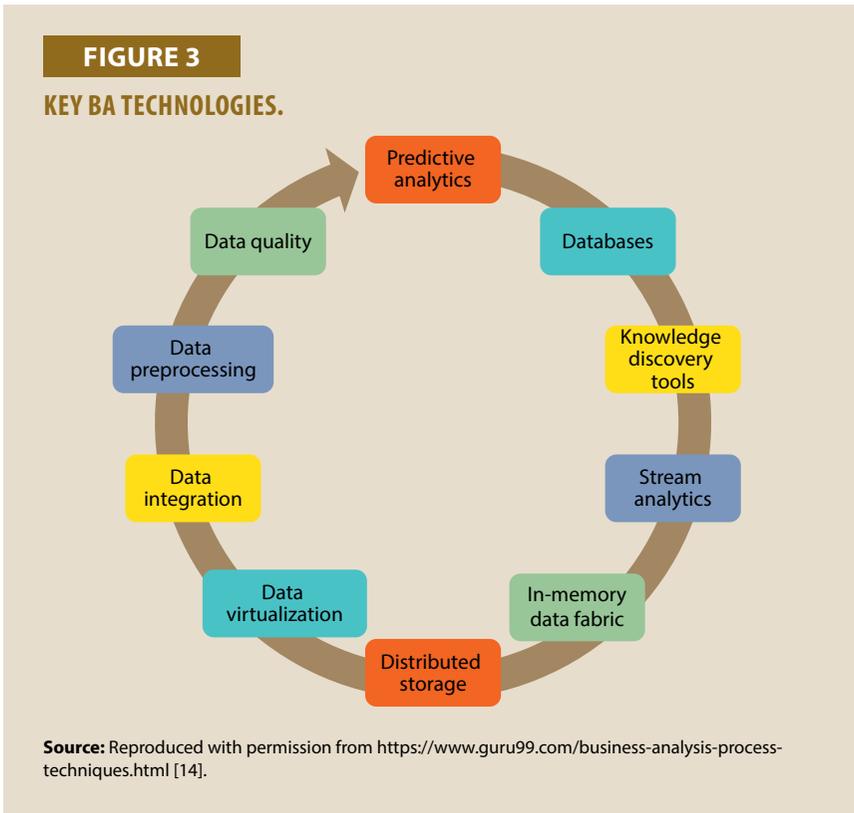
- Planning a BA approach;

- Stakeholder participation planning;

- BA governance planning;

- BA information management planning; and

- Identifying BA performance improvements.

FIGURE 2

KNOWLEDGE AREAS OF BA.

Source: Reproduced with permission from Miller K. et al. [15].
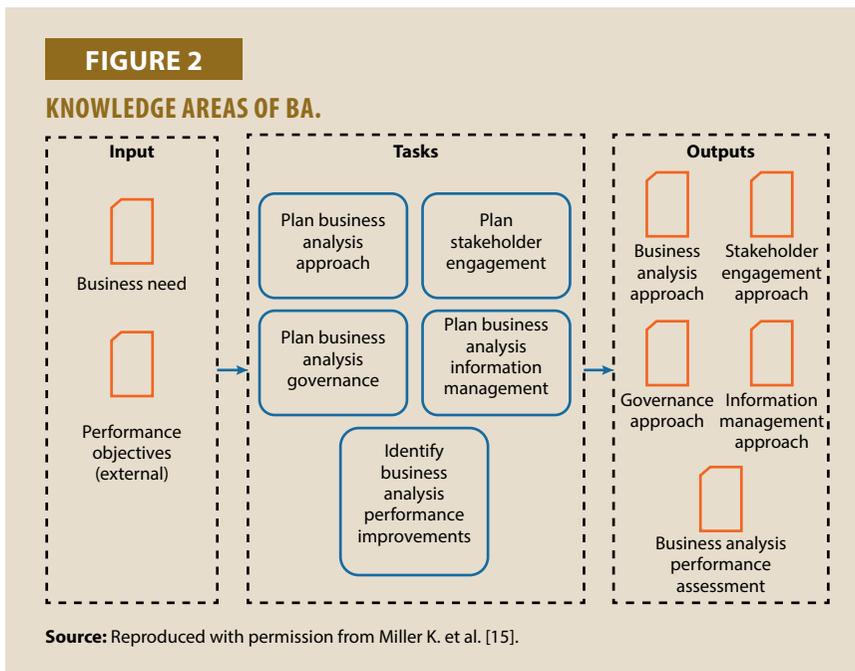
Application of Business Data Analysis in Organizations

After conducting BA and SME business data analysis, people working in organizations show better performance. Presenting these analyses helps the organizational culture grow and the business to prosper. Managers and leaders can make the best decisions for their processes. BA in SMEs is not only for managers but also to help all employees make decisions with broader insights and do their best to satisfy customers. By understanding the analysis that takes place in the business world, all employees optimize their activities, eliminate the threats that put them at risk, achieve higher productivity, use newer products and methods, and become more motivated. Organizations that want to succeed in their business fields must employ analysts who use new tools to analyze BA and SME business data and make continuous efforts in providing analyses [16]. The key technologies for BA are shown in Figure 3.

FIGURE 3

KEY BA TECHNOLOGIES.

Source: Reproduced with permission from https://www.guru99.com/business-analysis-process-techniques.html [14].

Business Analytics and SME Productivity

Considering the important role SMEs play in the economies of all countries, they are considered key factors for economic prosperity and productivity, not only because of their diversity but also because of their activity in all economic spheres. By performing BA in SMEs, analysts can easily speed up their decision-making processes and predict the next processes to be undertaken. Their complementary role in supporting large economic sectors and their ability to innovate and adapt to existing conditions are other aspects of SMEs' importance.

Some of the major contexts in which BA can help SMEs improve productivity are:

• Process productivity;

• Cost-effective decisions;

- Adaptability to disruptions;

- Human resources productivity;

- Budget productivity;

- Enhanced sales revenue (output);

- Increased output per unit cost of production (output);

- Optimized labor utilization (input); and

- Optimized capital utilization (input).

Business Analytics and SME Business Transformation

One significant impact of BA on productivity is to facilitate business transformation in the occurrence of disruptions or crises. Transformation helps SMEs to adapt to new conditions and change their business models accordingly. Some of the impacts of business transformation on SME productivity are:

- Optimizing workflows to improve employee productivity and engagement;

- Monitoring data to enhance cybersecurity;

- Streamlining operations to be more efficient;

- Tracking consumer behavior to enrich customer experience;

- Monitoring market trends to launch new products and services;

- Measuring the performance of marketing campaigns;

- Using data insights to modify business strategies; and

- Becoming leaders with data-driven decision-making.

Business Analytics Benefits for SMEs

In general, employing BA provides advantages for SMEs' productivity. Some of the advantages are:

- Increased competitiveness;

- Mobilization of tacit knowledge and informal information;

- Cost savings;

- Faster, easier access to information;

- IT infrastructure cost reductions;

- Increased workforce efficiency and productivity;

- Greater customer satisfaction; and

- Effective budgeting within short time frames.

Recommendations for SMEs in Adopting Business Analytics

Analysts tasked with BA for SMEs must constantly update and organize data to improve performance. Data should be organized in the most efficient ways for delivery to SME managers. One of the issues that is very important for managers is that data analysis results should be available to them as soon as possible so that they make decisions in a timely manner. In order for them to make better decisions, analysts should provide BA and SME business data analysis results before decision-making meetings, allowing the review of operational processes before and during the meetings. Timely delivery of such information increases the speed of work and can improve organizational performance significantly and is therefore an important responsibility of analysts.

Necessary Skills of Business Analysts

According to the statements of the International Business Analytics Organization, analysts must have special skills that companies and organizations can make use of. They must be able to communicate both verbally and in writing with the managers and leaders of any organization. One of the most

important activities of analysts is providing suitable, logical advice to managers so that they can find the best solutions through consultations on the BA and SME business data results. Analysts must make decisions and present ideas in a way that makes everything easy. Analysts' main focus should be on providing managers with ways to facilitate business.

Details on the BA results and SME business data given to managers should be as accurate as possible to find the best methods. Another important feature is that analysts must be fully familiar with organizational skills. The business of each company and organization is different, and analysts must have full knowledge of the business of each to perform their tasks in the best possible way. After analyzing the BA and SME business data, analysts should write clear reports before presenting them to managers. In the case of some changes and methods of data analysis, it is necessary for analysts to have the required engineering skills to be able to present their analysis in the most comprehensive manner. Each organization and company has specific costs, and analysts are tasked with analyzing those costs before managers order changes in the business.

Common Mistakes in Business Analytics for SMEs

One of the biggest mistakes in analyzing BA and business data for SMEs is that managers and leaders of organizations think that they can easily operate processes by performing the same analysis as professional analysts. The most important factor in improving processes is the correct implementation of the selected solutions, which should also be properly controlled. This means that managers and leaders should monitor the data of analysts and control them in order to perform better.

CONCLUSIONS

The main responsibility of business analysts is to analyze the results of BA and SME business data. Analysts have a duty to communicate with managers and leaders to make them aware of the changes that have occurred in the organization. According to these analyses, managers can identify how changes in processing, products, hardware, software, and services can increase business efficiency and benefits to the organization. Analyzing the business data of SMEs should lead to improvements in product processes through software and services. Due to the importance of BA in the current competitive environment, businesses should correctly identify their needs and take effective actions to meet those needs to achieve business goals. This can bring organizations closer to sustainable growth.

Analysts can establish logical connections between technology and the financial performance of organizations. In general, the role of analysts in providing BA for SMEs is constantly changing and evolving. The main reason is that most organizations rely on more data to complete their business activities, and analysts are forced to constantly review and analyze that data and suggest changes to managers and leaders. Every company and organization in which analysts work have different issues, and analysts must be prepared for all of them to succeed in their work. BA and related techniques can open doors to business success so that organizations are always on the path of learning, growth, and transformation.

BA is the process of making changes by specifying requirements and proposing solutions that bring value to stakeholders. It allows company managers to accurately determine the needs and main reasons for change in the organization and to describe and design solutions that create value. BA innovations may be strategic, tactical, or operational. Logical, correct analysis of business data can lead to impressive improvements, but the presentation of logical analyses depends on the analysts. The most important success factor in BA and SME business data analysis is the skills and professionalism of analysts. Business data analysis should improve organizational performance processes and

managers' decision-making choices. The goal of organizations is to produce and sell products and services to customers. By presenting accurate analyses, analysts examine the shortcomings of organizational performance and present them to managers and leaders who can make the necessary changes to achieve organizational goals.

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LIST OF FIGURES

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