

————— **Cybersecurity and Scalability** —————

# Identity & Access Management Service Provider Choice using Expert Choice Comparison



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## INTRODUCTION

A leading e-commerce company based in Sydney, New South Wales, Australia, has been a pioneer in delivering homeware and furniture retail services. As the company's digital footprint expanded, so did the complexity of securing its customer data, which made it an attractive target for cyberattacks. Numerous brute-force hacking attempts threatened the security of its backend systems and customer data.

## EXECUTIVE SUMMARY

This project was designed to select the most effective Identity and Access Management (IAM) service provider to safeguard customer data and support the company's evolving operations. Faced with increasing cyber threats-including brute-force attacks-the company needed a robust solution to protect sensitive customer information. As highlighted by Nizar (2024), IAM tools play a crucial role in protecting user identities and mitigating unauthorized access risks. Similarly, Singh et al. (2023) emphasizes that effective IAM solutions are vital for maintaining the integrity and security of e-commerce platforms.

Our goal was to position the company as a trusted and secure e-commerce platform, thereby bolstering customer trust and safeguarding its reputation in the face of ongoing cyber threats.

The project evaluated four IAM providers, including the current service provider, to determine the best fit for the company's future needs. This evaluation was based on the assumption that the company had merged with a larger company, increasing the user base from 200 to 1,000 employees, with potential for further expansion. The core question was whether the company should continue with the current service provider or explore other options to meet its long-term operational needs, balancing security, scalability, and cost-efficiency while maintaining its reputation as a secure and trusted e-commerce platform.

Using Expert Choice Comparison's Analytical Hierarchy Process (AHP) model (Forman & Peniwati, 1998), combined with pairwise comparisons, key decision-makers from across the organization reached a data-driven, strategic conclusion. This collaborative approach ensured all perspectives were considered, guiding the company towards a solution that addresses both immediate challenges and future growth.



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# IAM SELECTION

## ASSUMPTIONS USED IN THIS MODEL

- The Identity and Management (IAM) solution needed to be flexible enough to handle a potential merger that could increase the user base from 200 to 1,000 employees, with room for further expansion.
- All IAM service provider alternatives had to meet the "must-have requirements" for advanced security features, including Multi-Factor Authentication, Social Login Providers, Real-Time Alert and Threat Detection, and Log Monitoring.
- Additionally, all IAM alternatives needed to support role-based permissions to manage diverse roles and access needs.

## METHODOLOGY

The decision-making process for selecting the optimal IAM service provider used Expert Choice Comparison, a tool that applies the Analytic Hierarchy Process (AHP) to break down complex decisions into more manageable components and then compares each alternative against predefined criteria through pairwise comparisons.

Key stakeholders across the organization, including the CEO, Head of Engineering, Human Resources Manager, and the Project Manager, participated in this evaluation. This diverse mix ensured representation of a broad set of perspectives and needs of various departments, from IT and security to human resources and executive leadership.

## SELECTION CRITERIA

The following criteria were determined to be critical in selecting the most suitable IAM service provider, based on input from key stakeholders, including the CEO, Head of Engineering, Product Manager, and Human Resource Manager.

- **Security:** Was the most important criterion, given the company's experience with cyberattacks and the need to protect sensitive customer data.
- **Scalability:** The provider needed to accommodate the company's future growth without performance issues.



- **Cost:** Both initial setup costs and ongoing maintenance fees needed to be considered, as the company had previously used a free version of the current IAM service.
- **User Experience:** The ease of integration with existing systems and overall user experience were important for operational efficiency.

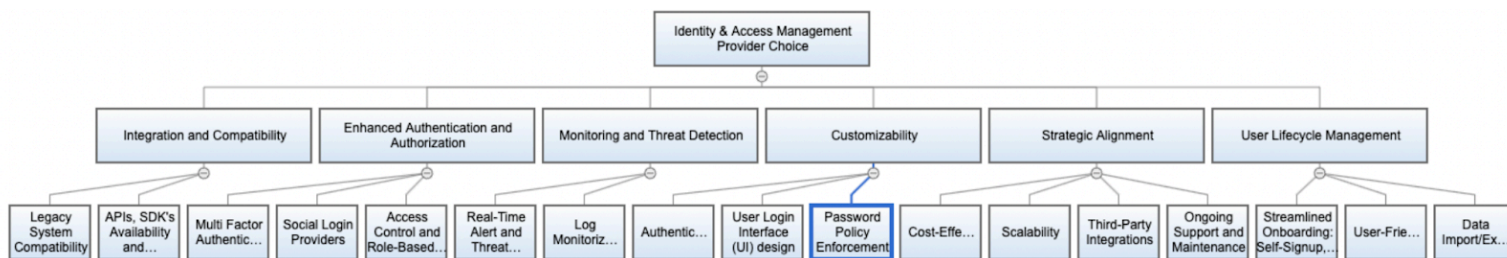
## OBJECTIVES

Based on the selection criteria outlined above, the initial requirements were further refined into more detailed, achievable, and measurable objectives. Expert Choice Comparion's Collaborative Brainstorming session helped the team outline these objectives based on the project's challenges and key criteria. Subject matter experts from different departments provided valuable input during this process.



**Figure:** Brainstorming Session for listing objectives

After the brainstorming session, the team finalized the objectives and added them into the model. Detailed information and supporting documents were included for each objective to ensure that all stakeholders had a thorough understanding of the key goals. This approach ensured that all stakeholders had the necessary information to understand the objectives and make informed judgments during the project.



**Figure:** Hierarchical Objectives



## ALTERNATIVES

In alignment with the outlined objectives, the team employed a top-down approach, starting with a brainstorming session to identify and define the necessary selection criteria. This step was followed by the creation of a hierarchical framework of objectives to ensure a structured and methodical process. Once these objectives were clearly defined, the team proceeded to select IAM service providers that demonstrated strategic alignment with the company's broader organizational goals.

A collaborative brainstorming session was facilitated using Expert Choice Comparison, allowing stakeholders to collectively list the pros and cons of each IAM alternative. A synchronous session enabled the participants to ensure that the alternatives aligned with the project's objectives, fostering a consensus on the best options to consider moving forward.

FusionAuth	
Pros	Cons
Seamless integration with Zanui's PHP-based backend system.	Free tier offers fewer customization options compared to paid plans.
Comprehensive	Multi-Factor

Auth0	
Pros	Cons
Seamless integration with Zanui's PHP backend system.	Paid plans for Business-to-Consumer (B2C) and Business-to-Business (B2B) use cases.
Comprehensive API documentation and	

One Login	
Pros	Cons
Legacy System Compatibility (e.g., PHP-based backend) and availability of APIs and SDKs with documentation	MFA methods and Social Login Providers are available under paid plans.
	Scalability and Third-

Frontegg	
Pros	Cons
Extensive API documentation for JavaScript-supported languages.	May require additional micro services implementation for compatibility with legacy systems, potentially incurring
Availability of SDKs on	

*Figure: Collaborative Brainstorming session for listing Pros and Cons for Alternatives*



FusionAuth



auth0  
by Okta

onelogin  
by ONE IDENTITY



frontegg



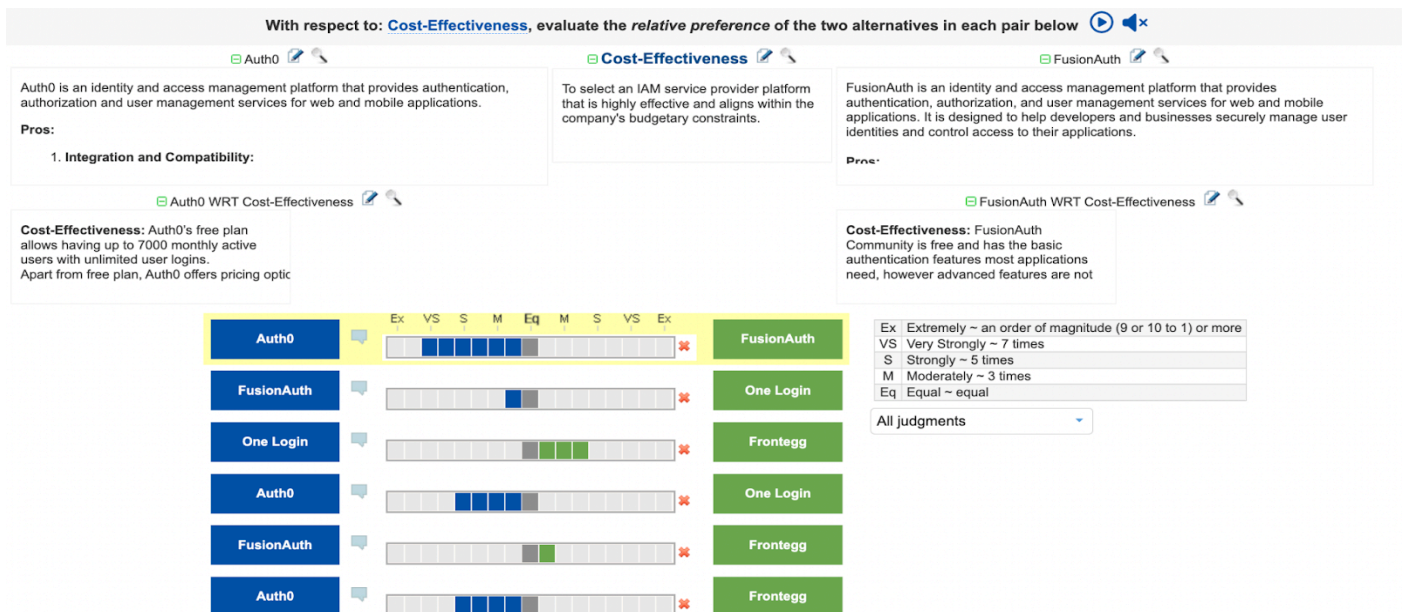
# THE DECISION MAKING PROCESS

The decision process began with the identification of four IAM service providers, including the current one in use. Using pairwise comparisons, the participants evaluated each provider based on the objectives outlined above. By assigning relative importance to each criterion, Expert Choice Comparison generated a weighted score for each IAM service provider. The final decision was reached through a collaborative effort involving key stakeholders from the IT Department, Executives, Organizational Development Team, and Program or Portfolio Management Department. These departments were grouped together in Comparison for this project. Each participant was assigned to their respective group and tasked with evaluating the set of objectives that aligned with their area of expertise.

# EVALUATION AND JUDGEMENTS

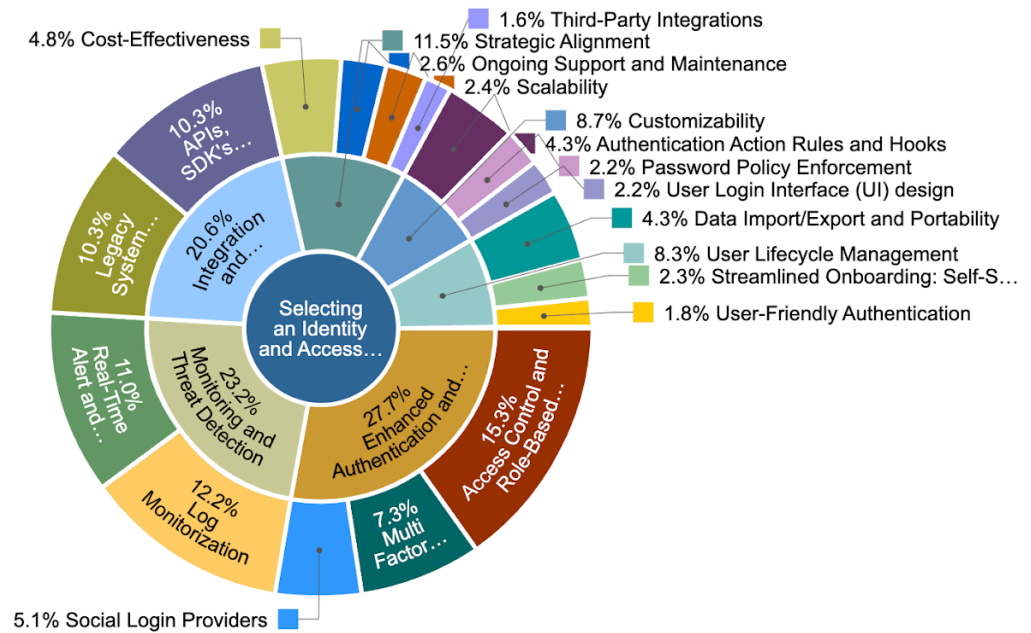
Invitations to complete the survey were sent out to key stakeholders - including the CEO, Head of Engineering, Software Engineer, Human Resource Manager, and myself, serving as the Project Manager through Expert Choice Comparison. These individuals played a crucial role in determining the best IAM service provider, each bringing a valuable perspective to the evaluation process. Participants engaged in both synchronous and asynchronous evaluations, utilizing Comparison's TeamTime meetings to facilitate judgments and ensure that everyone remained informed throughout the process.

The figure below illustrates the judgment evaluation page, providing an overview of the decision-making process. It highlights how various criteria were assessed and prioritized by the Project Manager to ensure alignment with the project's objectives and requirements.



## OBSERVATION

The results from the judgements provided valuable insights into the preferences of the five participants regarding the project objectives. The pie-chart showed that overall, “Enhanced Authentication and Authorization” was placed first with 27.68%, “Monitorization and Threat Detection” with 23.32%, “Integration and Compatibility” with 20.6%, “Strategic Alignment” with 11.47%, “Customizability” with 8.7%, and “User Lifecycle Management” with 8.34%.



**Figure:** Objective Priorities

These results highlighted the critical importance of focusing on Enhanced Authentication and Authorization, as well as the need for Robust Monitorization and Threat Detection measures in the chosen IAM service provider.



## Alternative Priorities

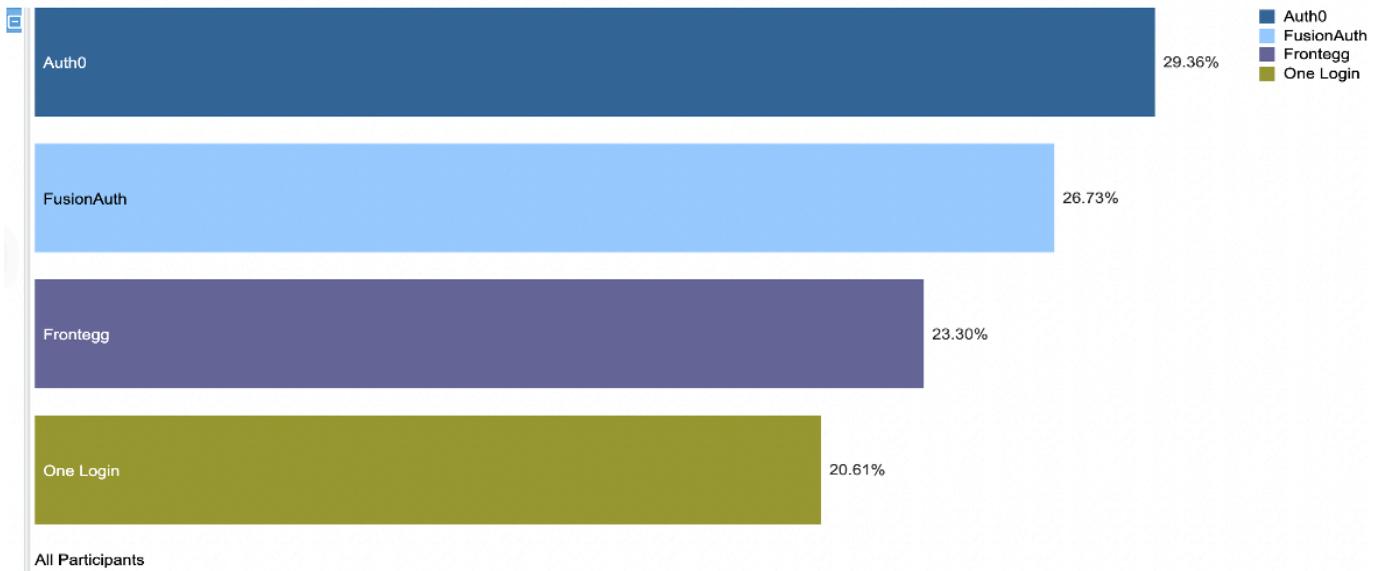


Figure: Alternative Priorities

Using the initial judgments given by participants Auth0 received the highest vote with 29.36%, followed by Fusion Auth with 26.73%, Frontegg with 23.30%, and OneLogin with 20.61%.

## Departmental Insights

Looking at results by department delivered insights on perceptions of how the IAM system would differently impact department specific areas of responsibility. For instance, the IT Department placed more emphasis on robust security and scalability measures, whereas the Human Resources team was more focused on better user experience and lower cost, as shown in the screenshot below.

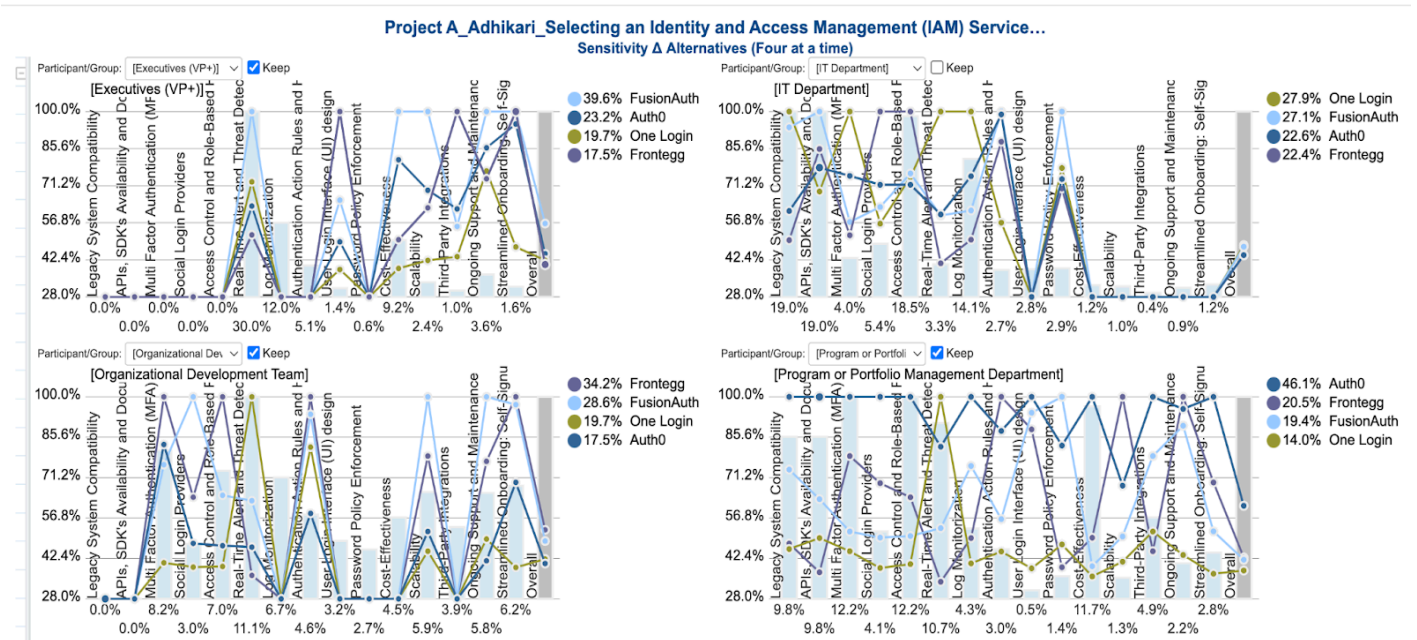
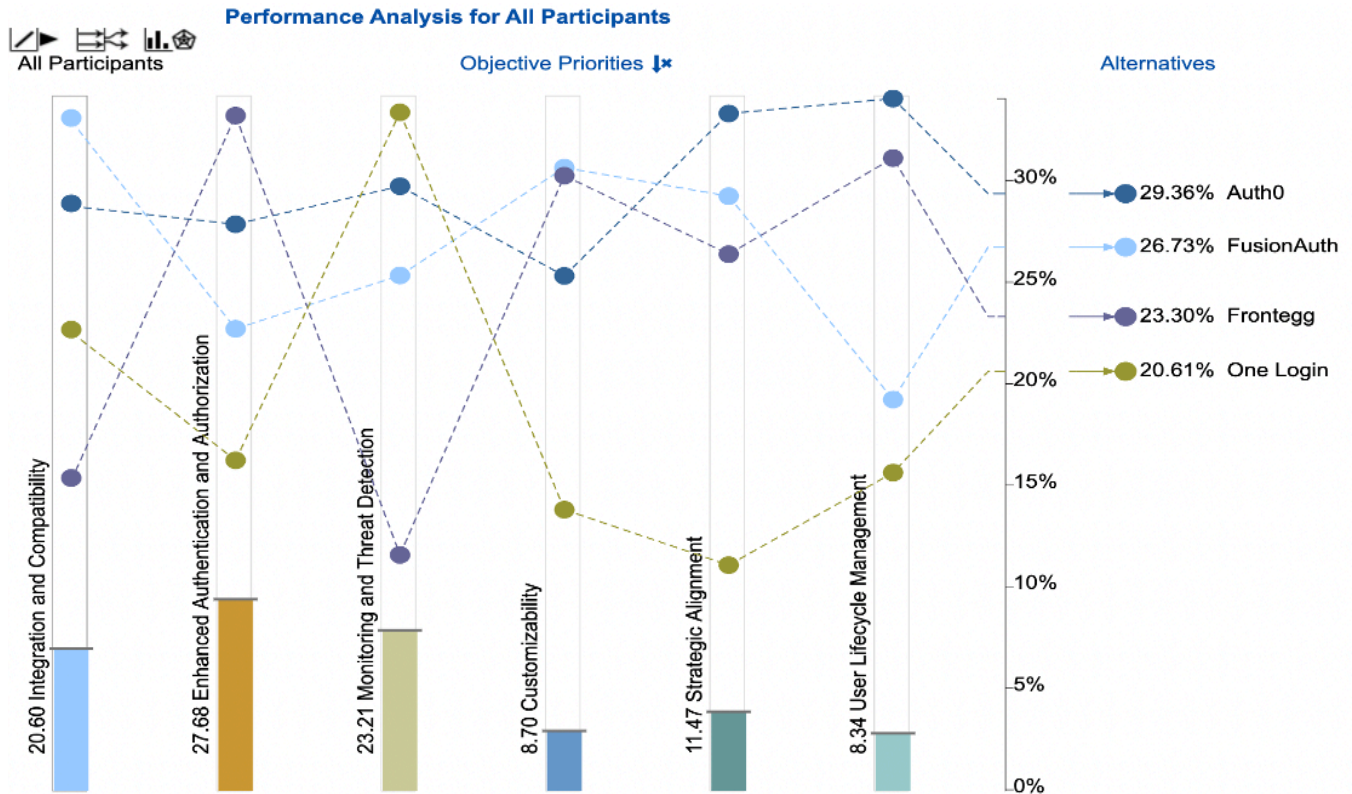


Figure: Sensitivity Δ Alternatives Performance



Here, we observe that all four IAM service providers are fiercely competing with one another. The preference for an IAM service provider varies among departments, depending on participants expertise and individual preferences. The Executive VP group prioritized FusionAuth with 39.6%, while the IT Department placed more emphasis on OneLogin with 27.9%. The Organizational Development Team favored Frontegg with 34.2%, and the Program or Portfolio Management Department supported Auth0 with 46.1%.

## Overall Insights



**Figure:** Overall Insights for Alternatives

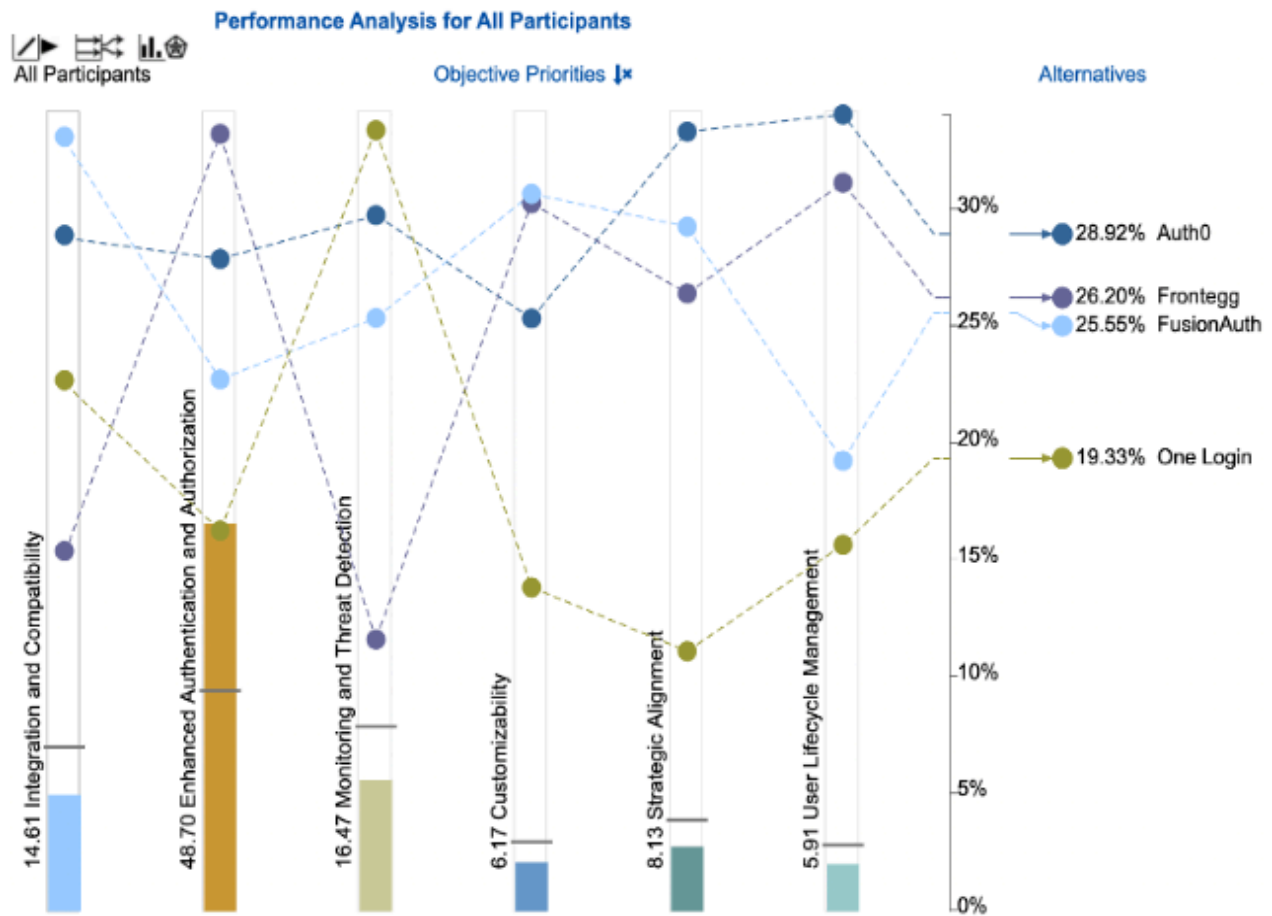
The next step was to use Expert Choice Comparion’s sensitivity analysis to better understand where each alternative performs best and to evaluate how the top two objectives, as determined by stakeholder votes, influence the overall decision-making process. This analysis provided deeper insights into the strengths and weaknesses of each IAM service provider in relation to these critical objectives, helping us make a more informed selection.

## SENSITIVITY ANALYSIS

While Auth0 was selected as the top alternative, based on the overall results, a sensitivity analysis was conducted to ensure that if management wanted to tweak the objectives priorities, the impact on the recommendation could easily be made. The objectives selected for the sensitivity analysis are the top two objectives voted on by all the participants (stakeholders).



**Auth0 remained the top choice, while FusionAuth moved to #3 and Frontegg secured the #2 position**

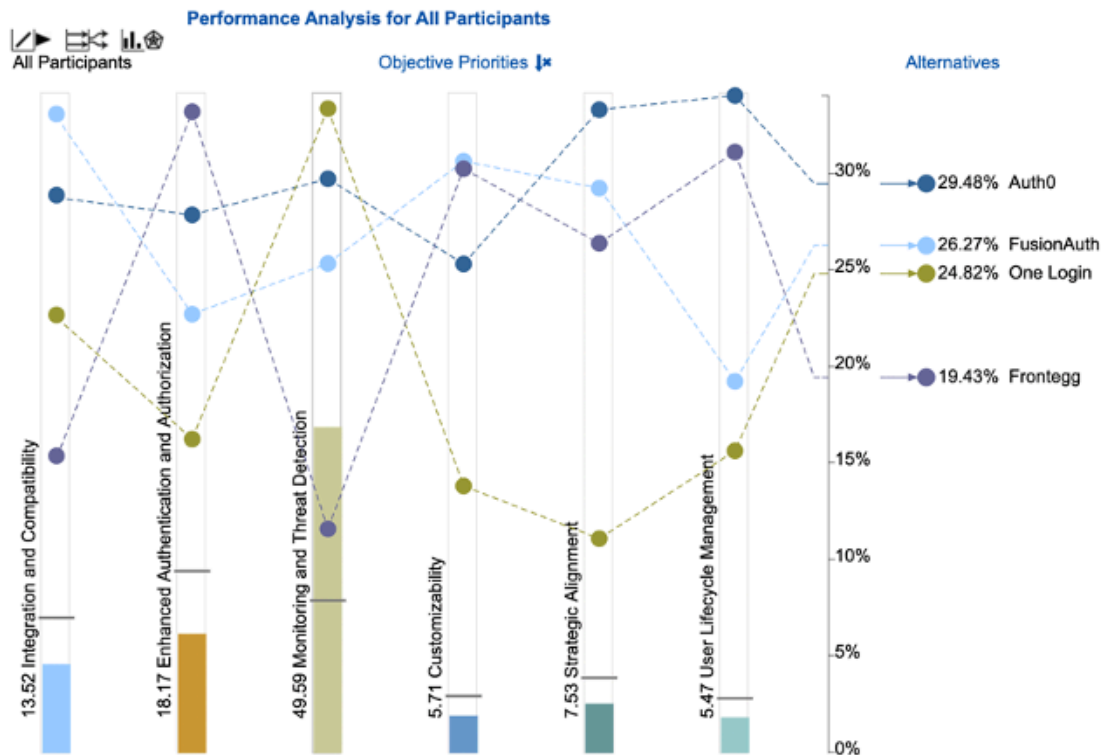


- Increasing "Enhanced Authentication and Authorization" priority from 10% to over 15% led to a shift in rankings.
- Vendors can use this type of sensitivity analysis to prioritize their product roadmaps based on "voice of the customer" input. If advanced authentication and authorization capabilities are of high priority, Frontegg would emerge as a stronger contender, indicating its potential to excel in this criterion.

It's worth noting that even with an increased weightage assigned to "Enhanced Authentication and Authorization," Auth0 still emerges as the winner, showcasing its strength in this criterion. This confirms Auth0's prominence in providing advanced authentication and authorization capabilities.

**Auth0 remained the top choice, while FusionAuth moved to #2 and Frontegg secured the #4 position**





- When increasing the weightage for "Monitoring and Threat Detection" just above 15%, Auth0 led with 29.48%, followed by Fusion Auth (26.27%), OneLogin (24.82%), and Frontegg (19.43%).
- This analysis caused OneLogin to drop to third place and Frontegg to land in the last position, reshuffling the initial rankings.

It's important to note that attributing such high weightage to "Monitoring and Threat Detection" might not be representative of the overall evaluation, as there are multiple objectives in the model.

## CONCLUSION AND RECOMMENDATION

After careful evaluation, the analysis and sensitivity assessment revealed that Auth0 emerged as the top choice. Utilizing the AHP model and pairwise comparisons, the conclusions drawn indicate that Auth0 is the optimal IAM service provider for implementation for e-commerce platforms. By prioritizing security and scalability, the company can focus on its expansion without compromising data integrity or customer trust. The use of Expert Choice Comparison ensured that every critical aspect was carefully weighed, leading to a well-informed decision. Auth0 demonstrated strong potential to support future growth while offering robust protection against cyberattacks.



## AUTHOR BIO

Sarbaja Adhikari is a software engineer and team lead with over three years of experience in the e-commerce industry. She has developed expertise in implementing robust security measures, particularly in identity and access management (IAM). Her hands-on experience has given her a deep understanding of the critical role IAM systems play in protecting customer data and ensuring compliance with security standards. Recognizing the growing need for enhanced cybersecurity, Sarbaja led a project to help e-commerce businesses select the most suitable IAM service providers to safeguard their platforms against evolving threats.

Sarbaja holds a Master of Science in Project Management from The George Washington University and a Bachelor of Science in Computing from Leeds Beckett University. She has successfully led diverse teams and driven program management initiatives, demonstrating her ability to align technology with business objectives. Passionate about promoting diversity and inclusion in tech, Sarbaja is committed to empowering women to take on leadership roles in technology.

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