TSC Category	Technical Craft					
TSC	Quantitative Research					
TSC Description	Conduct and lead systematic statistical, mathematical and numerical analyses to formulate facts, uncover patterns in research, test hypotheses and draw sound conclusions for problem-solving					
TSC Proficiency	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			DSN-RND-3022-1.1	DSN-RND-4022-1.1	DSN-RND-5022-1.1	
			Collect and analyse data to establish patterns, test relationships and draw conclusions through mathematical and statistical techniques and methodologies	Formulate strategies to evaluate data and examine assumptions, with the use of advanced mathematical models and theories, to test hypotheses and draw conclusions	Establish research parameters, tools, methodologies and techniques to conduct mathematical and statistical testing of hypotheses, derive insights and develop recommendations	
Knowledge			• Probability, standard distribution and other fundamental statistical research methods and techniques • Concepts of designing quantitative research studies • Data collection methodologies in quantitative research • Correlational, causal comparative, experimental, quasi-experimental and other types of quantitative research designs used by the industry • Concepts of data mining, basic methodologies and applications • Types of sampling methods commonly used in quantitative research • Common issues in quantitative research	• Scattergrams, correlation coefficients and other advanced forms of statistical research methods and techniques • Design and principles of randomised controlled trials • Types of quantitative research designs, models and methodologies • Concepts of data mining, basic methodologies and applications • Types of sampling methods commonly used in quantitative research • Challenges of quantitative research	• Scattergrams, correlation coefficients and other advanced forms of statistical research methods and techniques • Future trends and applications in data mining • Objectives of data collection and sequence of data collection activities • Types of sampling methods commonly used in quantitative research • Challenges of quantitative research • Concept of big data • Methods of managing stakeholders	

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Abilities			• Analyse data to examine and describe a phenomenon • Examine relationships between data points through mathematical and statistical analysis • Formulate assumptions to test hypotheses by using quantitative research methods and techniques • Analyse data through statistical tools and methodologies to generate unbiased results that can be generalised to larger populations • Conduct surveys and experiments to obtain specific results regarding the cause-and-effect relationships of several independent or interdependent factors related to specific problems • Utilise probability sampling techniques to produce accurate generalisations about the population, from which the sample was drawn • Present outcomes and findings of quantitative research projects to stakeholders	• Examine data gathered to draw out patterns and hypothesis for testing • Evaluate the most appropriate research methodologies and methods to test hypothesis or provide logical evidences • Conceptualise strategies to develop and continuously improve upon mathematical models • Review variety of experiments or different scenarios to validate or reject hypothesis • Apply mathematical models, theories and hypothesis pertaining to a phenomena • Develop relevant surveys and experiments to be conducted to answer the overall research study • Convince stakeholders of quantitative research findings and highlight their implications on the organisation	• Develop custom scalable and sustainable integrated mathematical models, by leveraging technical skills • Review tools and techniques to be used in modelling and data analysis • Determine the considerations in the collection of data and the choice of instruments for measurement • Dissect the final results and findings to ensure they answer research objectives • Develop strategies to use streaming data for research • Lead remediation efforts to resolve existing model-related gaps or findings • Identify similar quantitative research studies as comparison charts for reference • Verify and approve analytical approaches, conclusions and recommendations pertaining to area of research • Engage senior leaders to address concerns uncovered from quantitative research	