5. Conclusion

In conclusion, this thesis has explored the development and simulation of semi automated production line utilizing Visual Components 4.8 software. Through the meticulous design and implementation process, various aspects of automated production, including layout design, workflow optimization, and analysis through KPI's have been addressed.

All thesis objectives were achieved successfully and the desired result were obtained. Analysis of the layout showed its bottleneck, which were successfully solved, getting 43% more efficiency, with the same utilization rates of the equipment and lower utilization rate for human workers. So the final KPI's are:
Throughput (1 human worker) = 51
Throughput (2 human workers) = 73
$U_{(Mill\ 1)}$ = 16.5 %
$U_{(Mill\ 2)}$ = 16.1 %
$U_{(Lathe\ 1)}$ = 13.95 %
$U_{(Lathe\ 2)}$ = 13.95 %
$U_{(Robot)}$ = 99.5%
$U_{(Human\ worker\ 1)}$ = 88.55% (1 human worker)
$U_{(Human\ worker\ 1)}$ = 62.48% (2 human workers)
$U_{(Human\ worker\ 2)}$ = 63.13% (2 human workers)

The usage of Visual Components 4.8 software has proven to be instrumental in achieving a comprehensive understanding of the production line's functionality and efficiency. By leveraging the software's capabilities, I gained valuable insights into the functionality and efficiency of the production line, ultimately paving the way for more streamlined and effective manufacturing processes. I've not only expanded my understanding of automated production but also gained essential skills crucial for my future career in engineering. Work on this thesis served as a practical learning tool, it offers students and professionals alike the opportunity to immerse themselves in the complexities of industrial automation and manufacturing. Through hands-on experience with advanced simulation software like Visual Components 4.8, readers gain practical skills that are highly sought after in today's engineering industry.